C2Hear Online: towards personalised hearing aid information for the smartphone generation

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Audiology Cymru, Wrexham, 8.7.16
Question

If you are an audiologist

• How confident are you that the information and advice you offer your first-time hearing aid patients is
  • understood
  • absorbed
  • and then acted upon

once they leave the comfort of your clinic room?
Show of hands

If you are an audiologist

- I am confident that the information and advice I offer my first-time hearing aid patients is
  - understood
  - absorbed
  - and then acted upon

once they leave the comfort of your clinic room

disagree  neither  agree
I am confident that the information given is remembered and acted upon by my hearing aid patients.
Knowledge of hearing-related issues is poor

- Patients, public, practitioners
  - Experienced hearing aid users
    - hearing aids and how to use them – poor to excellent
    - 60-80% did not know how to use the telephone

Hearing aid non-use
Costs: NHS
person with hearing loss = communication difficulties
→ reduced social interaction → poorer QoL

First-time hearing aid users
Overall = 49.6%
Practical = 62.9%    Psychosocial = 34.3%
(El-Molla, Smith, Henshaw, Ferguson, 2012)

51% found difficulties using aid at first
“You get a lot of information …by the time you get home, you’ve forgotten most of it.”
(AoHL Hear Me Out, 2011)
Past
HEAR IT study

Q: Do video tutorials *supplement* advice and information provided by audiologists and result in enhanced benefit and use for hearing aid users?

1. To *develop* a series of multimedia videos (reusable learning objects, RLOs)
   - range of auditory rehabilitation subjects
   - accessible to hearing aid users and their families

2. To *evaluate* the benefits and cost-effectiveness of the RLOs

Randomised controlled trial

RLO+ or RLO- (n=203)
HEAR-IT study

1. Develop a series of interactive multimedia video tutorials: Reusable learning objects (RLOs)

- Based on learning theory
- Range of auditory rehabilitation subjects
- Video clips, animations, photos, testimonials
- Subtitled
- Interactive quiz
- Duration ~1 hour
- Developed with HA users

(Ferguson et al, Ear Hear, 2016)
Hearing aid insertion
“recognise the shape of your earmould with the shape of your ear” - reinforcements and consequences
Acclimatisation
Learning outcome: be aware of how you adapt to listening with your hearing aids
2. Evaluation: Clinically registered RCT (N=203)

**Take-up and adherence**
- Take-up = 78%
- 94.3% watched all RLOs

**Self-management**
- 2+ times = 49.9%
- Re-use suggested self-management

**HA knowledge & skills**
- Better knowledge on HAs and communication & HA handling skills

**HA use**
- Greater use (GHABP) suboptimal users

**Valued by users**
- Rated RLOs as highly useful (9/10)
- Improved confidence
- Preferable to written info

**Health economics**
- RLOs were a very effective and cheap healthcare intervention

*(Ferguson et al, Am J Aud 2015; Ear Hear, 2016)*
Main themes

- Content supported by the vast majority
- Communication partners were involved

“Well, I went through them, right the way through. I begged my wife to watch them as well which I thought was important”

- Provided reassurance, helped remember things
  - Improved awareness and confidence

“it explained how we have to learn to rehear things. That is not an aspect that I [was aware of], to re-educate the brain to interpret what you hear”.

- Sharing of videos with others (family, friends, neighbours)

“I have passed my DVD on to on old couple who both have hearing aids …" I kept telling her. "Play that DVD and you will know why," because you have got to get used to it, haven't you?”

(Ferguson et al, Ear Hear, 2016)
Present
Choice of media delivery: In 2010/11, PC & internet use was low

PC and internet use declined with age ($p < .001$)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>PC Use (%)</th>
<th>Internet Use (%)</th>
</tr>
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<tbody>
<tr>
<td>50-54 yo</td>
<td>85%</td>
<td>66%</td>
</tr>
<tr>
<td>70-74 yo</td>
<td>36%</td>
<td>17%</td>
</tr>
</tbody>
</table>

(Henshaw, Clark, Kang, Ferguson, J Med Int Res, 2012; Ferguson et al, 2016)
Let’s get the RLOs out there!

BAA 2014
C2Hear launched

NHS Supply Chain
Framework: GHB9636
The times they are a-changing

- Year-on-year increase in internet and smartphone use

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet</th>
<th>Internet via smartphone</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>61%</td>
<td>9%  36%</td>
</tr>
<tr>
<td>2012</td>
<td>70%</td>
<td>-          -</td>
</tr>
<tr>
<td>2014</td>
<td>78%</td>
<td>42%  74%</td>
</tr>
</tbody>
</table>

(55-74y) (65+y) (55-84y)

(Ferguson & Henshaw, AJA, 2015; ONS, 2014)
Let’s get the RLOs out there!

BAA 2015
C2Hear Online launched
C2Hear Online - Getting more from your hearing just got easy

>9500 views

Waiting room Demos, flyers link to website

One size fits all
Limited interactivity
Future
Internet-smartphone mode of delivery

Previously used a DVD platform

Benefits of greater flexibility of internet-smartphone platform are:

• tailored for the needs of the individual
• greater interactivity to promote greater learning
• means to self-monitor and self-evaluate
  → enhance self-management as well as knowledge
  → greater accessibility
Currently undergoing development

Communication Partners

What is hearing loss, and the consequences of HL?
Communication tactics
Psychosocial aspects of hearing loss
Communication Partners

Why CPs?

• Increasing research to show CPs are an important factor in AR
• Knowledge and understanding about hearing-related issues in the general population is poor.

- Participation restrictions (HHIE) assessed by CPs less than PHL
- Benefits of hearing aids assessed by CP greater than PHL
• Focus groups suggested that CPs would value information relevant to them
CP m-RLO content: evidence-based

What’s new and relevant to CPs?

Systematic review

Communication tactics
Expectations
Acclimatisation

Literature - metasynthesis

Users’ voice - focus groups

Users’ voice - video footage
Future development: grant funding pending

Aim: to develop individualised theoretically-driven m-RLOs

- tailored to the needs of the individual
- incorporate greater interactivity
- means to monitor progress (IMP-OS)

(*Coulson, Ferguson, et al, 2016)
Hearing aid users: Phase 1: individualise

Theoretical underpinning
COM-B model

Think Aloud Analysis
User involvement

Domains
e.g. physical skills reinforcement capabilities

Data tags
e.g. physical skills reinforcement capabilities

Individualisation
Suite of resources – mhealth programme

- Individualise
- Interactivity
- Self-evaluation

Other languages
UK: English not first language
Training residential carehome staff

n = 25 care home staff
n = 3 homes

Knowledge of hearing aids and communication

- Significant pre-post improvement $p < .001$ $d = 3.6$

“This should be made mandatory at induction with annual refresher sessions”

Practical hearing aid skills

- Significant pre-post improvement $p < .001$ $d = 3.3$

“Awareness of hearing aids has definitely gone up with all of us”

(Rocks et al, in prep)
RLOs for residential carestaff

“Hearing aids often drop off the radar. We shouldn’t be waiting for a crisis”

“This project has changed the things I’m doing and saying on a daily basis”

(McShea et al, in prep)
I am confident that the information given is remembered and acted upon by my hearing aid patients.
Summary online developments

November 2015

Open access - all

2016

m-RLOs communication partners

Future

m-RLOs hearing aid users and other populations
Thanks to...

Patient panels

Clinical and academic colleagues

Marian Brandreth, Holly Thomas, Ashana Tittle, David Maidment, Lynzee McShea, Alex Barker

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Summary online developments

**November 2015**
- C2Hear Online
  - Open access - all

**2016**
- C2Hear Online
  - m-RLOs communication partners
  - The Effects of Hearing Impairment in Older Adults on Communication Partners: A Systematic Review

**Future**
- C2Hear Online
  - m-RLOs hearing aid users and other populations