Improving Outcomes of Hearing Screening in the Neonatal Intensive Care Unit (NICU)


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FAQ’s Re: Hearing Screening in the NICU

What is the prevalence of permanent hearing loss in infancy?

The prevalence of sensorineural hearing loss in well-babies varies from 1:3,000 to 1:20,000 per year, or 0.3% to 0.01%. It is least 10 times higher for infants whose birth history required hospitalization in an NICU (10:20-1000 or 1:5). Milder degrees of sensorineural hearing loss are also present at birth (0.6:1000 or 0.006).

What is a “sensorineural hearing loss”?

Sensorineural hearing losses include cochlear (inner ear) disorders, also known as “sensori” impairments, all of which account for over 90% of permanent hearing loss present at birth. Sensorineural hearing loss in children also includes “neural” impairments often referred to as “auditory neuropathy” or more recently “auditory neuropathy spectrum disorder” (ANS) in recognition of the variable nature of this disorder. ANSD is characterized by absent or abnormal auditory brainstem responses in the presence of intact cochlear hair cell function.

How common is ANSD?

Although population-based studies are needed, the prevalence of ANSD is higher than once thought and may account for 7-10% of sensorineural hearing loss in young children.

What is the relationship between ANSD and NICU history?

NICU infants represent ~10% of the newborn population or approximately 400,000 infants per year. There is a growing body of evidence indicating that infants cared for in the NICU are at increased risk for “neural” hearing loss. For that reason the Joint Committee on Infant Hearing (2007) recommends separate protocols for the NICU and well baby nurseries.

How do we detect ANSD?

Auditory brainstem response (ABR) screening is sensitive to ANSD; otosclerotic emissions are not (although some infants with ANSD have absent or abnormal OAEs). For that reason the JCIH 2007 position statement expanded the definition of “targeted” hearing loss from congenital bilateral and unilateral sensory or permanent conductive HI, to include “neural” hearing loss (i.e., ANSD). Specifically, the Joint Committee recommends that NICU infants admitted for more than 5 days should have ABR included as part of their screen so that neural HI will not be missed.

Why 5 days?

About 25% of NICU infants are considered “low” risk (this includes infants with diagnoses such as transient respiratory distress, observation for temperature instability, and necrotizing enterocolitis). According to the National Perinatal Research Center, most of these infants are discharged by 5 days of age. Specific risk factors are often difficult for screeners to identify in the medical record so establishing a time criterion (>5 days) was considered by JCIH to be easier to implement. This may result in some over-referrals to audiology (or screening with ABR that could have been performed with OAE) but presumably fewer misses. It is implied in the JCIH 2007 position statement that procedures may be modified if the NICU has well established criteria for review and/or screening for known risk factors.

What does JCIH say about rescreening NICU infants?

A complete evaluation of both ears is recommended even if only one ear failed the initial screen. What about infants who require readmission to the NICU?

A repeat hearing screen is recommended prior to discharge for readmissions of infants in the first month of life. If these conditions are present associated with potential hearing loss.