

Cochlear Implant Update (10/98)

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The Food and Drug Administration has approved new technology for cochlear implants. Following extensive clinical trials a new implant and two new speech processors have been given the final OK. The new implant will allow expanded electrode opportunities which will then be accessed for programming as needed. The new speech processors incorporate improved technology and one can be worn at ear level.

There is now an expanded selection criteria for the new [Nucleus 24](#) implant for both children and adults. Adult candidates with severe to profound bilateral sensorineural hearing loss may score up to 40% correct on open-set tests of sentence recognition. Children are carefully evaluated but may receive an implant at 18 months.

What is a Cochlear Implant?

A cochlear implant is an electronic device that provides the function of the damaged or absent hair cells by providing electrical stimulation to the remaining nerve fibers. The implant provides useful hearing and improved communication abilities to the implant user. A cochlear implant is a safe, reliable and effective treatment for severe to profound hearing loss in adults and profound hearing loss in children.

Early research on cochlear implants began in France in 1957. Since then, cochlear implant technology has evolved from a device with a single electrode (or channel) to a complex system that transmits large amounts of sound information through multiple electrodes.

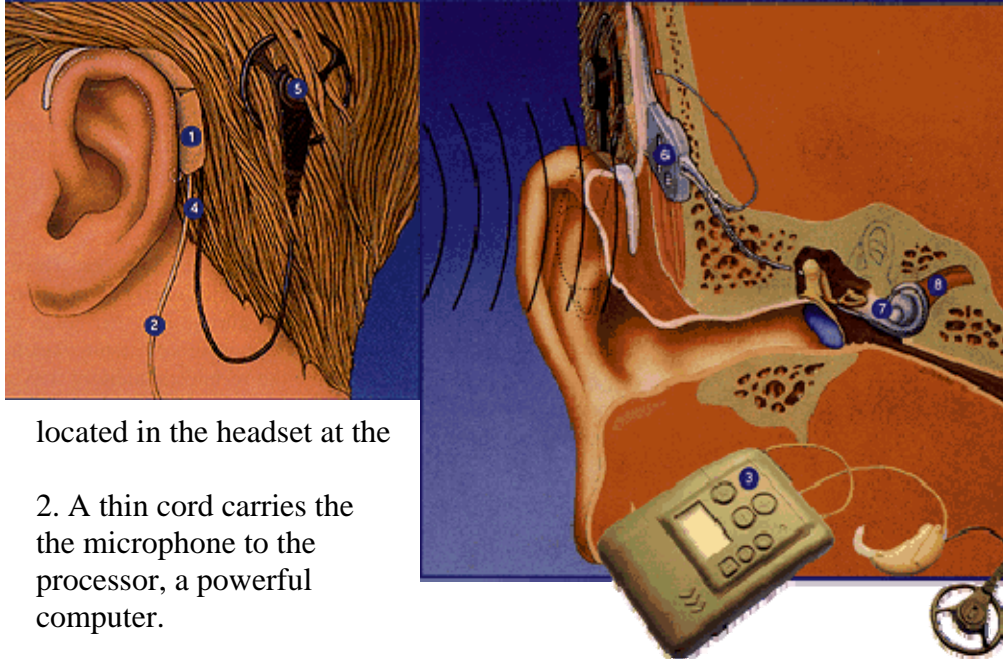
How is a hearing aid different from a cochlear implant?

Hearing aids amplify sound, making the sounds louder. The sounds produced by the most sophisticated hearing aids may not offer much benefit to people with profound hearing loss. The damage to the hair cells keeps them from using the "sound" information.

A cochlear implant does not make sounds louder: it provides useful sound information by directly stimulating the surviving auditory nerve fibers in the cochlea, allowing the individual to perceive sound.

How does the cochlear implant system work?

The process can be summarized by the following steps: (see the numbers on the diagrams)



located in the headset at the

2. A thin cord carries the the microphone to the processor, a powerful computer.

3. The speech processor filters, analyzes and digitizes the sound into coded signals.

4. The coded signals are sent from the speech processor to the transmitting coil.

5. The transmitting coil sends the coded signals as FM radio signals to the cochlear implant under the skin.

6. The cochlear implant delivers the appropriate electrical energy to the array of electrodes which has been inserted into the cochlea.

7. The electrodes along the array stimulate the remaining auditory nerve fibers in the cochlea.

8. The resulting electrical sound information is sent through the auditory system to the brain for interpretation.

1. Sounds are picked up by the small, directional microphone ear.

sound from speech miniaturized

If you have any further questions please call one of the members of our Audiology staff at

248-476-4622.