



Pediatric Audiologic Diagnostic Protocol

The following protocol should be used to facilitate the diagnosis of hearing loss by three months of age and entry into early intervention for infants with hearing loss by six months of age. This diagnostic protocol should be implemented by an audiologist licensed by the Iowa Board of Speech Pathology and Audiology Examiners.

Infants should be referred for a diagnostic evaluation after receiving a Refer result from one or both ears on a newborn hearing screen and a hearing rescreen performed at two to six weeks of age. Timely referral for diagnostic Auditory Brainstem Response testing may negate the need for sedation for this test in very young infants. Infants who are identified at risk for congenital or late-onset hearing loss (JCIH, 2007-link to our Web site page for list, http://www.idph.state.ia.us/iaehdi/common/pdf/risk_factors.pdf) should receive an audiological assessment at least once by 24 to 30 months of age. Children with risk indicators that are highly associated with delayed-onset hearing loss, such as having received ECMO or having congenital CMV infection, should have more frequent audiological assessments based on infant or toddler needs. All infants for whom the family has significant concerns regarding hearing or communication should be promptly referred for an audiological and speech-language assessment.

Audiologic diagnostic centers should be prepared to provide the following services:

I. Measures of auditory sensitivity

A. Auditory brainstem response (ABR)

Infants who do not pass the newborn hearing screen or rescreen should be evaluated with a click-evoked air-conduction ABR and at least one low-frequency tone burst ABR, preferably at 500 Hz. Response waveforms should be measured at several levels to allow threshold determination and latency-intensity functions. When thresholds are determined to be elevated, the audiologist may measure the ABR with frequency-specific stimuli at other frequencies as well. Infants suspected of having significant conductive hearing loss should be considered for bone-conduction ABR testing. Clinicians should be aware that technological advances will continually improve recommended protocols.

B. Evoked otoacoustic emissions

Transient evoked otoacoustic emissions (TEOAE) or distortion product otoacoustic emissions (DPOAE) should be used to confirm the magnitude and configuration of the hearing loss, as determined by the ABR.

C. Behavioral measures

At a developmental age of six months or older it is possible to obtain reliable behavioral audiometric information using Visual Reinforcement Audiometry (VRA). While this test has traditionally been performed in the sound field, ear-specific threshold information can be obtained using insert earphones. VRA is an important technique for use in monitoring auditory thresholds, especially during the first few years of hearing aid use.

II. Measures of middle ear function

A. Tympanometry

Although pass/fail criteria for tympanograms from infants under 6 months of age are currently being developed, an infant audiologic evaluation should include an admittance tympanogram at 1000 Hz to help determine middle ear function.

B. Acoustic reflexes

Ipsilateral or contralateral acoustic reflexes should be measured at a minimum of two activator frequencies (1000 and 2000 Hz) at a probe tone of 800 or 1000 Hz.