Cochlear Implants: The Role of the Early Intervention Specialist

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Case Scenario

• 3 month old baby with a confirmed severe to profound HL
Counseling the Family Includes What?
Let's Look at the FACTS!
Why Early Identification Matters

• Every day, 33 Babies are born in the U.S. with a permanent hearing loss
• In 1988, the average age that children with congenital hearing loss were identified was $2 \frac{1}{2} - 3$ yrs.
• Undetected hearing loss has serious negative consequences
Why Early Intervention Matters

• The effects of hearing loss can be minimized via early identification, early intervention, and appropriate habilitation.

• Newer hearing technology, such as digital hearing aids and cochlear implants, make it possible for children with hearing impairments to demonstrate speech/language and academic skills similar to those of children with normal-hearing (Robbins et al, 2004; Geers et al, 2003)
After the Identification: The Ideal

Once a child’s hearing impairment is identified:

– Immediate referral to an audiologist for follow-up testing and amplification fitting if needed.

– Immediate referral to early intervention program to discuss hearing loss, communication options, and cochlear implants.

– Child receives early intervention services within weeks after hearing loss is identified from a qualified professional trained in working with infants and children with hearing loss.
What is the Reality?

- Many professionals are unaware of the benefits of early identification and early intervention.  T/F
- Many children are still lost to follow-up.  T/F
- Children continue to be referred late, identified late, and have intervention begin later than it should.  T/F
- Many professionals have not been appropriately trained to work with new technology, particularly with infants and young children.  T/F
Why Early Cochlear Implantation Matters

• Age at onset of hearing loss & Age at implantation are the 2 factors that have the greatest impact on the child’s performance.
• Critical age for learning language
  – Babies learn spoken language by hearing it before they can speak.
There is no difference between how Hearing aids and Cochlear Implants work.

True
or
False
Cochlear Implant: What is it?

- Sound waves enter through the microphone.
- The sound processor converts the sound into a distinctive digital code.
- The electrically coded signal is transmitted across the skin through the headpiece to the internal portion of the device.
- The internal device delivers the sound to the electrodes.
- The electrodes stimulate the hearing nerve.
- The hearing nerve sends the signal to the brain for processing.
A Cochlear Implant is a surgically implanted device.

True

or

False
Cochlear Implants: The Parts

• A microphone
  – picks up sound from the environment
• A speech processor
  – selects and arranges sounds picked up by the microphone.
• A transmitter and receiver/stimulator
  – receive signals from the speech processor and convert them into electric impulses.
• An electrode array
  – a group of electrodes that collects the impulses from the stimulator and sends them to different regions of the auditory nerve.
Cochlear Implants: Who is a Candidate?

- 12 Months of age
- Bilateral Severe to Profound SNHL
- Minimal Benefit from Conventional Amplification
Cochlear Implants restore a child’s hearing to normal.

True
or
False
Children with a unilateral hearing loss may be a candidate for a cochlear implant.

True
or
False
How do you counsel?
Cochlear Implants: The Benefits

- Ability to learn to listen
- Ability to learn to talk
- Ability to hear music
- Opportunity to be educated in classrooms along with normal-hearing peers
- Opportunity to read and write (literacy skills) on grade level with normal-hearing peers
Cochlear Implants: The Process

Begins with YOU!
Cochlear Implants:  How can you help?

- Know where to find resources
- Stay informed
- Refer
- Remember you are an important part of the child’s team
Team Approach

- Parents
- Speech and Language Therapist(s)
- Child
- Teacher(s) of the Deaf
- ENT Surgeon Pediatrician
- Psychologist
- Social Work
- Audiologist

Team Approach
The Process

- Audiologic Evaluation
- Medical Evaluation
- Speech Language Evaluation
- Psychological Evaluation
- Educational Evaluation
Audiological Evaluation

- Determine the type and degree of hearing loss
  - Air & bone conduction thresholds for each ear
  - ABR & OAEs

- Assess the child’s current amplification system
  - Aided sound field testing
  - Aided speech perception testing

- Counseling
  - Address realistic expectations
  - Device selection
  - Post-operative follow-up
Medical Evaluation

- Determine cause of hearing loss (if appropriate)
- Assess status of middle ear & cochlea
- CT scan/MRI
- Counseling
  - Hearing loss
  - Surgical procedure
    - Surgery is usually out-patient
    - Average time is 2.5 hours
    - Typical incision is small
  - Post surgical considerations
- Determination of ear to implant
Speech & Language Evaluation

• Areas assessed
  – Vocabulary - knowledge of single words
    • receptive
    • expressive
  – Language - word combinations, grammar
    • receptive
    • expressive
  – Articulation/Intelligibility
  – Reading skills
• Provides baseline information
Psychological Evaluation

- Assessment of non verbal & verbal IQ
  - Verbal IQ assessed when appropriate
- Counseling for family
  - Impact of hearing loss on the family unit
- Assessment of child’s learning style
- Assessment of any other underlying issues
- Serves as a baseline evaluation
Educational Evaluation

• Areas to consider:
  – Communication Methodology
  – Support services
  – Speech/language and auditory skill development
  – Professional training
Audiologic Management

“Initial Stimulation” or “Hook Up”
Audiologic Management
“Initial Stimulation”

- External equipment placed on child
- The sound processor is programmed
- Speech is introduced through the sound processor
- Informal assessment of child’s initial responses to sound
- Counseling
  - Care & maintenance of equipment
  - Follow up appointments
  - Importance of therapy & auditory integration
Rehabilitation

Rehabilitation is KEY
A cochlear implant is NOT a “cure” for hearing loss.
Parent Commitment
Cochlear Implants: Resources to support you

- www.BionicEar.com
- eLearning Courses
- The Listening Room
- Tools For Schools
- On Call Support
No one option is right for every child or situation.
Counseling Families

• When counseling families whose child has just been identified with a hearing loss:
  – It is important to understand basic and current information regarding cochlear implants.
  – Parents should be provided with information regarding cochlear implants regardless of the degree of hearing loss, as candidacy may change.
  – Parents and professionals should understand the changing expectations regarding performance outcomes.
Life is either a daring adventure... or nothing.

Helen Keller