

Diagnostic Audiology Evaluations Via Telemedicine

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Telemedicine

- The use of telecommunication equipment and information technology to provide clinical care to individuals at distant sites and the transmission of medical and surgical information and images needed to provide that care.

Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier.



Professional Support

- American Speech-Language -Hearing Association, 2005 Position Statement for Audiologists
 - Does not remove existing responsibilities in delivering services
 - Quality must be consistent with face-to-face services
- American Academy of Audiology Resolution 2008-06
 - Diagnostic and rehab services provided by a qualified audiologist
 - To individuals with limited access in their community
 - Services delivered via telemedicine need validated for feasibility, accuracy, and confidentiality

Teleaudiology Applications

- Connecting Third World countries to audiology services in developed nations (University of Pretoria, South Africa)
- Hearing Aid Fittings (Mayo Clinic, Minnesota)
- Audiometric evaluations (Minot State University, North Dakota)
- Live video conferences with patients (Mark Krumm, AAA Taskforce on Tele-health and Tele-audiology)



Teleaudiology Applications (cont)

- Pediatric evaluations with pure tone, tympanometry, and otoacoustic emissions (Case Western Reserve University, Cleveland, OH)
- “Store and Forward” ENT medical clearance (Norton Sound Health Corporation, Alaska)
- Mentoring and Post-doc training with telehealth supervision (Marion Downs Hearing Center, Colorado)



Teleaudiology Applications (cont)

- Development of protocols for infant diagnostics (HRSA Grant awarded to Minot State University, North Dakota)
- Infant diagnostics for ruling out hearing loss (Thunder Bay, Ontario)
- Cochlear implant mapping (St. Petersburg and Sarasota, Florida)
- Tele-intervention and parent coaching (Utah State University, Utah)



Teleaudiology in California

- Establish a remote site clinic in an area of the state with limited services for real-time infant diagnostic evaluations with a pediatric audiologist
- Mentor a local audiologist for hearing aid fitting and follow-up
- Later expand to include cochlear implant mapping?



Choosing our partners



- University of California Davis Children's Hospital, Pediatric Telemedicine
- Under Dr. James Marcin, the telemedicine program uses high-speed video conferencing for real-time remote consultation and evaluation in emergency medicine, cardiology, child abuse, child development, and a variety of other subspecialties.
- Anne Simon, Au.D, Pediatric Audiologist with UC Davis Medical Center, Department of Otolaryngology, Head and Neck Surgery

The Equipment

- Video Otoscope
- Diagnostic Middle Ear Analyzer with high frequency probe-tone capabilities
- Diagnostic, Windows-based Evoked Potential Unit, including capabilities for click, tone burst, air and bone conduction, ASSR and OAE hardware and software
- High resolution video conferencing unit with multi-point options for host-site, remote site, and interpreting services, including camera and light source

The Appointment



- Real-time, full infant diagnostic evaluation
- Referral from outpatient screen
- Maximum age 4 months old (corrected) at first appointment to avoid sedation
- Two appointments will be scheduled within 3 weeks to allow for additional testing
- The State audiology consultant will initiate contact with family to give appointment instructions and obtain consent for project participation

The Evaluation

- The remote site technician will be present in the room throughout the appointment, and will adjust or reposition probes and electrodes as instructed by the audiologist
- The technician will:
 - Place the video otoscopy tip
 - Apply electrodes and insert earphones and assist parent in preparing infant for sleep
 - Place probe tips for OAEs and acoustic immittance
- All tests are recommended by the JCIH and performed and interpreted by the audiologist

The Results

- Initial findings and recommendations will be discussed by the audiologist at the time of the appointment
- Detailed reports will be forwarded to the parents, the PCP, and the State audiologist



The Counseling

- Appropriate Early Start and Physician referrals will be made
- The parents will receive a folder with
 - The Hearing Coordination Center (HCC) contact number
 - List of local resources
 - Application for Title V funding
 - Diagram of ear and familiar sounds audiogram
- The HCC audiologist will contact the family 1 week after receiving the results, as they currently do with all infants diagnosed with hearing loss

The Follow-up

- The State audiologist will coordinate with the Title V program for eligibility and hearing aid authorizations
- A referral to a local audiologist for hearing aids and follow-up care will be made
- The host site audiologist will be available for mentoring and advising the local audiologist
- The HCC audiologist and support parent will continue follow-up at 2 months and 6 months

How do I get started?



- Find a funding source
- Prioritize your regions with the most need
- Identify partners with experience and develop formal agreements
- Develop draft Policies & Procedures
- Be prepared to revise dates, procedures and plans

Issues to consider

- The equipment for the diagnostic and telemedicine runs over \$80,000.
 - This does not include costs for installing appropriate teleconnectivity lines
- Hospitals require provider credentialing at their facility
- If state lines are crossed, additional licensing requirements may be necessary
- There may not be a method for both sites to be reimbursed
- Training and visiting the remote site will be necessary

Issues to consider (cont)



Establishing contracts with all the parties involved is more complicated than ever imagined!

Questions yet to be answered

- Are families going to like telemedicine services?
- How is counseling going to be affected by telemedicine?
- What is the efficacy of using interpreters via telemedicine?
- Is the quality of the diagnostic evaluation going to be effected?
- Will offering services closer to home affect no-show rates?



One more thing...

Does telemedicine offer feasible, cost-effective, quality infant diagnostics services that will identify more infants with hearing loss earlier?

Questions???

