

**BILL DANIELS CENTER FOR CHILDREN'S HEARING
THE CHILDREN'S HOSPITAL – COLORADO**

Auditory Neuropathy Spectrum Disorder

Team Management Protocol for children who demonstrate variable auditory responses/difficult to test

Age	Audiological Diagnostics	Audiological Intervention	Speech-Language Recommendations	Family Consultant Or Social Worker	Additional Recommendations
0-2 months	Otoscopy ABR – CM OAEs ***1k Hz immittance/acoustic reflexes ***caution should be used in interpreting high frequency probe tone acoustic reflex results in infants less than 6 months of age - no normative data exists with this population	Parent counseling Parent education	Parent counseling Visual language enhancement techniques Observation of communication	Parent counseling Resources Emotional support	Pediatric/developmental Otologic Medical genetics Ophthalmologic Neurologic Home intervention services
3-6 months	Otoscopy ABR – CM; OAEs ***1k Hz immittance/acoustic reflexes ***see caution, above BOA; startle Parent auditory questionnaire (Appendix A)	Same as above	Counseling/collaborating to help provide language rich environment Initiate visual communication	Inquire about needed support Connect family to community based early intervention services	
6-9 months	Otoscopy Behavioral assessment (BOA, VRA) attempt ear specific, frequency specific warbled tones; speech awareness Immittance/acoustic reflexes OAEs Parent auditory questionnaire (Appendix A)	Same as above	Formal communication evaluation including assessment of receptive/ expressive/pragmatic language; play; speech sound production (Appendix C) Recommendations based on results	Provide community resources Parent organizations Parent to Parent mentors or guides Websites specific to AN	
9-12 months	Otoscopy Behavioral assessment (BOA, VRA); attempt ear specific, frequency specific warbled tones; speech awareness Immittance/acoustic reflexes OAEs Parent auditory questionnaire (Appendix A)	Same as above OR ***Audiologic management of children with amplification per clinic protocol (see Special Considerations , page 2)	Formal communication evaluation including assessment of receptive/ expressive/pragmatic language; play; speech sound production (Appendix C) Recommendations based on results	Same as above	Optional ABR evaluation under sedation/anesthesia if: Unable to obtain behavioral auditory responses; Child's auditory responses change; Per parent request

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Age	Audiological Diagnostics	Audiological Intervention	Speech-Language Recommendations	Family Consultant or Social Worker	Additional Recommendations
18 months	Otoscopy Behavioral assessment (BOA, VRA, CPA); attempt ear specific, frequency specific warbled tones; speech awareness/speech recognition in quiet & noise (Appendix B) Immittance/acoustic reflexes OAEs Parent auditory questionnaire (Appendix A)	Monitor 6 months OR ***Audiologic management of children with amplification per clinic protocol (see below)	Formal communication evaluation including assessment of receptive/ expressive/pragmatic language; play; speech sound production (Appendix C) Recommendations based on results	Same as above Support with behavior/ developmental milestones (e.g. “terrible twos) Begin transition process to preschool services Awareness/availability of family oriented activities	
24 months	Same as above	Monitor 6 months OR ***Audiologic management of children with amplification per clinic protocol (see below)	Informal re-evaluation Monitor vocabulary development	Same as above	
3 - 6 years	Same as above	Monitor 6 months OR ***Audiologic management of children with amplification per clinic protocol (see below) Collaboration with educational/intervention team	Yearly evaluation including assessment of language; speech sound production (Appendix D)	Individual Education Plan (I.E.P.) Transition into school	All services as needed
School age	Same as above	Monitor 6 months OR ***Audiologic management of children with amplification per clinic protocol (see below) Collaboration with educational/intervention team	Collaboration with educational SLP Same as above (Appendix E)	Self advocacy strategies for the parents and child	All services as needed

*****Special considerations:** Once frequency specific/ear specific audiometric “thresholds” at elevated levels are obtained by conditioned behavioral measures, and remain stable, fit with hearing aids using pediatric fitting strategies and fit to “audiogram.” If hearing levels are variable and/or fluctuate, consider multiple HA programs. Monitor and adjust hearing aid fitting based upon hearing thresholds, RECD measurements, parental report, and demonstration of benefit (Appendices A, B). Add FM as indicated; Parent documentation and input critical for management.

If child does not demonstrate benefit from amplification and speech-language skill development is not commensurate with his or her potential, or if child is not making expected progress, then cochlear implantation may be considered **REGARDLESS** of audiometric thresholds. CI workup should include surgeon consultation, imaging of cochlear nerve, CT scan, device counseling, team evaluation per CI Center protocol.