

Cochlear Implants

What Is a Cochlear Implant?

A cochlear implant is a small, complex electronic device that can help to provide a sense of sound to a person who is profoundly deaf or severely hard of hearing. The implant is surgically placed under the skin behind the ear. An implant has four basic parts:

- A microphone, which picks up sound from the environment;
- A speech processor, which selects and arranges sounds picked up by the microphone;
- A transmitter and receiver/stimulator, which receive signals from the speech processor and convert them into electric impulses;
- And electrodes, which collect the impulses from the stimulator and send them to the brain.

An implant does not restore or create normal hearing. Instead, under the appropriate conditions, it can give a deaf person a useful auditory understanding of the environment and help him or her to understand speech.

How Does a Cochlear Implant Work?

A cochlear implant is very different from a hearing aid. Hearing aids amplify sound. Cochlear implants compensate for damaged or non-working parts of the inner ear. When hearing is functioning normally, complicated parts of the inner ear convert sound waves in the air into electrical impulses. These impulses are then sent to the brain, where a hearing person recognizes them as sound. A cochlear implant works in a similar manner. It electronically finds useful sounds and then sends them to the brain. Hearing through an implant may sound different from normal hearing, but it allows many people to communicate fully with oral communication in person and over the phone.

Who Gets Cochlear Implants?

Different types of deaf and severely hard of hearing people choose cochlear implants. Both children and adults can be candidates for implants. Approximately 25,000 people worldwide have received implants. In the United States, some 14,000 people have implants; about half of these are adults and half are children. Adults who have lost all or most of their hearing later in life can often benefit from cochlear implants. These older candidates can often associate the sounds made through an implant with sounds they remember. This may help them to understand speech without visual cues or systems such as lipreading or sign language. Young children can also be candidates for implants. Cochlear implants, coupled with intensive post-implantation therapy, can help young children to acquire speech, language, developmental, and social skills. The best age for implantation is still being debated, but most children who receive implants are between 2 and 6 years old. Earlier implantation seems to perform better.

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How Does Someone Receive a Cochlear Implant?

A cochlear implant is a surgical procedure. The decision to receive an implant should involve discussions with many medical specialists and an experienced surgeon. The process is expensive. Some may choose not to have a cochlear implant for a variety of personal reasons. Also, though surgical implantation is almost always safe, complications are a risk factor, just as with any kind of surgery. An additional consideration is learning to interpret the sounds created by an implant. This process takes time and practice. Speech-language pathologists and audiologists are the professionals frequently involved in this learning process. Not everyone performs at the same level with a cochlear implant. Prior to implantation, all of these factors need to be discussed.

What Does the Future Hold for Cochlear Implants?

The technology behind cochlear implants is changing rapidly. With advancements in technology and continued follow-up research with people who have already received implants, researchers are evaluating new opportunities and additional possible candidates for cochlear implants.

Where Can I Get Additional Information?

Alexander Graham Bell Association for the Deaf and Hard of Hearing (A.G. Bell)

3417 Volta Place, NW
Washington, DC 20007
Voice: (800) HEAR-KID or (202) 337-5220
TTY: (202) 337-5220
Fax: (202) 337-8314
E-mail: AGBELL2@aol.com
Internet: www.agbell.org

American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS)

One Prince Street
Alexandria, VA 22314
Voice: (703) 519-1589
TTY: (703) 519-1585
Fax: (703) 299-1125
E-mail: entinfo@aol.com
Internet: www.entnet.org

Cochlear Implant Association, Inc.

5335 Wisconsin Avenue NW, Suite 440
Washington, DC 20015-2034
Voice: (202) 895-2781
TTY: (202) 895-2781
Fax: (202) 895-2782
E-mail: pwms.cici@worldnet.att.net
Internet: www.cici.org

House Ear Institute (HEI)

2100 West Third Street, Fifth Floor
Los Angeles, CA 90057
Voice: (213) 483-4431
TTY: (213) 484-2642
Fax: (213) 483-8789
E-mail: webmaster@hei.org
Internet: www.hei.org

League for the Hard of Hearing

71 West 23rd Street
New York, NY 10010
Voice: (917) 305-7700
TTY: (917) 305-7999
Fax: (917) 305-7888
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