PHONAK REMOTE SUPPORT: KEY LESSONS AND PRACTICAL TIPS

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DEMOCRATIZATION

Technology Adoption
Years until used by one-quarter of American population

- Electricity (46) 1873
- Telephone (35) 1876
- Radio (31) 1897
- Television (26) 1926
- PC (16) 1975
- Mobile phone (13) 1983
- The web (7) 1991

Source: Singularity.com
Economist.com/graphicdetail
THE MEDICALIZED SMARTPHONE
FOR YOUR HEALTH®
WHY? ACCESS AND CONVENIENCE

Conventional

eAudiology
Asynchronous settings exchange

User App <-> Feedback App

- No Real-time
- Limited fitting capability
- Additional tool for HCP
- No direct user feedback

Real-time:
- 100% of fitting capability in Phonak Target

Synchronous real-time tele-session
HOW REMOTE SUPPORT WORKS

Client

2.4 Direct

Phonak Audéo B-Direct

myPhonak app
iOS and Android video (MFA)

Real-time

Audiologist

Phonak Target
with integrated video
<table>
<thead>
<tr>
<th>Study Number</th>
<th>Study Title</th>
<th>Author(s)</th>
<th>Publication Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Qualitative Study of Attitudes</td>
<td>Singh, G. (2014)</td>
<td>Published</td>
</tr>
<tr>
<td>5</td>
<td>Re-engagement of Teen Hearing Aid Users</td>
<td>Carr, G., Joseph, K., Davis, A. (2014), not published</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Technical Usability Study with Hearing Care Practitioners in Germany</td>
<td>Schnittker, J.A, Schuepbach-Wolf, M. (2018), analyzing</td>
<td></td>
</tr>
</tbody>
</table>
1. QUANTITATIVE STUDY OF ATTITUDES

Gurjit Singh, Ph.D.  
University of Toronto, Sonova

Kathleen Pichora-Fuller, Ph.D.  
Toronto Rehabilitation Institute

Stefan Launer, Ph.D.  
Sonova

Michael Boretzki, Ph.D.  
Sonova
QUANTITATIVE STUDY OF ATTITUDES

Purpose: To survey hearing health care practitioners` attitudes toward eAudiology

1. Attitudes toward eAudiology appointments
2. Willingness to conduct different clinical tasks via eAudiology
3. Willingness to conduct a eAudiology appointment with different patient populations.

Method: Participants (202) working in Canada completed the Attitudes Towards Teleaudiology Scale for Practitioners (ATS-P) online.

Results:

• On average, it is believed that eAudiology will increase accessibility, but will likely have a minimal effect on hearing health care.

• Significant proportions of clinicians have opposing attitudes toward eAudiology.

• Willingness to conduct eAudiology sessions highly dependent on:

<table>
<thead>
<tr>
<th>Clinical Tasks</th>
<th>Patient Populations</th>
</tr>
</thead>
<tbody>
<tr>
<td>High for counseling-based behaviors</td>
<td>High: tech savvy, mobility issues, or travel long distance</td>
</tr>
<tr>
<td>Cautious for more technical tasks</td>
<td>Reluctance for new patients</td>
</tr>
<tr>
<td>Reluctance with diagnostics &amp; first fittings</td>
<td></td>
</tr>
</tbody>
</table>

PERCEIVED EFFECT OF eAUDIOLOGY ON HEARING CARE

Singh et al. (2014, IJA, 53, 850-860)
WILLINGNESS TO USE eAUDIOLOGY: CLINICAL TASKS

Singh et al. (2014, JA, 53, 850–860)
WILLINGNESS TO USE eAUDIOLOGY: PATIENT GROUPS

Singh et al. (2014, IJA, 53, 850-860)
Facilitating rapid response
Minimizing caregiver stress and time off from paid work
Reducing medical travel
Easier access to healthcare especially for people living in remote or underserviced locations
Reducing wait times
Reducing CO2 emissions
Reducing costs of delivering healthcare
More comfort when discussing stigmatizing issues
Improved clinical outcomes
Improved adherence to treatment

PERCEIVED BENEFITS OF eAUDIOLOGY

2. AUDIOLOGICAL FEASIBILITY AND EFFICACY OF REMOTE SUPPORT (NOT PUBLISHED YET)

Gurjit Singh, Ph.D.
Purpose: Compared to a face to face fitting, does a Remote Support follow-up session have an impact on:

- Ease of communication
- Resulting gain settings
- Resulting speech intelligibility
- Resulting sound quality
- Satisfaction with audiological service
- Duration of session
Subjects: 23 hearing impaired patients (mean age = 67.2 years)

Method:

Baseline
- Audiological assessment
- Fittings of hearing aid(s)
- Fine-tuning appointments

Experimental: Follow-up
- Mistuning 1
  - Face-to-face
  - Remote

Experimental: Follow-up
- Mistuning 2
  - Face-to-face
  - Remote

Measures
- MoCA
- HHIE
- Computer Anxiety Scale
- Baseline WIN testing
- Baseline real-ear testing

Traditional (Face-to-Face) Appointments
- Appointment duration

Experimental Appointments
- Appointment duration

Outcomes
- WIN testing
- Real-ear testing
- Sound quality ratings
## Audiological Feasibility and Efficacy of Remote Support

**Independent variable**

- Remote fitting versus fitting in clinic (within subjects design)

**Dependent measures**

- Ease of communication
- Gain changes compared to prescriptive fitting (REM)
- Speech intelligibility (Words-in-Noise-Test)
- Sound quality ratings
- Satisfaction with audiological service
- Duration of fitting session
Has conducting a follow-up session as a remote fitting session an impact on the following, compared to a face to face follow-up session?

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of communication</td>
<td>Nearly none</td>
</tr>
<tr>
<td>Resulting gain settings</td>
<td>None</td>
</tr>
<tr>
<td>Resulting speech intelligibility</td>
<td>None</td>
</tr>
<tr>
<td>Resulting sound quality</td>
<td>None</td>
</tr>
<tr>
<td>Satisfaction with audiological service</td>
<td>Nearly none</td>
</tr>
<tr>
<td>Duration of session</td>
<td>Remote session a bit longer (15.7 min v/s 22.4 min)</td>
</tr>
</tbody>
</table>
3. REMOTE SUPPORT VIDEO CONNECTION

Joerg Haubold, et al.
Purpose: To determine if having an audio and video connection between hearing care professional and patient is preferred to an audio connection only?

Subjects: 16 hearing impaired subjects, 8 professionals

Independent variable:
Video connection condition
1. No camera at all
2. Camera only on patient
3. Camera only on professional
4. Camera on both
Results: Camera condition Preference

<table>
<thead>
<tr>
<th>Camera condition</th>
<th>Patients (%)</th>
<th>Professionals (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidirectional video</td>
<td>92.9%</td>
<td>87.5%</td>
</tr>
<tr>
<td>Camera on professional only</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Camera on patient only</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>No video</td>
<td>7.1%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Relative frequency

- **Bidirectional video**
- **Camera on professional only**
- **Camera on patient only**
- **No video**

**Remote Support Video Connection**

**Results:** Camera condition Preference

1. **Bidirectional video**
   - Patients: 92.9%
   - Professionals: 87.5%
2. **Camera on professional only**
   - Patients: 0%
   - Professionals: 0%
3. **Camera on patient only**
   - Patients: 0%
   - Professionals: 12.5%
4. **No video**
   - Patients: 7.1%
   - Professionals: 0%
4. REMOTE SUPPORT: TECHNICAL FEASIBILITY STUDY

Gina Angley, Au.D.  
Vanderbilt University

Anne Marie Tharpe, Ph.D.  
Vanderbilt University

Jean Anne Schnittker, Au.D.  
Sonova
REMOTE SUPPORT: TECHNICAL FEASIBILITY STUDY

**Purpose:** To evaluate feasibility & perceived benefits of remote support follow-up appointments in a controlled clinical environment & in participants’ homes.

**Subjects:**

- 50 users
- 100+ sessions
- 65 Mean age (32-88)
- 35 min Average travel time

SUBJECTS REPORTED

88% Prefer remote support under difficult conditions

92% Would recommend remote support to other users

64% Would prefer remote support if offered a choice

AUDILOGISTS REPORTED

- **86%** Stable connection
- **80%** Remote support as efficient as face-to-face
- **82%** Satisfied with outcome

5. RE-ENGAGEMENT OF TEEN HEARING AID USERS

Gwen Carr, Keiran Joseph, and Adrian Davis
Purpose: Can eAudiology serve as a motivational tool to re-engage teenagers who have become disengaged (frequent non-attendance at clinic, either DNA or unexplained cancellation) from audiological care?
RE-ENGAGEMENT OF TEEN HEARING AID USERS

• **Subjects**: 20 hearing impaired young people with hearing loss (aged 12-19 years)

• **Method**: Focus groups + Remote Support sessions
  • Focus Groups
    • Knowledge and experience regarding technology.
    • Attitude towards their hearing losses and current experiences of amplification.
    • Mapping experiences of and enjoyment with audiology services and audiological support
Results:

I would rather have my audiology appointment in this way than travel to see my audiologist in the clinic

I felt comfortable with the equipment used
Results:

• Students gave positive feedback

• Desire to avoid inconvenience of taking time out of school or ‘wasting’ of own leisure time after school.

• Technology can be an attractive option for this age group because it empowers them to have greater control of their hearing aid services and feel like an equal partner
6. REMOTE SUPPORT AND PEDIATRICS

REMOTE SUPPORT AND PEDIATRICS

Purpose: Explore the feasibility and acceptability of using eAudiology to:

1. Investigate the use of virtual visits to monitor hearing aid use with data logging measurements
2. Enhance parent support for addressing challenges with hearing aid use and management

Subjects: Four families (children age range 2 months-5 years) and two providers participated.

Method: A 6-month longitudinal case study design was used to report Remote Support visits to help parents address hearing aid use and management issues.

Results: Over the 6 month period, average hearing aid use time increased by 3.5 hours/day.

Results: Percentage of days at hearing aid use goal during 6 month study period.

<table>
<thead>
<tr>
<th>Child</th>
<th>Age During Study</th>
<th>HA use goal/day</th>
<th>Goal met 1st 3 mths</th>
<th>Goal met final 3 mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-8 mths</td>
<td>8</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>24-30 mths</td>
<td>9</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>64-70 mths</td>
<td>10</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>37-43 mths</td>
<td>10</td>
<td>0%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Conclusion:

- Virtual visits provided benefits to families including flexibility & timely access to support.

- Could be scheduled at a time that allowed multiple family members to be involved, providing an opportunity to address their learning needs.

- The ability to collect data logging more frequently than would typically be available with in-office visits was important for problem-solving to increase hearing aid use.

- Increased consistency of auditory access, critical for spoken language development.

- Both parents and clinicians were accepting of tele-support.

7. TECHNICAL USABILITY STUDY IN GERMANY

Purpose:
1. Evaluate the technical stability of Remote Support in the German market.
2. Assess the usability of the Remote Support, including all elements related to the HCP and client workflow.

Subjects: 16 hearing impaired subjects, ages 29-78

Method: Clients completed at least one Remote Support session in their home using Wi-Fi. After the session, clients and the hearing care professionals filled out questionnaires to give feedback about their experience.
Results:

- Technical difficulties revealed a low bandwidth/connection speed for the HCP at one practice location.
  - The study had to be stopped at this location.
  - Maximum upload was 1Mbit/s from telecom provider
  - Hearing aid connection was not possible
- One practice had a strong internet connection – Appointments were successful
Results: Overall Satisfaction

Client Satisfaction

Overall, I am satisfied with this remote support session.

HCP Satisfaction

Overall, I am satisfied with this remote support session.
Results:

- The set-up of the Remote Support appointment in the office went well (main issue: email not on client's phone, and not knowing the password).

- The average appointment time was 26 minutes Remote Support follow-up appointments (compared to 10 traditional follow-up appointments: 33 minutes on average).

- In both fitting methods the software adjustment of the hearing aids was the most performed action.
Results: Clients were asked about advantages and disadvantages of each fitting method. Most common answers were:

*Traditional fitting*
- Advantages: more personal, no smart phone needed
- Disadvantages: time, travel

*Remote Support*
- Advantages: “any time, any place”, saves travel time
- Disadvantages: Internet/software quality, impersonal
TELEMEDICINE BARRIERS/CHALLENGES

Perceived Barriers to Telemedicine

Among Physicians:
- Malpractice/liability concerns: 60%
- Reimbursement concerns: 43%
- Technical problems: 40%
- Privacy/security issues: 40%

Among Patients:
- Not sure diagnoses via telemedicine are as accurate: 64%
- My physicians don't offer telemedicine: 51%
- Concerned about insurance coverage: 40%
- Privacy/security issues: 33%
- Technical problems connecting via phone or video: 31%

*Source: Miller, 2016. Medscape
PRACTICAL TIPS FOR REMOTE SUPPORT: CLIENT

• First fit in the office
• If client is interested in Remote Support, it is easiest to get them set up at the face to face appointment.
  • Does the client have email, is the email on client’s phone and do they know the password? Access to the playstore/applestore?
  • App download (if possible in the office + connection check to the HAs)
  • Take the client through the Remote Support set-up process
• Talk through app + how to accept the call (if needed)
• Explain how to clean the HAs + ear piece (how to check if it is clean – that is not always easy to see over the distance)
• Tell client it is important to have stable Wi-Fi during the RS appointment
PRACTICAL TIPS FOR REMOTE SUPPORT

- Test your Internet Speed
- Use Phonak hearing aids that are compatible with Remote Support
- Is the client’s smartphone compatible? (most iphone and Android work)
  - Compatibility Check: https://marvel-support.phonak.com/en/audeo-m-cell-phone-compatibility/
- You will need a web camera + headset in the office
  - Will work without headset, but cuts down on any background noise.
- Test Remote Support workflow before having the first real appointment
- Have a phone number for the client in case they forgot about the appointment
- Ask the client if they have new batteries in the HAs
- Turn video off (on both sides) if the connection during the appointment is not stable
- Think about how to schedule/manage the appointments + how to build it in your daily work
- Use the hearing diary + “chat function” to get more feedback from your client
GETTING STARTED

1. Basic Infrastructure/Test your Internet speed
   • Recommend 5 Mbps upload/download speed
   • A quick Google search will highlight many websites/apps that will test connection speed.
2. Check on ethical/license/billing/privacy information in your area.
3. Make sure you have a compatible hearing aid and are signed up for Phonak eServices.
4. Try a Remote Support session with a colleague, family member, or friend to get a feel for how it works.
5. Identify clients who you feel are good candidates.
6. Start with a few appointments and build up your Remote Support offering.
THANK YOU!

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