

WHAT AUDIOLOGISTS THINK about the opportunities and risks of digitalisation



By **Graham Hilton / Tania Rodrigues**
Photos: Phonak

The development of “telemedicine” has been much discussed in the health care sector of late and is becoming increasingly established in medical practices, gradually conquering the hearing care sector. Modern communication tools now make it possible to support customers via e-mail, chat, audio or video link and not only face to face at their local hearing care practice. In this article we investigate the current state of research, the findings with regard to the opportunities and risks of digitalisation of hearing instrument supply, and initial results regarding the practical use of eAudiology.

Why use eAudiology?

Many audiologists envisage eAudiology as a means to help customers overcome distances and restrictions in mobility, thus providing fast and convenient access to services, at least in theory. But can (and should) eAudiology really replace face-to-face attention in a hearing care practice setting? Which services and support can be sensibly offered at a distance and for which customers may this new approach be attractive and beneficial?

Researchers have intensively investigated this subject in recent years. Why is it worth thinking about eAudiology and carrying out research in this area? On the one hand, we have faster and more stable internet connections as well as increasing familiarization of the target groups with online applications and mobile apps, thereby improving the conditions for digital support. On the other hand, we are reaching the limits of personal care options: A growing number of people suffer from hearing loss and those affected are getting older and therefore struggle with increasing mobility restrictions. Particularly in developing countries, which may have one audiologist per 650,000 residents, visits to an audiologist could involve many hours of laborious travel.

Meta-analyses (Broens *et al.*, 2007 and Hailey & Crown, 2000) have shown that a reliable IT system, as well as the willingness of the participants to use it, are important preconditions for making telemedicine a success. Furthermore, it has been shown that more than 3 out of 4 end users are open to eAudiology (internal Phonak study, 2018).

Positive attitude of the audiologists

Several studies confirm that audiologists are interested in the principle of eAudiology (Singh *et al.*, 2014 and Singh *et al.*, submitted). In these studies, audiologists were asked to assess eAudiology, once via a standardized questionnaire and once in a qualitative interview lasting one to two hours. Both studies yielded very similar results and corroborate each other.

The audiologists discerned the following benefits of eAudiology in particular:

- easy access,
- rapid appointments and
- convenient supply

Perceived disadvantages reported by the audiologists included reduced quality of contact with the customer and a reduced level of trust. However, this perception was based on their “gut feeling” and not on personal experience or the documented experience of other audiologists.

eAudiology webinars

In May 2018, Phonak started a 12-month series of eAudiology webinars to support audiologists in mastering digital transformation. The series was launched by Dr Danielle Glista from Western University's National Centre for Audiology in London, Canada, with an introduction to eAudiology and by Dr Gurjit Singh, Senior Research Audiologist at Phonak and Associate Professor at Ryerson University and the University of Toronto, with an overview of the perceptions towards eAudiology. The last webinar also provided the basis for the current article. Other experts who will present in the series are Francois Julita, Dr Joseph Montano and Dr Melanie Ferguson. For those who missed the previous seminars, but would like to know more, recordings are available on the Phonak learning platform: <http://learning.phonakpro.com/> You may also want to keep an eye open for the next seminars under the hashtag #eaudiologyphonak on LinkedIn, Twitter and Facebook.

The study participants had very clear opinions regarding the fields of application in which eAudiology is or is not promising.

They saw the following application areas as suited for eAudiology:

- hearing rehabilitation,
- consulting or answering questions and
- follow-up appointments or fine-tuning of hearing instruments.

About the authors



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Graham has an MSc with distinction in Audiology awarded by University College London. He entered the field of audiology in 1986 and spent 10-years within the NHS where he was a head of department in West Lancashire prior to moving over to the manufacturer's side in 1997. He has worked with Phonak UK since January 2000 and currently occupies the role of Head of Professional Services.



Tania Rodrigues qualified as an Audiologist at the University of Cape Town, South Africa

She gained diverse experience in clinical practice working within both the public and private sectors in the United Kingdom, before joining Phonak in 2013. She is now the Audiology Training & Education Manager at Phonak HQ, Switzerland.

WIDE ANGLE | EAUDIOLOGY: A MODEL FOR THE FUTURE?

eAudiology A study review

Definition of eAudiology
Remote provision of audiological services, e.g. by email, chat, video or audio conference



Benefits of eAudiology
Helps overcome distances and mobility issues, allowing for fast and convenient access to hearing care

eAudiology – hearing care of the future?

Meta analysis shows...

Successful telemedicine implementations¹ have



reliable technological systems

&



stakeholder buy-in

+



More than **3** out of **4** patients are open for eAudiology?²

Hearing care professionals' attitudes

Quantitative study³

- **220** hearing care professionals
- Questionnaire



Qualitative study⁴

- **11** hearing care professionals
- Interviews of 1-2 hours

Results:



- + Accessibility
- + Faster appointments
- + Convenience

eAudiology is well-suited for

- Aural rehab
- Consulting / answering questions
- Follow-up appointments

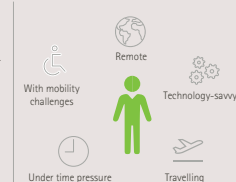


- Reduced relationship quality
- Less trust
- BUT: gut feeling, rather than evidence-based...

eAudiology is less well-suited for

- Screening / diagnostics
- New patients
- Children

For which clients?



eAudiology in follow-up adjustments⁵

23 patients



Incl. **19** experienced hearing aid users

Ø **67.1** years

Results:

Objective measures

- Measurements
- Performance in noise
- Overall sound quality



face-to-face

vs.



digital



Subjective measures

- Satisfaction with Appointment
- Service

Despite the objective measures being identical, the patients were slightly more satisfied with the face-to-face appointments.

► Patients still need to get used to digital services.

Hearing care professionals believe that eAudiology can contribute to better accessibility to audiological care. Nevertheless, the willingness to conduct eAudiology appointments depends on the task and the client group.

Audiologists very much see local, personal care as a more sensible option for:

- Screening or diagnosis,
- appointments with new customers or initial hearing instrument fitting and
- caring for children.

The following attributes were mentioned in response to the question of which customers would be a good choice ideal candidates for eAudiology:

- “technophile”
- geographically distant
- restricted mobility
- frequent travelers and
- those with very busy schedules

Comparison of results for hearing instrument adjustment: on-site versus digital

A further study compared the results of on-site fine tuning adjustment with fine tuning adjustment performed via an internet connection. The average digital appointment took 22.4 minutes, a bit longer than personal appointments on site, which took 15.7 minutes on average. This was in reference to the actual time used for programming the hearing devices and may be explained by the fact that both parties experience a learning curve when starting with the digital appointment initially. A follow-up study has shown that the time difference significantly reduces once the audiologist has performed 50 fine tuning adjustments via an internet connection, as the new processes and workflow become more familiar. It was noted as a positive aspect that the appointment for internet-based support does not require travel to and from the hearing care practice, nor any waiting time for the customer. Audiologists choosing this option save their customers considerable time, offering their customers flexibility and convenience.

Performance of clinical measurements did not show a significant difference between the two versions. A language comprehension test in a noisy environment showed no relevant differences between fine tuning adjustment made on-site versus that made during a digital appointment. Tests for sound quality - including loudness and clarity of the sound - also did not show a relevant difference between fine tuning adjustment on site versus via an internet connection. In summary: The objective measurement values showed almost no differences.

However, what was different was the subjective perception of the those tested. Satisfaction ratings of the appointment and the service via an internet connection was slightly lower than for the on-site

¹Brown, T. H. et al., 2007. Determinants of successful telemedicine implementations: a literature study. *Journal of telemedicine and telecare*, 13(6): 303-309.
²Wang, S. et al., 2018. *Telemedicine and eHealth*, 24(1): 1-10.
³Singh, G. et al., 2014. A survey of the attitudes of practitioners toward teleaudiology. *Ear and Hearing*, 35(1): 850-860.
⁴Singh, G. et al., (submitted)
⁵Singh, G. et al. (in review)

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Opportunities and risks of eAudiology

eAudiology offers both opportunities and risks for audiologists. However, dealing with some legal and practical issues at an early stage will best equip you to introduce eAudiology into your practice, thus clearly profiting from its advantages. Ten points to take into account:

1. Customer selection – eAudiology will not be the preferred choice for all of your clients. Selection criteria include an affinity for technology and access to the necessary technological equipment, as well as existing hearing and vision requirements. Personality also plays an important role; some clients are keen on the idea of partial remote assistance, while for others, personal contact at every appointment is an important factor.

2. Application environment – In most cases you will probably offer clients eAudiology in their homes. It is equally possible, though, that this service may be aimed at clients in hospitals or in a care home. Depending on the environment, the general conditions – technological equipment and maintenance requirements, specific rules and guidelines – may differ.

3. Fields of application – Which services would you like to offer using eAudiology? Regardless of whether you offer consulting, remote fine tuning of hearing instruments or hearing rehabilitation, you should ensure that you have the corresponding knowledge, the necessary technology and a selection of suitable and interested clients.

4. Interest groups – Not only is it important to allocate time and resources for eAudiology training and planning sessions, but time and effort may also be required to gain the agreement of clients and their family members, as well as the support of contact partners such as doctors, the authorities and funding agents.

5. Liability – Get to know more about the legal requirements regarding eAudiology. Check the conditions for liability and your mandatory liability insurance status in this field with the relevant authorities or insurance companies.

6. Mandatory documentation – Ensure that you are familiar with all regulations regarding mandatory documentation, including the declaration of consent for services rendered via eAudiology.

7. Cost reimbursement – Find out more about cost reimbursement of eAudiology by the relevant funding agents (if applicable). This will allow you to collect and document the required information, thus ensuring that you have the documentation required for invoicing.

8. Technology and skills – Do you and your team have the required knowledge and are your technical skills adequate for rendering eAudiology services? This could be a good time to train yourself in using the devices which you intend to be working with. It is also a good idea to ensure that you will have technical support in the event of an emergency.

9. Connection and signal quality – A stable, strong audio and/or video signal is an important requirement for the successful use of eAudiology. You should therefore test the internet connection speed and bandwidth requirements in advance; a consultation during which the sound or picture is interrupted and the client only hears half of what you have to say is neither effective nor good for business.

10. Data protection and security – Find out more about current regulations governing the safe handling of customer information and the most recent legislation concerning data protection and safety. Services such as electronic data transfers may require an adaptation of your usual procedures (e.g. the introduction of data encryption, the use of special user names and passwords, etc.).

appointment. It is thought that the reason for this might be that many customers require support for arranging and starting the internet appointment for their first time as well as time to gain familiarity with this new type of support.

Evaluation and outlook

There is strong evidence that eAudiology is seen as positive by audiologists and customers in principle. Both parties are seemingly open to it, although some research work and practical experience may still be required. The advantages - in particular, easier and faster access as well as the convenience of a location-independent supply - are clearly perceived.

The first tests with practical applications also show that the objectively measurable results of the fine tuning adjustments via internet vs face to face do not differ. There are no reasons for both audiologists and customers alike to feel uncomfortable with digital technologies and services, after a bit of practice and increasing familiarization.

Obviously, digital support will never replace face to face care, but is rather intended to supplement it. Digital support can be the right choice for specific customer groups, tasks or services and may help to save time, overcome distances and mobility restrictions and improve efficiency. |