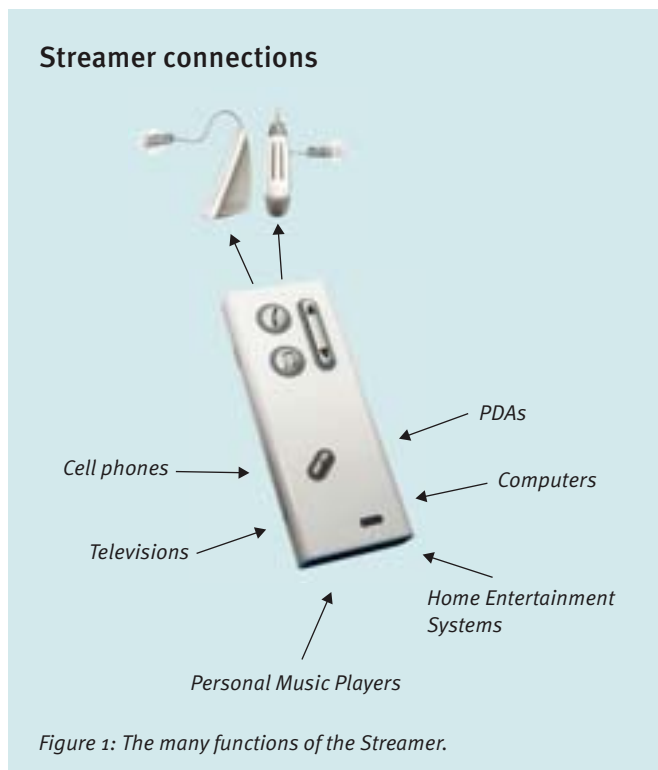


Removing Barriers to Hearing Aid Satisfaction

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The hearing aid industry has developed hearing aids that function much better. Yet, the penetration of hearing aids and satisfaction with hearing aid use is still quite low. The problem appears to be that the needs of the hearing aid user are not being met in many of the environments they are in. Kochkin¹ indicates that when hearing aid users are satisfied with their ability to function in many listening environments their overall satisfaction is high and when they are only satisfied in a few situations their satisfaction is low. Research indicates that one of the main hurdles to hearing aid satisfaction is the hassle and inconvenience experienced when using modern devices – primarily cell phones – together with hearing aids.

The Oticon Streamer is connecting people with hearing loss to the 21st century of communication. It wirelessly connects cell phones and other Bluetooth enabled technology to hearing aids. This allows hearing aid users direct listening to audio devices such as MP3 players, iPods and the television (see figure 1).



What are the chief barriers to satisfactory communication with hearing aids?

MarkeTrak VII² indicates that hearing aid users are not satisfied with their ability to hear on the phone, particularly on their cell phones. Cell phone listening had the poorest overall satisfaction rating of all the listening situations rated in MarkeTrak VII². Low satisfaction ratings for cell phone use are not surprising considering there have not been good cell phone listening options available for hearing aid users.

When hearing aid users complain that they can not hear on the cell phone we have advised them to try positioning the phone differently. If this doesn't work the patient is often told to try taking the hearing aid out and turning the cell phone volume up. These suggestions are not working well for hearing aid users. This lack of satisfaction causes frustration and may lead to hearing aid returns. MarkeTrak VII³ indicates that 19% of hearing aid returns were motivated at least in part by inadequate phone utility.



Hearing on the phone is important for people with hearing loss. Hearing aid dispensers should not be avoiding discussion of cell phone use. It is appropriate to routinely ask people coming in for hearing testing about

cell phone use and satisfaction. It is incorrect to assume that because someone has a hearing loss they are not cell phone users or don't want to be. For example, nearly 90% of Americans use cell phones and around the world there are now more cell phones than landline phones⁴. The trend toward more cell phone use does not exclude the elderly. Older people are increasingly adopting cell phones. They want to hear the person on the other end clearly and without feedback.

When a discussion of both current and desired cell phone use is initiated before the hearing aid fitting it provides the opportunity for the dispenser and patient to proactively find solutions to potential telephone listening problems before a problem with phone use is 'discovered' by the patient. Also, a proactive stance may motivate patients who are not sure they want to pursue a hearing aid to give them a try. MarkeTrak VII³ shows that nearly one fifth of hearing impaired nonusers would be more likely to pursue hearing aids if headset functionality was available.

The Oticon Streamer: Connecting hearing aids to wireless technology

The Streamer uses wireless technology to transform hearing aids into a pair of tiny cordless headsets. Engineers and clinical audiologists at Oticon developed the Oticon Streamer with the hearing aid wearers' needs in mind. The simplicity of the Streamer user interface allows the technology to be accessible to patients who might otherwise be intimidated by a new high tech device. The Streamer has few buttons and the use of each button

is intuitive. The Streamer uses Bluetooth technology to wirelessly connect hearing aids to Bluetooth enabled cell phones and other Bluetooth compatible audio devices. This allows hearing aid users to have hands free cell phone conversations with adequate amplification and frequency response. The frequency response and gain are set by the dispenser. The volume and programs in the hearing aids can be adjusted by the user via the Streamer, which works as a remote control. The external audio connection options with the Streamer allow direct audio input from MP3 players, iPods and many other audio devices. Audio input from the television to the hearing aids is also possible with the use of a device that links the television to the Streamer. Patients can control the listening volume with the Streamer. They also have the option to turn the hearing aid microphones on or off when watching television and talking on the phone

Streamer: Product Trial

The Streamer was very well received in a product trial where it was tested by 27 people with hearing loss. The trial participants were fit with the Epoq hearing aids and the Streamer. Participants filled out pre-test surveys concerning their use of cell phones before being fitted with the Streamer. Participants had several ways of dealing with cell phone conversations. These included: a) removing the hearing aids b) specific phone placement c) nothing required (no feedback with normal phone placement) and d) use of a hands free device. After completing the initial surveys participants were shown how to use the Streamer. This took approximately 30 minutes, including programming and participants practising Streamer use. Participants were then instructed to use the Streamer as much as possible for cell phone calls. If participants expressed interest in the music listening or television listening options of the Streamer, these were also demonstrated.

Overall Streamer satisfaction scores on a post-test survey showed that after fitting with the Streamer, participants were significantly more satisfied than with the Streamer than with their own cell phone listening solutions on all criteria tested. Eighty two percent of participants reported preferring the Streamer over their own phone listening solution. Those who did not prefer the Streamer were the ones who were already satisfied with their current phone use in the pre-test condition. Overall, the satisfaction ratings were an average of 2.4 points (on a scale of 1-10) better for the Streamer. There was significant improvement on each item rated (see figure 2). Several participants reported that the Streamer was exactly what they needed in order to hear on their cell phones.

Reasons for Patient Preference of the Streamer

Ease of handling was the number one reason for preference of the Streamer over own phone solutions (see figure 3). Participants liked that all they had to do was push a button on the Streamer to accept a call and that the whole thing was hands free. Better speech understanding, sound in both ears and no feedback were also frequently mentioned reasons for preferring the Streamer over other telephone solutions. Feedback and interference are not a problem with use of the Streamer, because the phone is not placed to the ear. Participants reported that with the Streamer they no longer needed to avoid cell phone conversations in noisy environments or outdoors. With their own phone solutions over 50% of participants reported avoiding cell phone conversations in some situations due to difficulty hearing.

Several participants with severe hearing loss reported being able to hear and understand on the cell phone for the first time. This is very important because increasing the number of situations people can comfortably communicate in is directly related to patient satisfaction with hearing aids¹.

Reasons for Streamer Preference Over Own Phone Solution

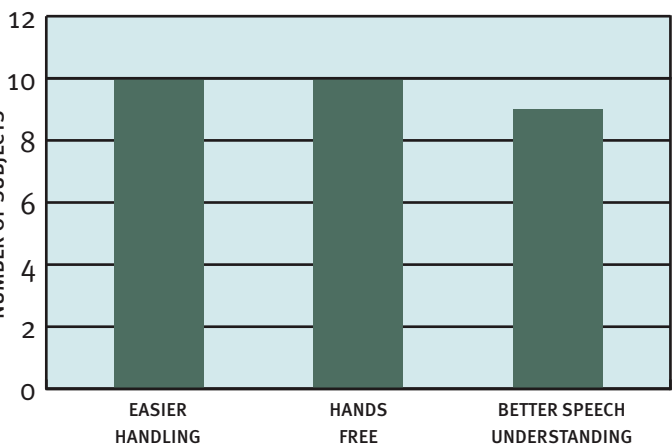


Figure 3. The 3 most common explanations for Streamer preference over own phone solution. (N=27)

Cell Phone Rating

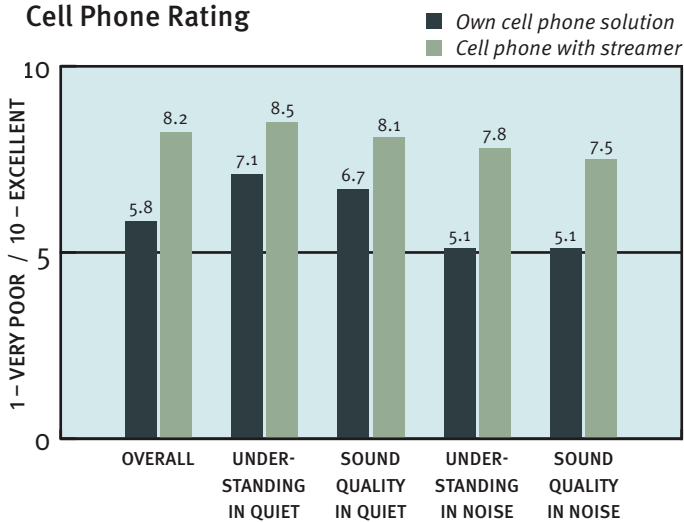


Figure 2. Oticon Streamer compared to own cell phone listening solution. All differences are significant. (N=27) 1 – indicates very poor satisfaction and 10 – indicates excellent satisfaction.

Product trial participants also reported liking the modern design (see figure 4). Participants indicated that wearing the neck loop was a practical solution for keeping the Streamer in place and that wearing the Streamer was not a bother. Half of the participants used the Streamer as a remote. They reported using the Streamer was quicker and easier than using the buttons on the hearing aid. Twelve people in the Streamer trial tried the infotainment option (Bluetooth audio streaming, and wired audio streaming from MP3, iPod or other audio devices.) Participants reported enjoying the direct audio streaming and feeling connected to technology like normal hearing people are. One patient commented that using the television connection was the difference between understanding everything and not understanding anything.

Participants response to Streamer



Figure 4. Patient's asked how much they agree or disagree with statements. (N=27) 1 – fully disagree, 5 – fully agree.

Implications

Hearing aid dispensers no longer need to avoid talking about cell phone use with their patients. Nor do they need to dread when hearing aid users pull out their cell phones, because there is a good option available that allow hearing aid users to hear on the phone with their hearing aids in place. The Streamer should be considered an option for hearing aid users who are having difficulty using their cell phone with their hearing aids, as well as hearing aid users who wants a hands free option. In many places it is illegal to have a phone in your hand when driving. The easy operation of the Streamer makes this a good choice for people who want something simple to operate. The Streamer is also a great option for people who like music and would like to hear music directly through their hearing aids.

The Streamer connects hearing impaired people to many different audio devices that were previously inaccessible. It is connecting hearing impaired people to the 21st century and letting them join the cellular and technological revolution. Now hearing aids are not just hearing aids they are mini headsets that allow a bidirectional informational flow. This is the beginning of a new era in hearing technology, an era where hearing aids are truly communication devices.

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