Young Children’s Auditory Development: Goals and Assessment

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What do professionals working with very young children who have cochlear implants need to know?

- Auditory hierarchy of skills
- Goals to facilitate development of these skills
- Timeline of expectations for skill acquisition*
- Monitoring tools

**Auditory Skills Pyramid (from AuSpLan)**

**Level 1 Awareness**

* Shows detection of sound/speech but no understanding.
  - **Low Goal:** Awareness of voicing.
  - **High Goal:** Awareness to the Ling sounds.
  - **Timeline:** one week post-implant
  - **Auditory Targets:** m, ah, oo, ee, sh, s

**Level 2 Suprasegmental-Discrimination/Association**

  - **Low Goal:** Discriminates between one of two speech utterances that differ by vocal length (e.g., gooo-stop).
  - **High Goal:** Discriminates/associates between one of four speech utterances that differ by suprasegments (e.g., sit down – good bye – time to go – shh, it’s night night time).
  - **Timeline:** six months post-implant
  - **Auditory Targets:** rim, brush-brush, brush-shh-go night night, run run run

**Level 3 Segmental-Association/Identification**

* Recognizes word meaning through segmental-vowel and consonant differences. Learning vocabulary and storing word association in his/her lexicon.
  - **Low Goal:** Associates/identifies two words that differ by vowels and consonants (e.g., shoe-ball).
  - **High Goal:** Associates/identifies between twelve words that differ by vowels and consonants (e.g., shoe-ball-boatinboat-boat-dog-cow-fish-horse-car-phone-book-tree).
  - **Timeline:** 9 months post-implant
  - **Auditory Targets:** Vocabulary – basic and expanded - cow, sheep, chicken, pig, moo, baa baa, bak bak, onk onk, neigh, nose, eyes, mouth, ears, run, jump, sleep, sit, eat, drink, stand, colors, big, little, soft, hard, furry, feathers

**Level 4 Identification**

* Identifies key words (concrete vocabulary) within a sentence context. Facilitates auditory memory.
  - **Low Goal:** Identify one key word in a sentence from a closed set.
  - **High Goal:** Identify 4+ key words in a sentence from an open set.
  - **Timeline:** by 23 months post-implant
  - **Auditory Targets:** Put the purple chair next to the fireplace.

**Level 5A Processing/Comprehension-Beginning**

* Involves receptive and expressive components at this level. Facilitates development of abstract receptive language that involves higher order processing skills. Goals should take into consideration the child’s chronological age.
  - **Low Goal:** Identify objects described by function/description.
  - **High Goal:** Listen to short paragraph and answer simple questions about the information presented.
  - **Timeline:** by 33 months post-implant
  - **Auditory Targets:** Shoe me something that is yellow, round and hot. Show me something that is an animal, goes in the water and is slow.

**Level 5B Processing/Comprehension-Advanced**

* Involves receptive and expressive components at this level. Facilitates development of abstract receptive language that involves higher order processing skills. Builds on skills developed at Level 5A. Goals should take into consideration the child’s chronological age.
  - **Low Goal:** Listen to a four part story and the arrange pictures in order that go with the story.
  - **High Goal:** Infer meaning from two to three sentences of information.
  - **Timeline:** by 36 months post-implant
  - **Auditory Targets (infer):** What is something that that goes on your bed? You use it when you are cold? Mom wants to go to the store to buy groceries. How should she get there?

**Assessment**

To ensure a child meets his/her potential for developing auditory skills, it is key to have assessment tools to monitor progress. Tools specific to very young children include the following:

**LittIEARS Auditory Questionnaire**

* Parent questionnaire that assesses age-related auditory behavior of children two years of age and under or for children with a hearing age less than two.
  - Based on normative data from children with normal hearing birth to 24 months.
  - Assists in development of early listening goals.
  - Quick and easy administration of 45 questions in age-dependent order.
  - Total score = sum of all Yes answers.

**Progress Assessment Form**

Values within blue area are considered critical.
Test once and compare to trajectory or track progress over time.

**Open- and Closed-set Task**

Developed by David J. Etmer, Ph.D., CCC-SLP

* Objective and developmentally appropriate, within child, criterion-referenced tool for assessing toddler’s ability to imitate and understand spoken words.
  - Administer at 6 month intervals (e.g., at 6, 12, 18 months post-implant or post-amplification).
  - Contains three word lists.
  - Each of the three lists contains three demonstration words and 10 stimulus words.
  - Adult says the word from the targeted word list and child imitates.
  - Child’s production is transcribed on score sheet.

After child imitates, then shown set of three pictures and asked to identify which one it is.

**Obtain 3 Scores**

* **Phoneme Accuracy:** provides a measure of child’s ability to imitate vowels and consonants in words. Score is % correct (matching phonemes).
  - **Word Acceptability:** provides an estimate of the intelligibility of a child’s spoken words by comparing to adult standard. Score is number correct out of number administered (%).
  - **Word Comprehension:** measures how well early-emerging spoken vocabulary words are understood. Score is total number of points.

**Auditory Skills Checklist**

Developed by Nancy S. Calef-Schenck, M.Ed., CCC-A, LSLS Cert. AVT

* Assists in tracking progress of auditory development and in setting goals.
  - Skills should be noted if the child responds using auditory cues only.
  - Verbal scoring (i.e., Never observed, Observed once, Observed greater than 3 times) and Number scoring (i.e., 0, 1, 2, 3, 4, 5) for total score of 77.

*Intrasubject design-comparing child’s score to his/her previous score to determine progress

**References**