Mississippi Speech-Language-Hearing Association
Best Practice Recommendations for
Infant Diagnostic Hearing Evaluation Following UNHS Referral

Background:
According to the Joint Committee of Infant Hearing (JCIH) 2007 Position Statement, all infants who meet Universal Newborn Hearing Screening (UNHS) referral criteria should receive a diagnostic audiological evaluation no later than 3 months of age. Furthermore, at least one ABR evaluation is recommended as part of a complete diagnostic evaluation for children younger than 3 years. For those families who choose amplification as a component of their child's intervention, appropriate technology should be fit within 1 month of diagnosis. JCIH states that the initial diagnostic audiology test battery should: 1) assess the integrity of the auditory system in each ear independently, even if only one ear referred 2) estimate hearing sensitivity across the speech frequency range 3) determine the type of hearing loss and 4) provide information needed to initiate amplification device fitting. In order to accomplish these goals, the following procedures are recommended for diagnostic audiological evaluation of children under 3 years of age. This test battery has been developed based on guidelines from the JCIH and the American Academy of Audiology.

Evaluation:

1) Child and Family History
    a. Relevant medical and developmental history including prenatal and perinatal history
    b. Newborn hearing screening results
    c. Risk factors for infant hearing loss and progressive/late onset hearing loss
    d. Information regarding development of motor, cognitive, and vision skills
    e. Emerging communication milestones
    f. Parent/caregiver observations of responsiveness to sounds
2) Otoscopy and examination of outer ear
3) Tympanometry
    a. Using 1000 Hz probe tone for infants under 4-6 months
4) Distortion product or transient evoked OAEs
5) Auditory Brainstem Response
    a. Frequency-specific assessment using tone bursts (500-4k Hz) or narrow band CE-Chirp stimuli
        i. Due to time constraints, assessment at all frequencies is not always possible. For fitting of amplification, it is recommended that thresholds be obtained for at least one low-frequency and one high-frequency stimulus.
    b. Click-evoked
        i. If response is absent or abnormal at the limits of the equipment, a high-intensity single-polarity click stimulus should be recorded in both rarefaction and condensation to determine the presence of the cochlear microphonic.
        ii. For an unfiltered click stimulus, pass criteria should be considered a threshold of 25 dBnHL or better.
    c. Bone-conducted
        i. Thresholds should be measured by bone conduction if air-conducted thresholds are elevated.

Supplementary Test Procedures:

1) Behavioral audiometry, as developmentally appropriate
2) Auditory Steady-State Response
3) Acoustic Reflexes
4) Wideband Immittance

Reporting:

Audiologists should document and interpret test results in a comprehensive report and distribute the report to the family and all associated medical, rehabilitation, and educational professionals. All test results should be explained to the family or caregiver in person in a timely manner in a language that is understandable to the family. The MS Department of Health must also be notified within 48 hours of identification using appropriate forms, which can be found at http://msdh.ms.gov/msdhsite/_static/resources/7071.pdf.

Comprehensive reports should include:

- Appropriate demographic information, name, medical record number, birth date, date of test, and place of test. (etc.)
- Adequate detail of test procedures
- Original graphics of test results when possible (tympanometry, ABR)
- Audiologic Diagnosis
- Summary and Conclusions
- Follow-up Plan
- Signature, contact information and credentials of the audiologist

References:

American Academy of Audiology Clinical Practice Guidelines. (2012). Audiologic guidelines for the assessment of hearing in infants and young children. Retrieved from http://audiology-web.s3.amazonaws.com/migrated/201208_AudGuideAssessHear_youth.pdf_5399751b249593.36017703.pdf

Joint Committee on Infant Hearing. (2007). Year 2007 position statement: principles and guidelines for early hearing detection and intervention programs. *Pediatrics, 120*(4), 898-921.

The following resources provide more detailed guidance on the above listed test procedures:

American Academy of Audiology Clinical Practice Guidelines. (2012). Audiologic guidelines for the assessment of hearing in infants and young children. Retrieved from http://audiology-web.s3.amazonaws.com/migrated/201208_AudGuideAssessHear_youth.pdf_5399751b249593.36017703.pdf

The English Newborn Hearing Screening Programme (NHSP) Guidance for ABR Testing in Babies. Available at http://hearing.screening.nhs.uk/audiology

British Columbia Early Hearing Program's Diagnostic Audiology Protocol. Available at https://www.phsa.ca/NR/rdonlyres/B8B8FF59-6474-4E66-8B92-5F1EA30916FD/40120/zDiagnosticABRTrainingManualSept 292008.pdf

Ontario Infant Hearing Program Audiologic Assessment Protocol. Available at https://www.mountsinai.on.ca/care/infant-hearing-program/documents/IHPAudiologicAssessmentProtocol3.1FinalJan2008.pdf

David R. Stapells (2010) Frequency-specific ABR and ASSR threshold assessment in young infants. In eds. R.C. Seewald & J.M. Bamford. A Sound Foundation Through early Amplification 2010: Proceedings of the Fifth International Conference. pp 67-106. Phonak Publishing, Stafa, Switzerland. Available at http://www.Phonakpro.com