When parents first learn their child has a hearing loss, they are presented with a host of wide-ranging options. Should they raise their child in a spoken language environment? If so, should they choose hearing aids or should they consider surgery for a cochlear implant for their child? What is involved in the process, and what should parents and the child prepare for and expect?

When considering whether to pursue a cochlear implant, it is important for parents to realize that tests and evaluations need to be completed before the cochlear implant team makes a final recommendation. All parties involved want to ensure that this technology is the best option for your child. The cochlear implant process begins with an evaluation phase that is designed to accomplish the following:

- determine whether the child’s hearing loss is significant enough to warrant a cochlear implant;
- provide the family with information about technology, surgery and required follow-up;
- reveal whether there are any medical reasons why the child should not have the surgery;
- determine what educational supports are required or need adaptation; and
- assess the child’s current communication skills and learning style.

The following is a general overview of the evaluation phase and what to expect from a cochlear implant evaluation.

The Cochlear Implant Team

Pediatric cochlear implant centers vary in number and type of staff members, but most use a team approach. Typically, each team member has a specific area of expertise, with knowledge and understanding of the expected benefits and challenges that an implant may provide. Cochlear implant teams usually have one member who coordinates evaluations, communicates with the family and oversees the progress of the candidacy process. Other team members may include an otologist, an audiologist, a speech-language pathologist, an auditory habilitation specialist, an educational specialist and, occasionally, a social worker or a psychologist.

The Case History

The cochlear implant team needs to become familiar with the child’s medical, developmental, audiological and academic history. Several audiometric and medical criteria also must be met before a cochlear implant is considered. In addition, the team needs to understand other aspects of the child’s experience that contribute to his or her status as a cochlear implant candidate — for example, whether the child’s educational environment will require substantial support in order for the child to succeed with a cochlear implant.

Audiometric Testing

The audiologist will perform a standard hearing test, both with and without hearing aids, and also may perform speech perception tests. If the child is an infant, the audiologist may
use other objective measures, such as Auditory Brainstem Response (ABR) testing, steady-state evoked potentials or other electrophysiological tests that provide information about the child’s hearing sensitivity without requiring a voluntary response from the child. These tests are painless, and often the child is encouraged to sleep while they are being administered.

It usually is necessary for the cochlear implant center to complete its own hearing tests, even if another audiologist has tested the child recently. There are specific hearing and speech perception levels, or criteria, that must be met for a child to be considered for a cochlear implant. The cochlear implant team most likely will want to confirm these criteria using their own tests before making any recommendations.

**Device Counseling**

Device counseling consists of a meeting with a team member who will discuss the features and operation of the cochlear implant system and answer any questions the family has about the process. Usually, these sessions include a discussion of the family’s expectations. The implant team will suggest that the child and family meet another “seasoned” family who can share their personal experiences and help the child’s family develop realistic expectations about the process.

Many families focus mostly on the surgical procedure itself and underestimate the work that will be involved in helping the child develop listening and speech skills during the first several years following the surgery. All caregivers must understand that the cochlear implant is not a quick fix for deafness; the surgery is only the beginning of a long journey toward development of listening skills that support communication.

**Speech and Language Evaluation**

Cochlear implant teams often include speech-language pathologists, Listening and Spoken Language Specialists® or others who evaluate the child’s auditory development and communication skills. Age-appropriate tests are administered to sample the child’s language skills and ability to use residual hearing for communication. The family will be asked to describe the child’s language and communication abilities at home and at school.

The more information the cochlear implant team has about the child’s overall development, the better equipped they are to make appropriate recommendations.

**Educational Evaluation**

The type of intervention a child receives before and after a cochlear implant is critical to the success of the procedure. An educational specialist can evaluate the child’s educational setting, interact with the child’s teachers and solicit their input, and identify whether they would benefit from additional training about hearing loss or cochlear implants.

With the parents’ permission, the consultant can take this opportunity to discuss the child’s academic status and learning style. An educational specialist may assist the family and the school in designing an Individualized Family Service Plan (IFSP) or an Individualized Education Plan (IEP) that will meet the child’s needs and establish realistic expectations among providers after implantation.

**Medical Evaluation**

Every child who is considered for a cochlear implant is examined by a doctor who specializes in surgery of the ear. Each child will receive a CT scan (x-ray) or a magnetic resonance imaging scan (MRI) of the inner ear as part of the assessment. The surgeon needs to see the structures of the inner ear to ensure that the cochlea is intact and an auditory nerve is present. A vaccination for meningitis is strongly recommended before surgery to reduce the risk of postoperative infection.

**Consultation With a Social Worker or Psychologist**

Some cochlear implant centers ask families to meet with a social worker or psychologist during the candidacy phase. This professional may seek information regarding the family’s support network or financial needs and help determine if any organizations or programs are available to provide assistance, if necessary. A social worker or psychologist may assess the family’s expectations and may ask family members to discuss why they are pursuing a cochlear implant for their child.
Surgery

The cochlear implant surgery usually takes two to four hours. The child will be given a general anesthetic, and a small incision will be made behind the ear. The hair may be shaved around the area of the incision. The surgeon may create an indentation, called a “bed,” in the mastoid bone (the hard bone directly behind the ear). This bed is where the implant case, which holds all of the electronic components, is placed.

How much the implant can be recessed depends on the child’s size and skull thickness. The surgeon will make a small opening into the cochlea to insert the electrode array, then secure the implant/electrode array in place. The electrode function usually is evaluated before the incision is closed.

Postoperative Procedures

When the child wakes up after the surgery, there may be some mild discomfort, and medication for pain may be administered. However, children respond surprisingly well to the surgery. They usually are up and about on the same day or the next day. The length of the hospital stay varies, but it can be as short as one day. Usually, the child can resume reasonable normal activity in just a few days.

Depending on the method of closing the incision, the child may need to return for suture removal in one to two weeks. Following surgery, it takes three to six weeks for the incision to heal and any residual swelling to subside. During this period, the child will not hear anything with the cochlear implant.

Following surgery, the primary goal is to keep the area clean and dry and to prevent any injury to the head while the incision is healing. In general, most children recover quickly and return to school with the doctor’s clearance within a few days.

Source: Volta Voices, Jan/Feb 2008