

Cochlear Implants in Children with Special Needs

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Purpose of presentation

Discuss management of CI children
with special needs:

- Setting Expectations
- Monitoring Progress
- Using Music to Enhance
Communication

**Number 1 rule in working with
CI children with special
challenges**

- Don't forget what you know, but don't let that limit you

Reasons for Optimism

- Published studies – CI children with mild second impairment: good benefit but progress is slower (Holt & Kirk; Donaldson et al, Waltzman, et al;)
- Published case studies – also encouraging
- Anecdotal reports of CI benefit in children with multiple disabilities

Implantation of Children with Multiple Disabilities - Expectations

- Re-evaluating the definition of success
- Realistic expectations – characteristics of individual child must be considered;
- Better use of predictive methods for pre-implant counseling and informed consent

Children with multiple disabilities

- Not all are candidates for CI – some success stories, some difficult disappointments
- Pooling of data across centers needed in order to:
 - Gather objective measures of benefit
 - Determine chances of success with various clusters of disabilities
 - Set criteria for appropriate candidates
 - Counsel parents appropriately

Rational for implantation of children with multiple disabilities

- Developmental synchrony – humans are meant to hear
- Cumulative practice
- Not making a decision is making a decision
- Effect of hearing loss sometimes under-estimated by other specialists
- *Superior benefit for children implanted early: Age at Implantation matters, even for children younger than 3 years*

Drawbacks for implantation of children with multiple disabilities

- Challenges in assessment/determining candidacy
- Realistic expectations by CI team
- Realistic expectations by family
- Appropriateness of materials and procedures
- For some, progress judged only on an individual basis
- Inadequate professional skills with this age group
- Lack of conclusion data to predict who will benefit
- *Fear of failure/disappointment/loss of hope or confidence*

Not every special needs child is an appropriate candidate for a cochlear implant

An important diagnostic question:
Does the child, pre-CI, use available sensory input to make sense of his/her world?

The Nitty Gritty of working with CI children with multiple disabilities

- Break down tasks into much smaller tasks
- Rehearsal/practice of skills
- More time spent on pre-requisites to skills
- Be willing to try anything once
- Find motivators (every child has some)
- Follow the child's lead
- Setting goals: what is needed at home? At school? Socially?
- **COLLABORATION WITH OTHER SPECIALISTS IS ESSENTIAL**

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Rewarding Results are more
than...

Wishing



Building Blocks for Success

- Expectations
- Programming
- Equipment Management
- Rehab Approach
- Parent Involvement is a MUST

Establishing Expectations

- Uncertainty
 - Short and long term goals should be discussed early and often
 - Consensus across team
 - May need to use a different “measuring stick”
- For mildly impaired: Use of Red Flags (Robbins, 2005)
- For significantly impaired: Rate of Progress
- Augmentative Communication

Parents Support Clinicians – pre-implant

- Begin Early!
 - If possible, have audiologist observe or participate in therapy
 - Ask Audiologist to send unprogrammed equipment home before initial stimulation

Parents Support Clinicians – post-surgery, before hook-up

- Parents share what you know about your child
 - Before programming begins
 - How does your child express happiness?
 - How does your child express discomfort or fear?
 - Identify your child’s favorite toys/activities
 - Identify your child’s favorite foods
 - Share what motivates your child
 - Share what scares your child
 - Identify your child’s “best” time of the day

Parents Support Clinicians – after initial stimulation

- Share about your child – Individual way to Monitor Progress for that child
 - After sound has been introduced
 - How is your child letting you know s/he is hearing?
 - Is your child an “off responder” or an “on responder”?
 - What sounds does your child enjoy?
 - Does your child respond to some sounds more than others?
 - Do some sounds scare your child?
 - Note: Ling sounds are important... but maybe later 😊

Monitor Progress: Parents keep Perception Diary

“Please make at least one note each day regarding any observations of your child’s listening development (you may make several notes if you like!) Comments might include changes in the child’s use and acceptance of his aids; sounds your child has alerted to; curiosity about sound; changes in what he can or cannot detect, or anything deemed to be notable. Be as specific as possible.”

You may ask them to do the same for a Production Diary.

Environmental Sound Walks

Music can...

- Reinforce active listening skills
- Stimulate verbal responses
- Stimulate motor responses
- Be adapted to any age, ability, or culture
- Release and nurture creativity
- Be a non-verbal/pre-verbal means of communication
- Motivate
- Build a sense of community

“There would be no music and perhaps, no need for it if it were possible to communicate verbally that which is easily communicated musically” – E. Thayer Gaston

Speech/Music Connection/Differences

SPEECH

- intonation
- rate
- stress
- rhythm
- duration
- produced by voice

- speech decoding (temporal)
on left auditory cortical
regions

MUSIC

- intonation
- tempo
- accent
- rhythm
- duration
- produced by voice and
instruments

- pitch discrimination (frequency)
on right cortical regions

"All song comes from speech" – Carl Orff

Musical Development

Birth - one:	Sensorimotor response
One - two:	Pitch imitation/melodic fragments
Two - three:	Intervals/spontaneous song/ awareness of songs and rhymes
Three - four:	Attempts to sing learned songs/lyrics and rhythm
Four - five:	Beat competent/tonal center
Six - seven:	Can sustain/conserve melody
Eight - eleven:	Harmony/read notation
Adolescence:	Fully musical/social experience

“Music hath charms to soothe the savage beast” - unknown

Musical Activities

1. Steady Beat
2. Sing/Stop
3. Sing/Hum
4. Pitch Imitation
5. Skunk Lullaby
6. Pitch Discrimination
7. Grandpa's Farm

"Music produces a kind of pleasure which human nature cannot do without"

- Confucius