Early Hearing Detection and Intervention in New Mexico: Beyond the Newborn Hearing Screen

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Objectives
• Up to date guidelines for newborn hearing screening
• Risk factors / Management options
• How are we doing as a state and how can we improve?
• Resources in NM

Pediatric Hearing Loss
• Treated by 6 months; NORMAL speech and language relative to peers
• Exception severe to profound bilateral SNHL (Goal for cochlear implant; <12 months)
• Delayed diagnosis ~ $400,000 in special education and early intervention during primary and secondary school

Pediatric Hearing Loss - Overview
• Congenital hearing loss is the most common birth defect in the United States (1-3/1,000)
• 12,000 infants are born/year with hearing loss in the US
• Additional 4-6,000 will develop hearing loss before age 3
• 80 infants are born/year with hearing loss in New Mexico
• Per child per year... $11,000 for HL vs $8,000 DM

Vaccines

How do we get from here to there?
Newborn Hearing Screening

EHDI – “Eddie”
Early Hearing Detection and Intervention

Joint Commission on Infant Hearing recommends neonates with 1 or more risk factors should be screened using ABR
Infants readmitted to hospital within 30 days of birth should be re-screened

“1, 3, 6 RULE”
+ Risk Factors

• 1 month of age: Screening +/- Re-screening
• 3 months of age: Diagnosis
• 6 months of age: Early Intervention/Referral/Amplification

The Screen
OAE: OTOCOUSTIC EMISSIONS
S-ABR: SCREENING AUDITORY BRAINSTEM RESPONSE
Newborn Hearing Screening

- OAE
- ABR

Risk Factors Associated with Congenital Hearing Loss

- 50% of HL patients have an associated risk factor
- 5-10% of infants with risk factors will have congenital or progressive hearing loss

Risk Factors Associated with Congenital Hearing Loss

<table>
<thead>
<tr>
<th>Most Likely</th>
<th>&lt;10%</th>
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<tbody>
<tr>
<td>Craniofacial anomalies (&gt;50%)</td>
<td>Low birth weight (&lt;1500 gm)</td>
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<tr>
<td>Family history of childhood HL (1-15%)*</td>
<td>Hyperbilirubinemia (&gt;20 mg/dL)</td>
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<td>Congenital infections (&gt;15%)</td>
<td>Ototoxic medications (aminoglycosides/loop diuretics)</td>
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<tr>
<td>Mechanical ventilation for 10 days or greater (&gt;10%)</td>
<td>ECMO</td>
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<tr>
<td>Bacterial meningitis (&gt;10%)*</td>
<td>Maternal Substance Abuse</td>
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<tr>
<td>Neurodegenerative disorder</td>
<td>Parent/physician concern*</td>
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Auditory Neuropathy Spectrum Disorder

- An abnormal or absent ABR with present OAEs
- Speech perception scores which are worse than expected when compared to thresholds in a routine audiogram

~30% of children with CMV will have hearing loss
**Craniofacial Anomalies: 50% will have HL**

**Meningitis**
- Needs rapid identification, management, and referral
- Deafness can develop within the first week after infection
- Cochlear ossification
- ABR for diagnosis and MRI for imaging
- Cochlear implant ASAP

**UNM Audiology Recommendations**
- Evaluation at 12 months and repeat per audiologists/PCP’s discretion
  - <1500gm
  - Hyperbilirubinemia
  - Ototoxic medications
  - ECMO
  - Substance abuse
  - Parent or physician concern
  - Neurodegenerative disorders
  - >5 days in the NICU

**UNM Audiology Recommendations**
- Evaluation at 6 months, 12 months and then at audiologist’s discretion
  - Craniofacial abnormalities
  - Family history of childhood hearing loss
  - Severe asphyxia
  - Congenital infection
  - > 36 days mechanical ventilation
  - Bacterial meningitis and sepsis
  - Syndromes associated with HL

**Management of Pediatric Hearing Loss**
Surgical Management: Osseointegrated Implants

New Mexico EHDI: Screening
NM: 90.2%
National: 97.2%

Surgical Management: Cochlear Implants

New Mexico EHDI: Screening (2014)
• 91% of infants born were screened (97%)
• 96% were screened before 1 month of age (96%)

New Mexico EHDI: Diagnostic Assessment
NM: 5.5%
National: 59%
New Mexico EHDI: Diagnostic Assessment (2014)

- Closer to 47% (42%) of infants who failed screening received a diagnosis
  - Unable to contact, or contacted but parents didn’t respond
- Only 34% were diagnosed before the age of 3 months (41%)

New Mexico EHDI: Enrolled in EI

NM: 88.5%
National: 62.5%

Resources for Early Intervention

- 0-3 years
  - Family Infant Toddler Program (NM DOH)
  - New Mexico School for the Deaf
- 3+ years
  - New Mexico School for the Deaf
  - Child Find (Public Schools)

Pediatric Otolaryngologists - NM

UNM Children's Hospital

- Erica Bennet, MD
- Tania Kraai, MD
- Karen Hawley, MD

505-272-2302

Cochlear Implant Surgeons - NM

- UNM
  - Dr. Karen Hawley – Pediatric Otolaryngology
  - Dr. Bradley Pickett – Otology/Neurotology

- Presbyterian
  - Dr. Karl Horn – Otology/Neurotology

- Head and Neck Surgeons of New Mexico (ABQ)
  - Dr. Laura Brainard – Otology/Neurotology

Resources for EHDI

- New Mexico Department of Health
  - https://nmhealth.org/about/phd/fhb/cms/nbhs/
- CDC – EHDI
Communication Options

- American Sign Language
- Bi-Lingual (ASL for "verbal communication" and write/read in English)
- Total communication
- Auditory-Verbal based communication

Bi-Lingual Communication: ASLA

- Albuquerque Sign Language Academy
- A Charter School
- K-12
- Focuses on family education
- Offers education for hearing and DHH children
- Developmentally delayed/Co-morbidities

Auditory Verbal Communication: PEI

- "A clinic and a school"
- Auditory Verbal Communication
- Infants through Kindergarten
- Also offers Early Intervention services

Moving Forward

- Continue to work together as healthcare providers (Nurses, PCPs, Audiologists, Otolaryngologists...)
- Improve screening and follow up
- Develop more educational materials for families and healthcare care providers
- Centralized Database for the DOH
- Update our Legislature
- Early Hearing Detection and Intervention Act
- Rules and Regulations for the DOH
- Improve access / Telemedicine

Total Communication: NMSD

- Early Intervention Statewide
- Primarily a school ABQ and Santa Fe
- Pre-K through High School

A Challenge...

To return home and learn about the hearing screening process in your hospital(s), used by the midwives and neonatologists and evaluate what system you have in your practice to help track these children.

How can we make it as easy as vaccines?
Questions

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