

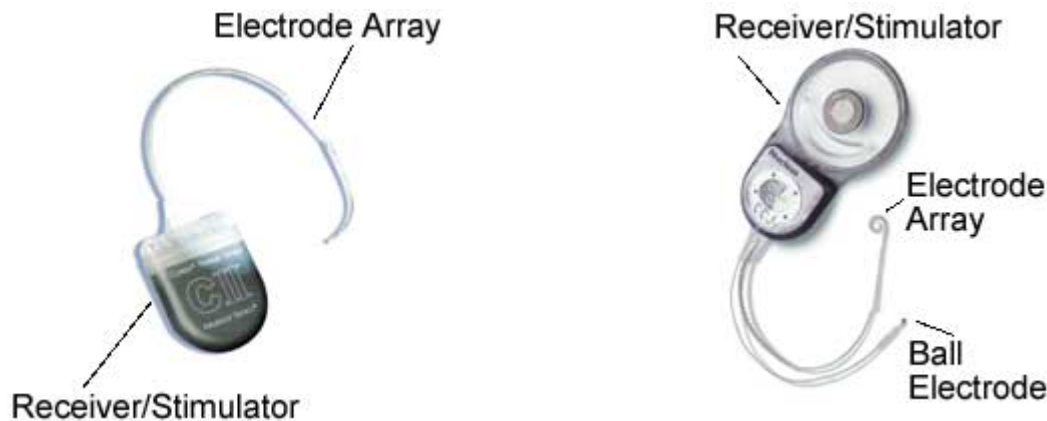
Hearing & Amplification

Cochlear Implants

What Is A Cochlear Implant And How Does It Work?

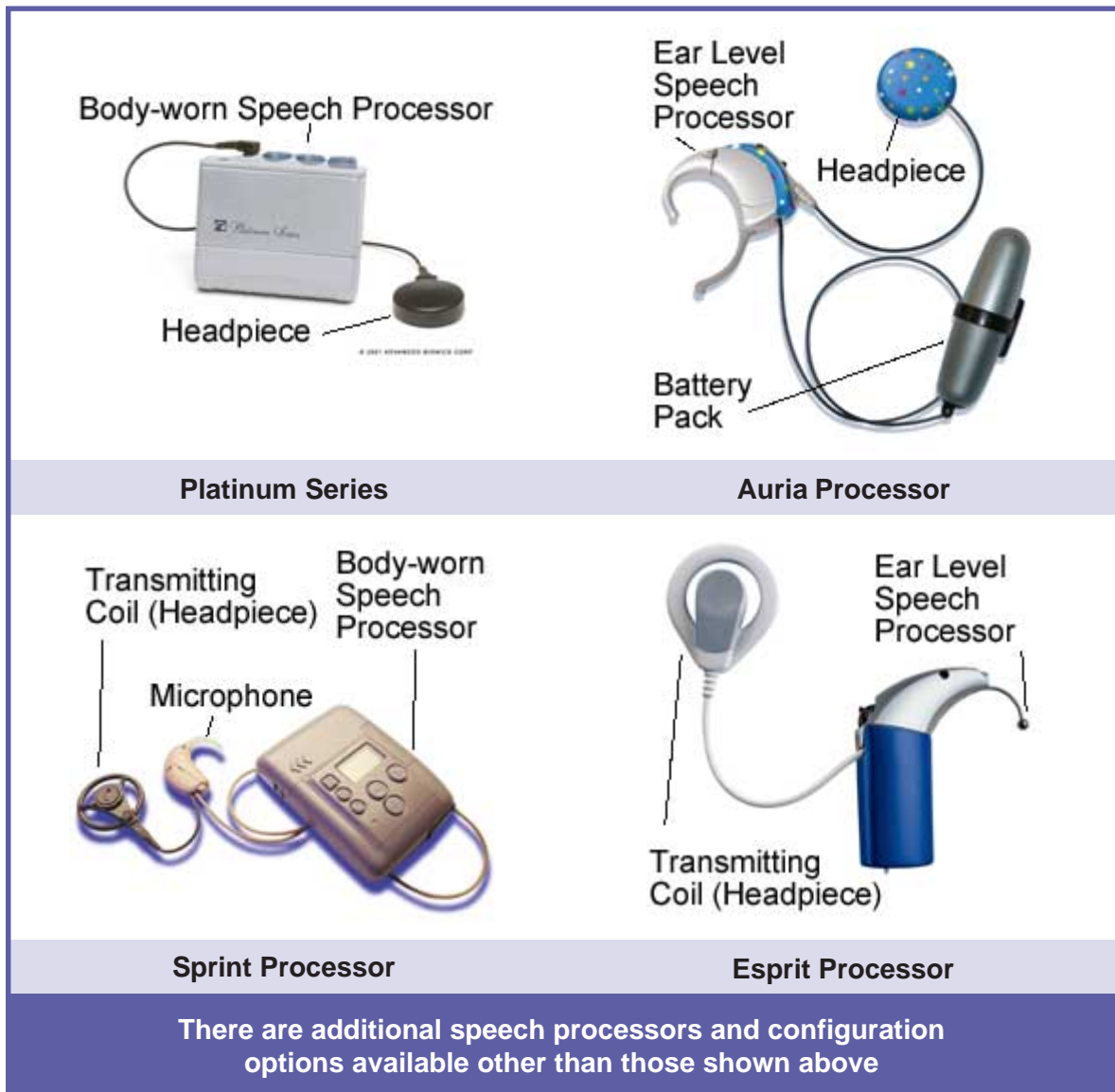
Cochlear implants are implantable devices designed with the goal of providing sound detection and speech recognition for people who receive little or no benefit from hearing aids. There are several manufacturers of cochlear implants such as Advanced Bionics Corporation, Cochlear Americas, and Med-El. The cochlear implant—regardless of the manufacturer—is comprised of both internal and external components.

The internal portion, which is implanted surgically, has a receiver and tiny electrodes. The receiver is imbedded under the skin behind the ear and the electrodes are surgically inserted into the cochlea.



The external portion, shown in the picture below includes a speech processor that is connected to a headpiece by a cord. The headpiece has a transmitting coil that sends the signal from the speech processor to the internal part of the device. It magnetically attaches to the surface of the head behind the ear at the spot where the internal portion of the implant is located.

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The internal and external portions work together to change sound into electrical signals that are sent to the hearing nerve. First, the microphone picks up the sound energy, and transmits the signal through the cord to the speech processor. The speech processor filters, analyzes, and converts the sound energy into a digital code that is then sent back through the cord to the headpiece where it is transmitted across the skin, via radio frequencies, to the internal receiver. Then, the internal receiver delivers the signal to the electrodes that have been placed inside the cochlea. The electrodes bypass the damaged parts of the cochlea and send a tiny electrical charge directly to the auditory nerve. Finally, the auditory nerve carries these electrical signals to the brain where they are interpreted as sound. This process occurs so rapidly that the listener will hear speech and other sounds without any noticeable delay.

For more information about specific manufacturers please visit the following websites:

Advanced Bionics Corporation - www.cochlearimplant.com

Cochlear Americas - www.cochlear.com

Med-El - www.cochlearimplants.com