How eHealth can bring your clinic into the future

Annette Cleveland Nielsen, PhD
Project Manager,
eHealth Researcher

Eriksholm Research Centre
PART OF OTICON
Definition WHO, 2016 (World Health Organization):

- Covers many domains, including electronic health records, mobile health and health analytics
- Put information in the right place at the right time
- Providing more services to a wider population and in a personalized manner
eHealth - an umbrella term

Modified from: John Crawford, Healthcare Industry Leader, Europe IBM Industry Academy Member
eHealth drivers
Technology and “evolution”
Demographics and diseases

A. Developed countries

B. Developing countries (ex. Sub-Saharan)

C. Sub-Saharan countries

Vos et al., 2015
eHealth Activities and Hearings Aids - A Systematic Review

Elisabeth Ingo, PhD student
Caitlin Barr, PhD
Ariane Laplante-Lévesque, PhD

Annette Cleveland Nielsen
Project Manager, eHealth Researcher, PhD
Objective:

- Overview of the newest eHealth and hearing aids
  - Activities
  - Efforts
  - Concerns

Search questions:

1. Which eHealth activities support the hearing loss and hearing aid adult client journey?

2. What are the facilitators and barriers to the successful implementation of eHealth in this client journey?

Found 46 relevant publications published from Jan. 2005 to Sept. 2015
eHealth platforms and publication years

- **85% (39) publications last 6 years and of these 49% (19) in 2014-2015**
  - **15% (7) publications first 5 years**

**Records**

- **2005-2007**: 4 records
  - DVD, PC or telephone: 2
  - Online and internet: 2
  - Across platforms: 3
  - Apps and mTech: 2

- **2008-2009**: 2 records
  - DVD, PC or telephone: 1
  - Online and internet: 1
  - Across platforms: 2
  - Apps and mTech: 1

- **2010-2011**: 8 records
  - DVD, PC or telephone: 3
  - Online and internet: 5
  - Across platforms: 7
  - Apps and mTech: 6

- **2012-2013**: 10 records
  - DVD, PC or telephone: 5
  - Online and internet: 10
  - Across platforms: 9
  - Apps and mTech: 9

- **2014-2015**: 15 records
  - DVD, PC or telephone: 8
  - Online and internet: 14
  - Across platforms: 13
  - Apps and mTech: 13
eHealth services and percentages of eHealth activities

88% of eHealth activities are within Online and internet and Apps and mTech

Education and information
- Internet info on HL, client empowerment, HCP interaction
- Apps for interactive atlases, simulations of HL

Self-testing
- Apps for self-monitoring of HL

Sound enhancement with HAs or other devices
- Internet for remote fitting, Apps and mobile phones as HA

Rehabilitation programs
- Auditory training with DVDs, Online rehabilitation
- Apps for rehabilitation

Asistive tools
- Communication aids and alerts

Legend:
- DVD, PC or telephone
- Online and internet
- Apps and mTech
Main conclusions

- eHealth can open for new possibilities in audiology
- Reach previously unreachable persons with hearing loss – both geographical and client groups
- Concerns regarding quality and reliability of apps, legal frameworks, data safety and re-imbursement models
- A paradigm shift towards a personalized client centered journey
- Give individually tailored cost and time efficient audiologic client journeys
- Open up for holistic interventional audiologic service
eHealth for Hearing

• Which services are most relevant to hearing healthcare?

• How can they be used in the future client journey?

• What will the role of the audiologist be?

• How do we preserve and empower good client-HCP relationships?

Todays client journey?
Today’s client journey

- Face-to-face visits today - and 30 years ago……..

- Audiologists (AUDs) are not making the most of their expertise

- Centered client journey

- Time consuming for and – mean number of follow-ups are 3 (Bennett et al., 2016)

- Data and information donors are the
Tomorrows client journey?
Tomorrows client journey?

- Not face-to-face and a time saving client journey

- Pre- and post-fitting: 1) Information to **AUDs** on client needs and use of hearing aids
  2) Information to **clients** for empowerment
  3) Empowered **client-AUD** relationship

- Expertise in focus - support AUDs in what they do best

- Centered journey

- Data and information donors are and manufacturer
An eHealth hearing care ecosystem

Eriksholm Research Centre project: App(etite) for living well with hearing loss
Developing eHealth tool demonstrators

Collaboration partner: Center for User-driven Innovation, Learning and Design
Danish Centre for Health Informatics, Aalborg University, Denmark

Funded by the Danish Ministry of Higher Education and Science

Future hearing care:
Personalized, Preventive, Participatory and Predictive
Methods for developing user innovated eHealth tools

• User Innovation Management

• A user-centered innovation design in focus-groups

• In an iterative process

• For hearing aid users, their significant others and audiologists

• Users drive the innovation and design together with researchers
Background

Today AUDs know very little about the clients entering the clinic and how the hearing aids are used once the client leaves.

Clients know very little about own hearing loss, hearing aids, and the client journey.

- No time in face-to-face visit
- Post-fitting problems difficult to detect in due time
- Future hearing aid dissatisfaction - 20% non-use - re-visits

- Client care goals for tomorrow:
  - Client empowerment
  - Client differentiation
  - Increased individualization of hearing aids
  - Refined fine-tuning needs
  - Awareness of a good change
  - Empowered client-AUD relationship
Pre-fitting eHealth tool possibilities

- Client sends information to AUD
  - Important listening situations, real-life here and now listening problems, diseases etc.

- AUD sends empowerment information to client
  - On hearing loss, hearing aid rehabilitation expectations, hearing aid types etc.

- AUD get client insights
- AUD know the client needs prior to visit
- AUD can plan ahead - guided client communication
- AUD get predictive analyses for evidence based clinical decision support
- AUD can differentiate clients before they enter the clinic (easy, moderate, difficult)
Post-fitting eHealth tool possibilities

- Real-time client experiences with hearing aids
- Evidence based clinical support through big data and information exchange
- Use and other hearing aid features etc. are registered
- AUD is notified if agreed goals on usage are not met etc.

- AUD can easily follow all clients progress or problems – and intervene in due time
- AUD can push questions to the user for clarification
- AUD decides on giving extra information, do a telephone call or have the client in for a visit
- AUD can push an update on settings to the hearing aid
Possible user innovated client demonstrator
Possible user innovated client demonstrator

Client own page

My Hearing Aids
Graphical re-use from Genie 7

Tips & Tricks
Can be videos or text

Joe’s data
Take test
My Audiologist
My Hearing Aids

Left Hearing Aid
Style xxx
Speaker
Dome
Battery
Etc.
Etc.

Right Hearing Aid
Style xxx
Speaker
Dome
Battery
Etc.
Etc.

My Data
Graphical re-use from RIA/Datalogger

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Possible user innovated audiologist demonstrator
Interventional audiology

eHealth and interventional audiology
• Audiologists teaming up with other Health Care Proffs/GPs
• For a holistic perspective on clients

• Through data and predictive analyses
• For evidence based clinical decisions

• Solutions to the increasing elderly population globally
  • Suffering from hearing loss and other chronic diseases
  • Those not using hearing aids are more prone to cognitive decline
    (Amieva et al, 2015)
Interventional audiology

Audiologists propose holistic solutions for clients and are providers of health data for GPs, cardiologists, geriatric specialists, elderly home and family.

Clients expect individualized information, guidance and motivation on their health status monitoring, level of health and information on a level in according to their eHealth literacy competences.

Hearing aids as in-ear-sensors for health and disease monitoring.

Cardio vascular diseases, diabetes, dementia, vision impairment.

GPs work closely with audiologists on individualized evidence based holistic client health solutions and monitoring.
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alni@eriksholm.com