Tele-toddlers: Potential Applications of Telepractice in Pediatric Fitting

Jean Anne Jordan, Au.D.
Phonak AG
Acknowledgement

Darcy Stowe, M.S., CCC-SLP
Hearts for Hearing

Anne Simon, Au.D.
University of California-Davis

Erica Friedland, Au.D.
Sherry Rauh
Nova Southeastern University

Anne Marie Tharpe, Ph.D.
Gina Angley, Au.D.
Vanderbilt University

Stefan Launer, Ph.D.
Michael Boretzki, Ph.D.
Martina Wolf
Phonak AG

Ned Carter
All Ears Cambodia
Agenda

- Telemedicine/Telepractice
- Disruptive Innovation
- Using Teleaudiology/Telepractice to Increase Access
  - Current Applications
  - Future Possibilities
- Challenges
Knowledge is Power

“We must start to manage knowledge as if it were money. The application of what we know will have a bigger impact on our futures than any drug or technology.”

- Sir Muir Gray, Director of BVHC, United Kingdom
What is Telemedicine/Telepractice?

- **Telemedicine** is the use of medical information exchanged from one site to another via electronic communications to improve patients’ health status.

- Includes applications and services using 2 way video, email, smartphones, wireless tools, and other forms of telecommunication technology.
Telemedicine

ACCESS & CONVENIENCE

Conventional

With telemedicine
Smart Diapers

- Parent scans QR code on a wet diaper.
- Smart Diapers can reveal signs of:
  1. Urinary tract infection
  2. Prolonged dehydration
  3. Developing kidney problems
- In clinical trial period, awaiting FDA approval.
CellScope

- Developed at University of California- Berkley
- Parents take a picture of the tympanic membrane using the special attachment for the iPhone and an app
- Image is sent to the physician through a HIPPA compliant website
- Ear infections can be diagnosed and treated from home
Agenda

- Telemedicine/Telepractice
- Disruptive Innovation

Using Teleaudiology/Telepractice to Increase Access
  - Current Applications
  - Future Possibilities
- Challenges
History of Mobile Phones

» In the beginning cell phones weighed almost 2 pounds and were expensive. Today’s technology is small, affordable and has opened up limitless possibilities.
Disruptive Innovation in Audiology

- WDRC
- Analog to digital
Agenda

Telemedicine/Telepractice

Disruptive Innovation

Using Teleaudiology/Telepractice to Increase Access

Current Applications

Future Possibilities

Challenges
A Systematic Review of Telehealth Applications in Audiology

• Audiological screening
• Audiological diagnosis
• Audiological intervention
• Patient and clinician Perceptions
Overcoming Geographical Barriers
University of California, Davis
Teleaudiology Program

• Tele-audiology program developed to reduce loss to follow up
• Target Population
  – Infants not passing newborn screen
  – Four months of age and younger
  – Must qualify geographically based on residence
    • Far N. California inland counties
    • where loss to follow up rate was 20% (compared to 4.5% across California)

University of California, Davis
Teleaudiology Program

• Comprehensive diagnostic infant hearing evaluations
  – History
  – View structures (pinna and symmetry of face)
  – Video Otoscopy
  – Immittance
  – Otoacoustic Emissions
  – Auditory Brainstem Response
  – Auditory Steady State Response (as needed)
  – Counseling/Recommendations

• Audiologist performs all testing from expert site

• Audiology assistant is at the originating site with patient, technical analyst & medical interpreter as needed
University of California, Davis
Teleaudiology Program

• Parent Satisfaction
  – Positive response
  – Pleased not to travel as far
  – Not concerned about the remote environment
  – Participate openly with history, discussion of evaluation findings, and recommendations
Hearts for Hearing
Teletherapy IHEAR

• Auditory verbal therapy, HIPPA compliant
• Established in 2005
  – Motivation: family 3 hours, 1 car, dad working
• Most have face to face therapy before beginning teletherapy
• IT specialist works with parents to prepare for first session
  – Equipment: computer & webcam
  – Parents are technologically savvy
• Challenges:
  – Internet Stability
  – Audio
  – Licensing

Darcy Stowe, M.S., CCC-SLP, Dec.13
Benefits of teletherapy

- Providing regular intervention to patients who would not be able to travel frequently.
- Child can keep the same provider if they move.
- Working flexibility for the therapist.
Agenda

Telemedicine/Telepractice

Disruptive Innovation

Using Teleaudiology/Telepractice to Increase Access
  - Current Applications
  - Future Possibilities
  - Challenges
Is this a Pipe?

_Ceci n’est pas une pipe._
Telemedicine Delivery Models

Expert Site

Audiologist

Remote Site

Facilitator

Patient
Telemedicine Delivery Models

Expert Site

Remote Site

Audiologist

Patient
Phonak Distance Support Prototype

Phonak Target

Distance Support Client

Fitter

Phone

Video

HI user

Internet
Vanderbilt University
Distance Support: Phase I

• Goals:
  – Were clients able to install the software on a laptop?
  – Was the audiologist able to connect to the hearing aids?
  – Audiologist and client experiences?
Vanderbilt Pilot Study

Phonak Target

Distance Support Client

Fitter

Phone

Video

HI user

Internet
Vanderbilt University Phase I Results
Client Software Installation

Vanderbilt Client Software Installation

Minutes

Time installation software  Average time= 8 min

Age

2013-12-10  A Sound Foundation 2013
Vanderbilt University Phase I Results
Acclimatization to Prototype

**Vanderbilt- First Half Appts**

- Average time: 19 min

**Vanderbilt- Second Half Appts**

- Average time: 13 min
Vanderbilt University Phase I Results
Subject Experience

- 90% listed a strength related directly to accessibility and convenience
- 20% had concerns about loss of face to face contact
- 4% had concerns about using technology
- 92% would recommend to friends and family.

Preference for Distance Support:
- 64% prefer Distance Support appointments in the future if possible
- 32% were neutral
- 4% preferred face to face
Vanderbilt University Phase I Results
Audiologist Experience

- Generally satisfied with 76% of appointments, the remaining 24% were rated as neutral.
  - Needed real ear
  - Connection problems
  - Hearing aid batteries dead
  - Visual inspection of the hearing aid needed
Vanderbilt University
Patient Benefit
Vanderbilt University
Clinician/Clinic Benefit

• Efficiency scheduling
  • High cost on efficiency for no shows
  • Possibly more likely to replace no shows with Distance Support patients
• Remote fitting appointments were shorter, saving clinic time so more patients can be seen
  • Face to face visits can be used for patients with issues that can not be solved remotely or prefer face to face.
Convenience may equate to patients seeking services more often when they need them.

- 40% of clients in Phase I reported they would seek services more often.
- Possibly increase satisfaction
Vanderbilt University Phase II
Preliminary Results

- 62% of clients preferred using a webcam instead of telephone only
- Audiologist was able to connect to 87% of patient’s hearing aids.
- More to come……..
Possible Pediatric Applications

- Datalogging
- Feedback manager
- Adding a phone program
All Ears Cambodia

• NGO- only ear and hearing clinic in Cambodia
• Greatest need: Education and training of local staff/volunteers
  – Satellite clinics have to close for trainings
• Greatest challenge: infrastructure
  – Urban/rural divide
Nova Southeastern University & Los Pipitos

- Fifteen children, ranging from 2-9 years old, will be fit with hearing aids by an audiology team from Nova Southeastern University in winter 2014.
- Follow up visits are planned on an annual basis.
- Nova will test Phonak Distance Support as part of remote follow-up care provided to families and clinics in between face to face visits.
  - Start with small conservative steps such as reading datalogging
  - Will provide feedback to Phonak on what tasks are not solvable or appropriate through the current functionalities of Phonak Distance Support.
Agenda

- Telemedicine/Telepractice
- Disruptive Innovation
- Using Teleaudiology/Telepractice to Increase Access
  - Current Applications
  - Future Possibilities
- Challenges
Key Challenges

• Licensing
• Reimbursement
• Real ear measurements
• Infrastructure
• Inability to physically inspect ear and equipment
Thank you!
Jeananne.jordan@phonak.com