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)

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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

- JCIH 2007 Statement Pediatrics 898[1].pdf
- 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
- Massachusetts Loss to Follow-up on Use of Audiologic Evaluation Services (AES): (2002-2003 Births: 158,243)
  Liu et al. *Pediatrics* 2008

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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

Gravel

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

RATE / 1000	NEWBORNS	SCHOOL AGE	INCREASE
MILD 21 – 40 dB	0.34†	9.1	x 26.8
MODERATE 41 – 70 dB	0.53†	1.8	x 3.4

†**Assumed** rates

Panel of JCIH Members

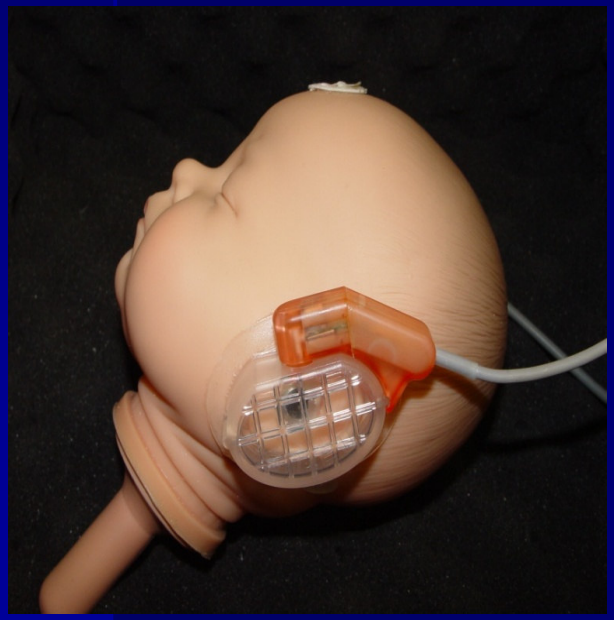
Stories from the trenches

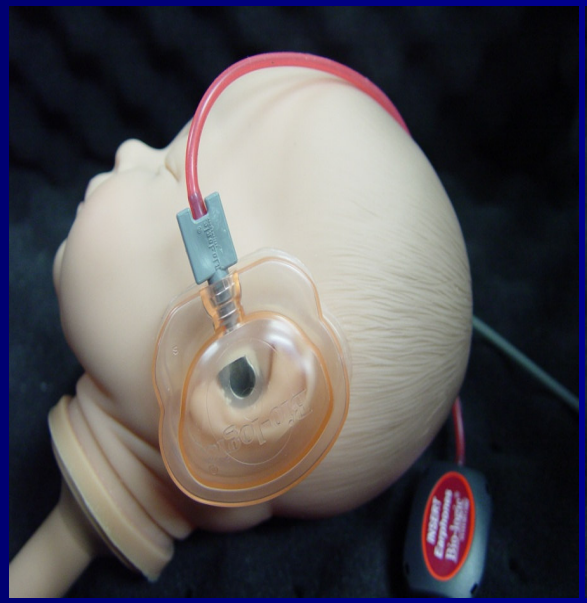
Colorado – pass-refer rates and prevalence rates changed with change in equipment

UCLA – test with the "machine" that passes everyone

JD Durrant, D Sabo, R Delgado

Call for calibration standard for newborn screening using auditory brainstem responses *International Journal of Audiology 2007*46:686-691,.





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

Document to address (cont)

- Children with Additional Disabilities and those who are medically fragile
- Late Identified
- Populations with hearing loss with inconclusive evidence for providing early intervention services

Document to address (cont)

- 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

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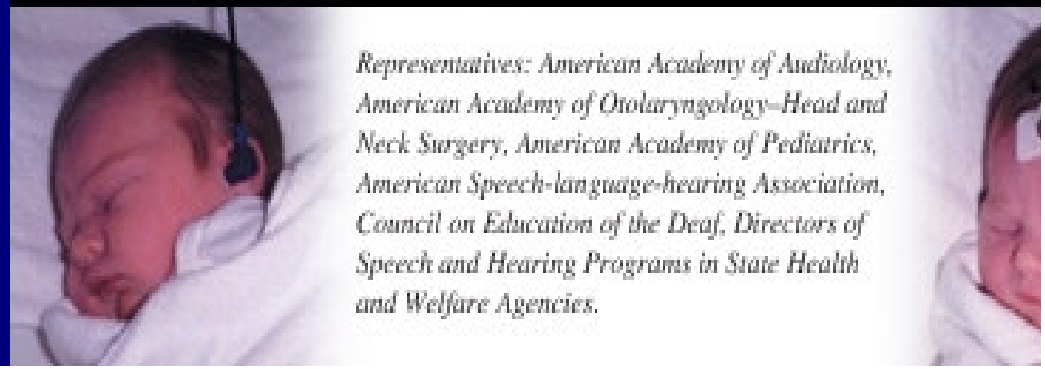

Representatives: American Academy of Audiology, American Academy of Otolaryngology–Head and Neck Surgery, American Academy of Pediatrics, American Speech-language-hearing Association, Council on Education of the Deaf, Directors of Speech and Hearing Programs in State Health and Welfare Agencies.

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
- Norton, Gorga, Widen, Folsom, Sininger, Cone-Wesson, Vohr et al., *Ear & Hearing,* 2000
- "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

Massachusetts
Loss to Follow-up on Use of Audiologic Evaluation Services (AES): (2002-2003 Births: 158,243)
Liu et al. *Pediatrics* 2008

- 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