

# m-Health Self-Management Program for the Smartphone Generation

By Melanie Ferguson, PhD

How confident are you that all the important information and advice you offer new hearing aid clients is understood, absorbed, and acted upon once they leave the comfort of your clinic?

Research shows that hearing aid users, even long-term users, have difficulties manipulating their devices (*Am J Audiol.* 2009;18[1]:69). But to successfully benefit from hearing aids, new users must have a good understanding of the many practical and psychosocial issues around hearing loss, communication, and hearing aids.



Figure. C2Hear information for first-time hearing aid users.

## A MULTIMEDIA SOLUTION



Working closely with hearing aid users, we developed C2Hear—a series of free, interactive multimedia video tutorials or reusable learning objects (RLOs), which are short bits of multimedia that enhance learning through the visual demonstration of concepts and processes (Figure). Each RLO includes learning objectives, a range of visual imagery and sounds (illustrations, video clips, animations, photos, testimonials), and an interactive multiple choice quiz with feedback (*Am J Audiol.* 2015;24:329). C2Hear was created for a DVD platform, as Internet use by typical first-time hearing aid users was low in 2012 (*J Med Internet Res.* 2014;16[4]:e113). About half of the users watched RLOs using a DVD for TV, 15 percent used DVDs for PC, and 33 percent opted to use the online version.

## EFFECTIVENESS TRIAL

A randomized, controlled trial of 203 first-time hearing aid users showed a number of benefits (*Ear Hear.* 2016;37[2]:123). Results revealed improved knowledge of practical and psychosocial issues, improved hearing aid handling skills, and significantly greater hearing aid use in those who did not wear their hearing aids all the time. Feedback on the RLOs was extremely positive. C2Hear was rated as highly useful (9/10) and preferred to written information. It helped users feel more confident using their hearing aids and provided reminders and reassurance. Take-up



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of and adherence to C2Hear was high (78% and 94%, respectively), and half referred back to C2Hear two or more times, suggesting that the RLOs were used to self-manage their hearing loss. But does this enriched knowledge improve outcomes? More recent analysis has shown that better knowledge mediates the relationship between practical hearing aid handling skills and hearing aid satisfaction (Maidment & Ferguson 2016; *IHCON*).

## ONLINE TOOLS FOR CLINICAL PRACTICE

To fill the gap in the educational support for hearing aid users and to maximize accessibility, C2Hear Online was launched in November 2015 as a free web and mobile tool via YouTube. To date, it has over 18,000 global views (28% from North America). Given the rapid increase of smartphone use, we are now taking a mobilehealth approach to current RLO developments using a web-based app to communicate with partners and the general public, enabling greater engagement.

## FUTURE DEVELOPMENTS

We have recently been funded by a National Institutes of Health Research grant to take this technology to the next logical step, which will move away from the current “one-size-fits-all” approach to a more individualized approach for users. This RLO development will be theoretically underpinned by the recent COM-B health behavior model (*Int J Audiol.* 2016;55[S3]:S99). We also plan to include goal setting and subsequent monitoring to enhance self-management of hearing loss as well as translate C2Hear into other languages, including U.S. English and Chinese. Finally, following some research carried in residential care homes, we plan to redesign C2Hear to supplement the training of non-audiological health care professionals and caregivers. 