The Road to a Teleaudiology Program - Bumpy, But Worth the Journey

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Audiologic Nuts & Bolts

Driving Objectives:

- Reduce the number of infants from 35 counties in the eastern part of North Carolina who are lost or have delayed follow-up after referring on a hearing rescreen.
- To provide diagnostic evaluations for children from rural northeastern North Carolina.
In tune with the 1-3-6 Plan

- Joint Committee on Infant Hearing (2007) endorses:
  - Screening no later than 1 month of age
  - Comprehensive audiological evaluation at no later than 3 months of age
  - Appropriate intervention at no later than 6 months
Audiologic Implementation

- Test protocol development
- Training audiologists
- Duel site preparation
- Evaluation/changes
Developing The Diagnostic Protocol: Guiding Principles

- Joint Committee on Infant Hearing (2007)
- Ontario Infant Hearing Program (2008)
- British Columbia Early Hearing Program (2008).
Protocol: General Issues

Objective:
- Determine the presence or absence of permanent childhood hearing impairment

Target Impairments:
- Hearing threshold > 30 dB HL in 500 to 4000 Hz range
Protocol: General Issues

Components:
- History
- Cursory otoscopy
- Middle-ear analysis
- Otoacoustic emissions
- Auditory brainstem response
Assessment Details

- **Tympanometry**
  - 1000-Hz probe tone

- **Distortion product otoacoustic emissions (DPOAEs)**
  - Nominal $f_2$ frequencies of 1500, 2000, 3000 and 4000 kHz.
  - The $f_2/f_1$ frequencies ratio of 1.2
  - $L_1$ and $L_2$ of 65 and 55 dB SPL
Assessment Details

- Auditory brainstem response (ABR)
  - Frequency-specific assessment using AC and BC tone bursts
  - Click-evoked ABR testing using both condensation and rarefaction stimulus, if there are risk indicators for neural hearing loss (AN/AD)
Training

- Onsite training at East Carolina University for audiologists
- Development of protocol handbook
- Continued consulting support
Site Preparation: ECU

- Consultation with ECU Telemedicine Center
- Equipment setup and training
  - Polycom system
Site Preparation: Remote Sites

Site visits

[Map of remote sites]

[Image of telemedicine equipment]
In Real Time: Introductions
Test Preparations
Examination of Results
Counseling
What does it feel like?
Results to Date

- 8 infants referred/scheduled from February to October 2011
  - 3 diagnosed as “normal”
  - 2 referred to ENT
    - 1 with abnormal ABR to AC tonal stimuli and middle ear function
    - 1 with abnormal middle ear function
  - 1 not tested due to technical problems
  - 1 no show
Troubles/Issues

- Diagnostic instrumentation interface
- Billing
- Medical records/HIPAA
- Liability insurance
Future

- Teleaudiology is here to stay!
- Being adopted for service provision in many sites:
  - USA: California, Colorado, Iowa, New Mexico, North Dakota, Utah, Wisconsin
  - Canada: Ontario
- Licensing/within-between states?
  - 21 NCAC 64 .0219 TELEPRACTICE
Questions