

An "S-L-P" Approach to Early Intervention Following Cochlear Implant Surgery

By Ross Adams

Editor's Note: We are pleased to offer our readership the following contributed essay from Ross Adams, who recently was named San Diego's "Teacher of the Year." We congratulate Ross and thank him for submitting this essay.

Children who are deaf do not have access to the world's steady stream of auditory information to assist in their learning. Hearing aid technology may provide partial access for some children, but cochlear implant technology can offer significantly more auditory information that is of better quality than a hearing aid. A well mapped and maintained cochlear implant can open a new and exciting avenue of learning for deaf children, that is the auditory channel. Therefore, intervention following cochlear implant surgery and initial switch on of the device should focus on the piece of the puzzle which has been missing:

SOUND

The first step in learning through listening is for a child to recognize that sound exists. Intervention can begin simply with noisy games, watching the child intently for curiosity in sound. Therapists can call attention to the sounds that the child's favorite toys make. Quickly, however, it is important to switch to speech as the sound source. Awareness of environmental sounds has merit, but awareness of speech is a skill that leads to communication. The interventionist can add words and vocal play targets to all interactions. Ling's six sounds-ah, oo, ee, sh, ss, mm-which span the speech spectrum, provide a useful starting place for the development of awareness of particular speech segments. Early work in sound detection requires that the child learn to anticipate speech and to wait for it before responding. Listening games must therefore become waiting games, encouraging the child to listen for a spoken cue. These activities can pave the way for more structured detection tasks in which the child practices the conditioned-play audiometry

game, waiting patiently for a sound then responding through a play activity, then waiting again and responding. After many opportunities to listen, a child will be ready to identify what has been heard by selecting or pointing to the item named. This is the beginning of the next important phase in cochlear implant intervention:

LANGUAGE

In the days and weeks following initial switch on of the cochlear implant, it is a good use of time to work on important precursors to communication. These skills include eye contact, turn taking, and shared attention to an object of interest. The natural language stimulation techniques of self-talk (i.e., talking about what the therapist is experiencing), parallel-talk (i.e., modeling language for the child by talking about what he/she is experiencing), and extension/expansion (i.e., repeating the child's utterance in more full and complete adult-like form) can be utilized. Once a child begins to identify what he has heard, however, language work begins in earnest. Language work does not take the place of work with sound, but is instead overlaid upon it. Identification forms the foundation of receptive vocabulary, and language comprehension forms the foundation for production of spoken language later on. Depending on the child's age, weeks to months may be spent in the receptive phase of language development. Changes in the child's expressive, spoken output should occur slowly over time and should mirror typical development in scope, sequence, and timing. (It is important to remember that developmental comparisons should only be made using the child's cochlear implant listening age and not his chronological age, as the former is the length of time the child has been learning to understand sound.) General vocalization on the part of the child should give way to babbling, to jargon, and ultimately to recognizable words within nine-to-12 months. Once the child begins using words, the focus of intervention should shift once again to

the aspect of spoken language that shapes speech intelligibility:

PHONOLOGY

While working on general awareness, detection, and identification of sound, intervention can simultaneously address important precursors to phonological development. These skills include the ability to perceive and then produce variations in the non-segmental aspects of speech (e.g., duration, intensity, pitch) as well as a wide repertoire of recognizable vowel sounds. Non-segmental variation (e.g., sustained, brief, and repeated vocalizations; loud and not-so-loud vocalizations; and high- and optimal-pitch vocalizations) occur naturally during typical vocal play and should both be modeled and encouraged following initial switch on. Experimentation with a variety of vowel sounds is also important as a foundation for intelligible spoken language. The more patterns and vowels in a child's repertoire, the more solid a foundation he/she will have to build upon as spoken language develops. Once recognizable words have emerged, intervention should follow a standard phonological protocol, looking first at encouraging the child to mark the correct number of syllables in words (i.e., reducing weak syllable deletion), then closing syllables (i.e., reducing final consonant deletion by producing some phoneme in the word-final position even if the correct phoneme is not produced), then finally producing sounds from each class or manner in which phonemes can be produced (i.e., reducing the phonological error patterns of stridency deletion and stopping, nasal deviation, and glide deviation). The last phonological targets to be addressed will involve errors of place (e.g., fronting) and voicing. Phonological development after implantation should also mirror typical development in scope, sequence, and timing.

By building from sound to language to phonology, the interventionist capitalizes on decades of research about the ways in

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SLP Approach

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which typically developing, hearing children use their listening to learn to talk. The S-L-P approach takes advantage of the developmental knowledge of educators and allows the child to lead the way, learning about the sounds and words which interest him most. "Drill-n-kill" activities and laborious "training" sessions are no longer necessary as learning through listening is fun and exciting. Implant technology offers children with severe to profound hearing loss much more than was ever available from hearing aids. Making the most of this greater auditory access is a challenge that all speech and hearing professionals should accept with the confidence that they can help a child with an implant reach his/her fullest potential.

Ross Adams, MA, CCC/SLP is an Early Intervention specialist with the HOPE Infant Family Support Program for the San Diego County Office of Education, San Diego, CA.