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DEPT. OF HEALTH AND HUMAN SERVICES
NEBRASKA EARLY HEARING DETECTION & INTERVENTION PROGRAM

Nebraska Early Hearing Detection & Intervention Program (NE-EHDI) Recommendations for Newborn Hearing Screening Protocol

These recommendations are aligned with the 2019 Joint Committee on Infant Hearing (JCIH) guidance.

Initial Inpatient Hearing Screening

- The hearing screening should be performed using otoacoustic emissions (OAEs) or auditory brainstem response (ABR) equipment.
- Testing should be completed as close to discharge as possible; false positive rates *decrease* 12-24 hours after birth.
- If possible, testing should not be attempted prior to 12 hours of age. Screening between 24 – 72 hours is preferable.
- Newborns delivered via C-section should be tested no sooner than 24 hours (preferably after 48 hours) to allow ear canal debris to clear.
- If the infant is in the NICU more than 5 days, then they should have an ABR hearing screening just prior to discharge. If the infant does not pass the initial screening, they should be referred directly to a pediatric audiologist for repeat testing.
- Both ears should be screened, **with a maximum of 2 screenings per ear**. (Incomplete screenings due to baby being fussy or moving do not count.)
- Do not screen if the infant does not have an ear, only a partial ear, or no ear canal. A referral should be made directly to a pediatric audiologist or ENT. Results should be recorded in ERS as "atresia" and a note should be added on the hearing screening record in ERS.
- If the baby does not pass the first screen:
  - If the second step is OAE, wait 12 hours before a second screen.
  - If the second step is ABR, wait at least 4-6 hours before a second screen.

Re-screening Inpatient/Outpatient

- The re-screening should be performed using otoacoustic emissions (OAE) or auditory brainstem response (ABR) equipment.
  - The 2019 JCIH Position Statement provides new guidance on OAE screenings. Screenings in the well-baby nursery may be accomplished via OAE or ABR, with the second screen being conducted using either technology. Re-screening with OAE after failing an ABR is acceptable with the caveat that a baby with auditory neuropathy will be missed. However, the recommendation to rescreen using ABR technology continues to be the preferred protocol. Please inform parents verbally and in writing that OAE doesn't rule out all types of hearing loss, including auditory neuropathy.
- For outpatient re-screenings, parents should be notified ahead of time that more efficient testing will occur if the infant arrives for the screening ready to sleep and is comfortable.
- **Both** ears should always be screened, even though one ear may have passed initially.
- Babies should only be re-screened once before discharge.
- In the event of one ear or both ears not passing the screening ("refer") prior to discharge, an outpatient screening should be performed **prior** to one month of age.
- Results from separate screenings cannot be combined to create bilateral pass results. ***Both*** *ears* must pass in the same screening event in order for the screening to be considered a "bilateral pass." Only report the most recent screening.
- For transfers or readmissions in the first month for all infants (NICU or PICU) a repeat hearing screening is recommended before discharge when there are risk factors for hearing loss. Risk factors for hearing loss include:

  Perinatal:
  - Family history* of early, progressive, or delayed onset permanent childhood hearing loss
  - Neonatal intensive care of more than 5 days
  - Hyperbilirubinemia with exchange transfusion regardless of length of stay
  - Aminoglycoside administration for more than 5 days**
  - Asphyxia or Hypoxic Ischemic Encephalopathy
  - Extracorporeal membrane oxygenation (ECMO)*
  - In utero infections, such as herpes, rubella, syphilis, toxoplasmosis, cytomegalovirus (CMV), Zika
  - Birth conditions or findings such as:
    - Craniofacial malformations including microtia/atresia, ear dysplasia, oral facial clefting, white forelock, and microphthalmia
    - Congenital microcephaly, congenital or acquired hydrocephalus
    - Temporal bone abnormalities
  - Syndromes associated with hearing loss or progressive or late-onset hearing loss. (For information on the over 400 syndromes, visit HereditaryHearingLoss.org)

  Perinatal/Postnatal:
  - Culture-positive postnatal infections associated with sensorineural hearing loss***, including confirmed bacterial and viral (especially herpes viruses and varicella) meningitis, or encephalitis.

- Events associated with hearing loss:
  - Significant head trauma, especially basal skull/temporal bone fractures
  - Chemotherapy*

Caregiver concern**** regarding hearing, speech, language, or developmental delay* Infants at increased risk of delayed onset or progressive hearing loss
**Infants with toxic levels or with a known genetic susceptibility remain at risk
***Syndromes (Van Camp & Smith, 2016)
****Parental/caregiver concern should always prompt further evaluation.

Referrals for Diagnostic Audiological Evaluation

- A referral should be made to a pediatric audiologist for a diagnostic evaluation following a failure to pass the first outpatient screening or failure to pass an inpatient screening in the NICU.
- The primary health care provider should coordinate the diagnostic evaluation so that the infant can receive two evaluations (if needed) prior to 3 months of age.

Communication of Screening Results and Parent Education

- The parents should be informed that the screening is about to take place prior to nursery staff taking the baby to be screened, and the Initial Screening Card* should be given to the parents at that time.
- The parent(s)/guardian(s) of the infant should be given the results both verbally and in writing, in their preferred language.
- The parent(s)/guardian(s) of the infant should also be given written information concerning the hearing screening, risk factors for hearing loss, and normal language development.
- "Your Baby Needs Another Hearing Screening" brochure and the Refer card* needs to be given to parents when the infant does not pass the screening, as well as stressing the importance of follow-up action. The results of the inpatient hearing screening **should not be minimized** when results are communicated to the parents. (i.e.- **do not** tell parents that "it's probably just fluid in the ears.")
- If the hearing screening will be repeated at the birth hospital on an outpatient basis, parents should be informed about how to prepare their baby for the outpatient screening. (Infants are easiest to screen when they are sleepy.)
- The primary health care provider should receive the results in writing.
- NE-EHDI should receive only the final screening results via data entry into the Nebraska Vital Records – Electronic Registration System (ERS), within 14 days of birth.

* EHDI Educational brochures, Initial Screening cards and Refer cards can be ordered free of charge on the NE-EHDI website.

Quality Assurance

- The state referral rate average ranges from 8-12% for OAE screening and less than 3% for ABR screening.
- NE-EHDI will provide each hospital with a quality assurance report annually. The report will have individual hospital statistics.
- A hospital QA report is available on ERS that a hospital can run for any date range.

Other Recommendations

- The screening equipment should be calibrated annually.
- Screeners should be trained by a representative of the screening equipment, an audiologist, or a trained individual for the equipment.
- Screeners should be trained on how to communicate newborn hearing screening results to parents utilizing the Parent Perspectives video. This is one of the training components of the Nebraska Newborn Hearing Hospital Champion Campaign. If you haven't pledged or completed the campaign, you can find more information at http://dhhs.ne.gov/Pages/Nebraska-Newborn-Hearing-Hospital-Champion-Campaign.aspx
- Screeners can review information on the National Center for Hearing Assessment and Management (NCHAM) website at http://www.infanthearing.org/nhstc/index.html. It provides a free streaming online video with step-by-step modules for conducting OAE and ABR screening. You can also receive CEUs for completing the course and passing the exam.
- Evaluation of the competency of the hearing screeners should occur periodically, and retraining should be provided as necessary.
- All hearing screening staff should review these recommended protocols annually, and retraining provides as necessary.