

What Is Newborn Hearing Screening?

Significant hearing loss is one of the most common birth conditions with an estimated incidence rate of one to three per thousand live births. Before newborn hearing screening, many hearing losses were not diagnosed until 2 ½ to 3 years of age. Left undetected, hearing loss in infants can negatively impact speech and language acquisition, academic achievement, and social and emotional development. If detected early, the negative impacts can be diminished and even eliminated through early intervention.

Newborn hearing screening is an essential preventative public health program. It meets the following prerequisites for a population screening program –

- Condition is sufficiently frequent in the screened population
- Condition is serious or fatal without intervention
- Condition must be treatable or preventable
- Effective follow-up program is possible

In 2000, the Infant Hearing Act established newborn hearing screening in Nebraska. The statute required birthing facilities to educate parents about newborn hearing screening, to include hearing screening as part of the standard of care and to establish a mechanism for compliance review by December 2003. The Act also required that regulations be promulgated to mandate newborn hearing screening if less than 95% of newborns in the state received a hearing screening.

Newborn hearing screening requires objective physiologic measures to detect hearing loss in newborns and young infants. There are two basic techniques that birthing facilities in Nebraska use to screen newborns for hearing loss. Both are easily recorded in newborns and are non-invasive measures of physiologic activity that underlie normal auditory functioning.

The most frequently used screening technique is measurement of otoacoustic emissions, or OAEs. A miniature earphone and microphone are placed in the newborn's ear canal, low intensity sounds are presented, and responses produced by the inner ear are measured. The second screening technique, Auditory Brainstem Response, or ABR, uses small electrodes to detect certain brainwaves in response to sounds that are presented by a miniature earphone. For both methods, the response of each ear is measured. OAE and ABR are both reliable and accurate. Screening can occur as early as 12 hours of age, preferably with the newborn sleeping, and averages from five to 20 minutes to complete.

If a response is not detected for one or both ears, the result is a "refer" (did not pass). A "refer" to the screening test indicates that a hearing loss *may* exist but there are also other factors that may have contributed. A "refer" does indicate that a second screening is necessary to determine if the other factors, such as vernix in the ear canal, fluid in the

middle ear cavity, movement, equipment failures, or inexperience of the tester, contributed to the initial result. A “refer” on the second screening indicates the need for a diagnostic audiological evaluation to confirm or rule out a hearing loss and, if hearing loss is present, to begin to identify the type and degree of the loss.

Each birthing facility has established a newborn hearing screening protocol that identifies how the screening will be administered, the recording and reporting procedures, how refers will be handled, i.e., re-screen as an inpatient with the same or different screening technique or re-screen as an outpatient, and quality assurance measures.