Who is Cochlear?

Cochlear is the world leader in cochlear implant technology, with more than 25 years of experience in implant design and innovation. Over 70% of all people who have cochlear implants worldwide use a Nucleus® cochlear implant. More than 75,000 recipients, in 70 countries benefit from Cochlear’s Nucleus implant system.

Cochlear has successfully built the world’s most experienced research, clinical and technical team, which supports over 1,000 cochlear implant clinics worldwide.

Cochlear has over 25 year of experience with people who have a cochlear implant, and experience is critical to providing the most advanced technology possible.

Over the years, Cochlear has demonstrated its commitment to providing all recipients with many improvements in technology. Cochlear is financially able to be around for a very long time to support recipients for their lifetime.

Hear now. And always

How does the normal hearing ear function?

The ear has three parts:

1. **Outer ear** - the visible part that collects and directs sound waves down the ear canal to the middle ear.

2. **Middle ear** - includes the eardrum and three tiny bones that send the sound to the inner ear.

3. **Inner ear** - contains the cochlea (hearing organ) that includes the sensory cells for hearing. These sensory cells are called hair cells.

In normal hearing, sound waves move through the ear canal and strike the eardrum. This causes the eardrum and the three bones in the middle ear to vibrate.

These vibrations send waves through the fluid in the inner ear or cochlea and set off an electrical response in thousands of tiny haircells. This response is sent to the hearing nerve, which sends it to the brain where sound is heard.
What is sensorineural hearing loss or “nerve deafness”?
Sensorineural hearing loss is the medical term for what a lot of people call “nerve deafness”. Using the term “nerve deafness” for this type of loss may be confusing as the hearing nerve is usually not damaged. With sensorineural hearing loss the eardrum, bones and hearing nerve are normal, but the tiny hair cells in the cochlea have been damaged. The damaged hair cells cannot send sound information to the hearing nerve, so the brain does not receive complete sound information. A cochlear implant replaces the damaged part of the inner ear, and can benefit people with severe to profound sensorineural hearing loss.

What is a cochlear implant?
A cochlear implant is an electronic device that is designed to help people with hearing loss communicate more easily in the hearing world, and take advantage of educational, employment and social opportunities. They have the potential to enhance and improve the quality of life for employment deaf and hard of hearing individuals.

Many deaf people, who use a cochlear implant, are able to hear their children, talk on the telephone, participate in advanced education, and communicate effectively in social and work environments.

When a person gets a cochlear implant, they have an operation. The surgery is done in a hospital by an ear doctor and takes about 2 1/2 hours. Most people go home from the hospital the same day. About one month after the operation, when the incision has healed, an audiologist turns on the implant and the person hears sound through the implant for the first time. This is also referred to as the “initial stimulation” or “hook-up”.

There are two parts to a cochlear implant:
1. The inside part is made of two pieces that are connected together:
   a. the implant (receiver/stimulator) and
   b. the electrode array
      The implant is placed behind the ear under the skin and the electrode array is placed inside the inner ear, in the cochlea.

2. The outside part is placed behind your ear and looks like a behind the ear (BTE) hearing aid. It is called the:
   c. Sound processor – the Nucleus Freedom

The sound processor is a powerful minicomputer. It picks up sounds from a small microphone behind the ear and turns the sounds into coded signals. The signals are then sent to the cochlear implant under the skin and on to the electrode array in the cochlea. The cochlear implant user hears sounds as they occur.
Who can benefit?
Cochlear implants are a proven medical option for individuals who are severe to profoundly deaf. They have been used by deaf individuals for more than 20 years. Candidates for the Nucleus Freedom system include adults and children who meet the following criteria:

**Adults**
Ages 18 years of age or older who have:
- Severe-to-profound “nerve deafness”, also called sensorineural hearing loss, in both ears
- Onset of hearing loss prior to learning speech or after learning speech
- Receive little or no useful benefit from hearing aids
- Score 50 percent or less on sentence understanding tests in the ear to be implanted, and 60 percent or less in the non-implanted ear or in both ears
- A desire to hear and communicate more easily with the hearing community
- Realistic expectations of the benefit of a cochlear implant

**Children**
Ages 12 months to 24 months who have:
- Profound deafness in both ears
- Are not developing auditory or speech skills
- Family or caregiver who is active with rehabilitation exercises with the child

Ages 25 months to 17 years, 11 months who have:
- Severe-to-profound nerve deafness, also called sensorineural hearing loss, in both ears
- Receive little or no benefit from hearing aids
- Are not developing speech skills
- Active participation in rehabilitation exercises
- Realistic expectations of the benefit of a cochlear implant

**Did you lose your hearing prior to learning speech?**
Teenagers and adults who lost their hearing prior to learning speech may benefit from a cochlear implant, especially if some spoken language is already used for communication. A cochlear implant will be most effective if the recipient has:
- A strong commitment to using the implant full-time
- Ongoing rehabilitation to (re)introduce hearing and to help use hearing during daily activities
- Motivation in learning to listen as new sounds are heard
- Positive support from family and friends

**PURE TONE AUDIOGRAMS**
If you or your child’s hearing falls within the shaded range, you or your child may be considered a cochlear implant candidate.
What does a cochlear implant sound like?
What does the person with a cochlear implant hear? It’s an experience that varies among people who have an implant. Electrical stimulation produces sound that is very different from hearing with hearing aids. Hearing aids amplify sound; they provide power but not always clarity to a severe to profoundly deaf ear. In fact, the most commonly heard complaint from deaf individuals using hearing aids is that they can hear but have trouble understanding. Cochlear implants bypass damaged hair cells and stimulate the hearing nerve directly. They are designed to provide a clear auditory signal to the brain. While it takes a while to adjust to the unfamiliar signals from the implant, after the initial adjustment period, most people say that the sound is very natural.

What kind of implant system is available?
The Nucleus® Freedom™ system includes the Nucleus® Freedom™ cochlear implant, the new Freedom behind the ear (BTE) sound processor and the Freedom body-worn sound processor.

The system offers many features that are designed to give recipients the clearest sound in many environments including in noisy restaurants, talking on the phone, or sitting in a quiet room. The Nucleus Freedom system has the flexibility to match each individual’s particular hearing needs.

The Nucleus Freedom system is designed to be power-efficient and low maintenance. It is powered by batteries and is engineered for long battery life.

The Nucleus Freedom system uses the latest, most advanced technology. It has the flexibility to accept technology upgrades and improvements in sound processing as they are developed.

Nucleus Freedom system
1. Nucleus Freedom implant with Contour Advance electrode
2. Nucleus Freedom behind-the-ear sound processor
3. Nucleus Freedom body-worn sound processor

What is an audiogram?
An audiogram is a tool used by audiologists to measure the results of a hearing test. The picture below shows where speech and environmental sounds are found on the audiogram.

Audiogram - Environmental & Speech Sounds
Normal speech sounds are represented in the yellow shaded area across the audiogram. Speech sounds vary in pitch (high or low) and loudness (loud, medium, soft).

Various environmental sounds are represented on the audiogram. A jet airplane at take off is high pitched and loud, so it is shown at the bottom right.

After a person receives a cochlear implant, their audiologist will test their hearing. Below is an audiogram that shows how well one recipient hears with a cochlear implant (CI) as compared to hearing with a hearing aid (HA). The “X” indicates this person’s hearing before receiving the cochlear implant.

Audiogram – Hearing Test
CI = Cochlear implant only
HA = Hearing Aid only
X = Unaided hearing (No hearing aid or cochlear implant)
Frequently Asked Questions:

**Can the implant be worn during sports activities?**
Yes. The Nucleus® Freedom™ system can be worn during most sports activities. The external part, the Freedom behind the ear (BTE) sound processor is light-weight and gives active implant users freedom from cords. The outside parts of the system should be protected from breakage, moisture and extreme heat.

The internal part of the Nucleus Freedom implant is protected by a tough titanium case, however, it is best to avoid a direct blow to the internal part. We recommend protective headgear be worn for activities such as bicycling, roller blading, soccer and football. Recreational scuba diving will not harm the implant.

**Can I go swimming with the implant?**
Yes, however the sound processor and headset must be removed and protected from the water. No other special precautions are necessary.

**Can I wash my hair?**
Yes. The doctor may request that you avoid getting the incision wet for a day or two following surgery. After the incision has healed you may wash your hair normally.

**Will I have a hole in my head?**
No, there will not be a hole; the implant incision heals following surgery. You may have a small scar; but your hair will grow back over the incision area.

**What if newer technology is developed, will my implant be out of date?**
The Nucleus Freedom system incorporates the latest, most advanced technology available. It has been designed with the flexibility to accept upgrades in software enhancements, speech coding strategies and sound processors.

**Will my health insurance cover the Nucleus Freedom system?**
Most private insurance policies and/or health plans will provide full or partial coverage. Additionally, Medicare, some state Medicaid organizations, the Veterans Administration and TriCare also provide coverage for the Nucleus Freedom system. Insurance or reimbursement specialists, audiologists and physicians from your implant team can assist in the submission of necessary documentation to your plan or carrier to obtain pre-authorization of coverage and determine how much your insurance policy will cover. Cochlear Americas also has reimbursement experts to assist you and your center.

**How much does an implant cost?**
Costs for the pre-implant evaluation, the implant system, surgery and post-surgical fitting and training are generally $50,000 to $70,000. This figure will vary, depending upon your needs and the hospital and professional charges.

**Where can I go for more information?**
At Cochlear's website, www.cochlearamericas.com, you can join an online forum, The Nucleus Forum, where you can find out about the experience of others with a cochlear implant.