Update on the Joint Committee on Infant Hearing Activities

EHDI Conference 2009
Addison, TX

Judith Widen - University of Kansas Medical Center - Kansas City, KS
Judith Harrison, AG Bell Association – Washington, DC
Al Mehl, Betty Vohr, Brandt Culpepper, Michelle King,
Current Members

- AG Bell
  - Judy Harrison, MA

- American Academy of Pediatrics
  - Albert Mehl, MD
  - Betty Vohr, MD

- American Academy of Audiology
  - Christie Yoshinaga-Itano, Ph.D - CHAIR
  - Alison Grimes, AuD
  - Phil Bongiorno (AAA Staff)
Members, cont.

- American Academy of Otolaryngology-Head and Neck Surgery
  - Patrick Brookhouser, MD
  - Stephen Epstein, MD

- American Speech-Language-Hearing Association
  - Brandt Culpepper, Ph.D.
  - Mary Pat Moeller, Ph.D.
Members, cont.

- Council of Education of the Deaf
  - Beth Benedict, PhD
  - Bobbie Scoggins, EdD

- Directors of Speech and Hearing Programs for State Health and Welfare Agencies
  - Michelle King, AuD
  - Beth Martin, MA
Supporting Organizations

- Boys Town National Research Hospital
- Centers for Disease Control and Prevention
- Maternal and Child Health Bureau
- National Institute for Deafness and Other Communication Disorders
Recent Activities

- Stakeholder’s Meeting
- Early Intervention Task Force
- Assortment of presentations on JCIH recommendations
  - AAP “Future of Pediatrics” meeting – EHDI in the Medical Home
  - EAR Foundation
  - State conferences and conventions
JCIH 2007 Statement

- ExecSummFINAL[1].pdf
Joint Committee on Infant Hearing

- Not a Commission, a Committee
- Authority?
- Politics?
- Writing skills?
- Clarification Year 2007 statement[1].pdf
Are we missing mild hearing loss?

- British studies (Davis et al., 1997; Lutman et al., 1997)
- Identification of Neonatal Hearing Impairment
  Norton, Gorga, Widen, Folsom, Sininger, Cone-Wesson, Vohr et al., Ear & Hearing, 2000
- A Multi-Center Evaluation of How Many Infants with Permanent Hearing Loss Pass a Two-Stage OAE/A-ABR Newborn Hearing Screening Protocol”
  Johnson, White, Widen, Gravel, James, Kennalley, Maxon, Spivak, Sullivan-Mahoney, Vohr, Weirather, & Holstrum, Pediatrics 2005
Why are we missing mild hearing loss?

- Targeted hearing loss – 35 dBnHL click?
- < 30-40 dB, unusual configurations
- Standards for calibration, or the lack of them
- Variability among screening devices, levels, pass-fail criteria
JCIH Stakeholders meeting

- Hosted by ASHA at its National Office in Rockville, MD
- September 17, 2008
- JCIH members & representatives of companies who manufacture or sell hearing screen devices
JCIH Stakeholder’s Meeting

- **Tone:** friendly, healthy discussion of issues
- **Speakers:**
  - Judy Gravel
  - John Eichwald
  - Panel of JCIH members from the trenches
  - John Durrant
  - Bob Burkard
Statement of the Challenges:
Where We Have Been,
Where We Are,
Where We'd Like to Go

Gravel et al.

A multisite study to examine the efficacy of the OAE/AABR newborn hearing screening protocol: Recommendations for Policy, Practice, and Research *American Journal of Audiology* 14: S217-228, Dec 2005
Eichwald

Discrepancy between prevalence of hearing loss in infants versus school age children

<table>
<thead>
<tr>
<th>RATE / 1000</th>
<th>NEWBORNS</th>
<th>SCHOOL AGE</th>
<th>INCREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILD 21 – 40 dB</td>
<td>0.34†</td>
<td>9.1</td>
<td>x 26.8</td>
</tr>
<tr>
<td>MODERATE 41 – 70 dB</td>
<td>0.53†</td>
<td>1.8</td>
<td>x 3.4</td>
</tr>
</tbody>
</table>

† Assumed rates
Panel of JCIH Members

Stories from the trenches

Colorado – pass-refer rates and prevalence rates changed with change in equipment

UCLA – test with the “machine” that passes everyone
Bob Burkard

- Acoustic Calibration of Transients
  Tutorial on terminology, limitations of SLMs, how do we accurately measure the sound pressure level of a transient?

- A Description of the ANSI Standards Process
ANSI S3 Standard S3/WG 72, "Procedure for the Generation and Measurement of Acoustic Stimuli used to Elicit Auditory Evoked Potentials".

Membership:
Robert Burkard (Chair)
John Durrant, Rafael Delgado, Judy Widen,
Roger Ruth, Dorian Houser, Chick Clemen

The proposed scope of the standard is:
The proposed standard will identify minimum specifications for the stimuli used to obtain auditory evoked potentials (including otoacoustic emissions), as well as recommended calibration procedures.

NOTE: Once the Acoustic Stimuli Standard is completed, we will follow up with a technical standard for Hearing Screening instruments.
Discussion at JCIH Stakeholder’s Meeting

- **Manufacturers:**
  - What hearing loss do you want to screen for?
  - You all are asking for things most of our customers don’t use

- **JCIH:**
  - Transparency and disclosure [link](#)
  - Way to do at least weekly calibrations
  - Data/information provided to user beyond pass/refer, i.e. wave forms, noise (for administrative coordinator of use of system)
  - Develop quality standards of performance – i.e. no false passes in noise, will run 1000 times and not give a false response [Brit link](#)
Disclosure and Transparency

- Descriptive Information
  - How signal was measured
  - What coupler was used and measurement equipment
  - SPL level obtained
  - SPL to HL conversion level
  - Some data that provides Sensitivity/Specificity/Validation information
Task Force on Early Intervention

- Lead by Christie Yoshinaga-Itano
- Charge: develop a document providing guidelines for the provision of early intervention services to infants and young children with hearing loss and their families
- Document to be developed by JCIH members and a task force of professional experts
Document to address

- System for a single point of entry into intervention
- Parent/Family involvement
- Deaf/Hard of Hearing involvement
- Skills of the Early Intervention providers
- Fidelity of Intervention
Initial Meeting

- Hosted by AGBell in December, 2008
- Interested JCIH members and Initial Task Force members
- Outlined document components and additional persons of interest for expert input
Document to address (cont)

- Progress Monitoring and Transitions
- Specific Skill Development
  - Language
  - Social/emotional
  - Cognitive
  - Pre-literacy
- Non-native English and multicultural populations
Children with Additional Disabilities and those who are medically fragile
Late Identified
Populations with hearing loss with inconclusive evidence for providing early intervention services
Interdisciplinary interactions with medical, audiologic, EHDI system, Part C, state EI programs, etc.

Systems implementation strategies for statewide systems
Section Outlines

- Recommendation
- Description
- Rationale
- Supporting Evidence
- Performance Indicators
Future Activities

- Continued work with stakeholders as appropriate
- Draft development of the Early Intervention document
- Presentations as requested
- Additional issues as they arise
Representatives: American Academy of Audiology,
American Academy of Otolaryngology–Head and
Neck Surgery, American Academy of Pediatrics,
American Speech-language-hearing Association,
Council on Education of the Deaf, Directors of
Speech and Hearing Programs in State Health
and Welfare Agencies.
Definition of Targeted Hearing Loss

Expanded

- From congenital bilateral and unilateral sensory or permanent conductive HL
- To include neural hearing loss (auditory neuropathy/dyssynchrony) in infants admitted to the NICU ≥ 5 days.
Hearing Screen Protocols

- Separate protocols are therefore recommended for NICU and well baby nurseries.
- Infants > 5 days in NICU are to have AABR included as part of their screen so that neural HL will not be missed.
Clarification

- Rationale for different protocols
- Where did the 5 days in the NICU come from?
- One of the considerations was the cost of making the change for all NICU babies which represent 10% of all newborns.
- All others can be screened with either OAE or ABR.
- JW comment: *automated* ABR?
Clarification: Follow up for risk factors

- Previous recommendation for every 6 months
  - too great a burden on system
  - infants with “unknown risk factors” develop delayed-onset HL

Thus responsibility for surveillance shifted to PCP with referral to audiologist

Risk factor list

Low risk – another assessment by 24-30 months

New concern – assess immediately

* risk for delayed onset - earlier & more frequent re-assessment
Clarification

- Recommendations regarding ototoxic medications
  To be consistent with the intent of simplifying the referral process to NICU > 5 days, the recommendation has been reworded:

  All infants with or without risk factors requiring NICU care of >5 days, including any of the following: ECMO,* assisted ventilation, exposure to ototoxic medications (gentamycin and tobramycin) or loop diuretics (furosemide/lasix). In addition, regardless of length of stay: hyperbilirubinemia requiring exchange transfusion.
Identification of Neonatal Hearing Impairment

- Multi-center Investigation sponsored by NIH-NIDCD

“"To determine the accuracy of three measures of peripheral auditory system status (TEOAE, DPOAE and ABR) applied in the perinatal period for predicting behavioral hearing status at 8-12 months corrected age.”
Identification of Neonatal Hearing Impairment

- 7 institutions
- 7,179 infants evaluated
  - 2,348 = WBN babies
  - 4,478 = NICU babies
  - 355 = well babies with high risk indicators

- Targeted for VRA @ 8-12 months: NICU, WBN with HRI, and 80 WBN (no HRI) infants who failed one or more neonatal testing

- 3,134 (64%) returned for VRA
Identifying Mild PHL in Infants

- Norton et al. (2000)
- Three measures (ABR, TEOAE, DPOAE) - able to identify majority of ears with moderate hearing loss or greater.
- “more difficult for any tool to distinguish between normal hearing and mild hearing loss” (p.533)
- “some ears with mild hearing loss will be missed, regardless of which test is used” (p.534)
Identifying Mild PHL in Infants

- Cone-Wesson et al. (2000)
- Ears with mild PHL (n=22 [30.2%] of 86 ears with PHL) confirmed at 8-12 months (VRA)
- Outcomes (neonatal ABR and OAE [DPOAE and TEOAE])
  - 10 ears failed both OAE and ABR tests,
  - 4 ears passed both OAE and ABR tests,
  - 4 passed ABR and failed both OAE measures
  - 2 failed ABR and passed OAE tests

- 385 with PHL (64% bilateral; 71% mild or moderate in degree)
  - 76% (N=294) did not pass NHS
    - Median age at dx: 1.2 months
  - 20% (N =77) passed NHS
    - 76% of losses were mild; ~80% bilaterally affected
    - Median age at dx: 7.7 months
  - 4% (N = 14) missed NHS
    - Median age at dx: 8.7 months