

Keeping Up with Wireless Hearing Assistive Technology

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Editorial

Audiologists recurrently collect case history information about their patient's physical wellbeing, specifically as it relates to hearing. When fitting hearing aids or investigating the value of other assistive technology, considerations should include the patient's listening environments and his or her communication partners. Knowledge and understanding of the acoustics of the patient's listening environments, concomitant to the characteristics of speech can be beneficial to improved patient outcomes. Are there concerns with the distance between the speaker and your patient? Do potential reverberation and noise issues exist? With whom does your patient communicate? Are there visual issues, such as line-of-sight barriers or the speaker's face being in a shadow? Additional considerations may include finding out the patient's knowledge of and comfort level with newer, wireless technologies. Does your patient only use a landline phone? Do they use a Bluetooth-enabled cellphone/smart device or other wireless devices, and/or computer programs such as Skype or Facetime? Knowing these specifics provides the foundation for either tailoring the assistive or access devices to the patient's comfort level or introducing newer technologies to provide better and/or easier access to communication.

Audiologists should become familiar with newer wireless technologies, as they are a welcomed addition to those well-established technologies of frequency modulation, induction hearing loop, and infrared systems. A few of these newer technologies include bluetooth, digital enhanced cordless telecommunications (DECT), near field magnetic induction (NFMI), and smart device applications.

Of course, Bluetooth has permeated almost every part of our culture, as much of its popularity is due to its availability, low power consumption, and low cost. Bluetooth can transmit about 30 feet. Bluetooth allows hearing aids to receive audio from smart devices, computers, and entertainment equipment, like televisions, via a streaming device. A new version of Bluetooth, known as Bluetooth Low Energy, uses less energy than the original and has also found its way into hearing aids, eliminating the need for a streaming device.

Another wireless technology gaining popularity is the microwave technology Digital Enhanced Cordless Telecommunications (DECT). Utilizing the 1.9 GHz band, DECT provides one of the technologies

that let hearing aid wearers listen bilaterally over the telephone, instead of listening with only one hearing aid. This application is presently focused on landline telephones. DECT uses a base station, which provides a signal range is almost 2000 feet. Similar to Bluetooth technology, DECT now has a low energy version known as DECT ultra low energy (ULE).

Lastly, near field magnetic induction (NFMI) is a wireless technology similar to the familiar induction loop-telecoil. Unlike Bluetooth and DECT, NFMI signal strength rapidly decreases as the distance between the transmitter and receiver increases. So, the effective range for NFMI is about 6 feet. This is considerably shorter than the range of Bluetooth and much shorter than the range of DECT; but, the range of NFMI allows for binaurally fit hearing aids to communicate with one another. NFMI delivers the foundation for "super" directional microphone arrays.

Additionally, smart device applications or apps facilitate improved communication. Apps like Skype or Facetime allow for those with hearing loss to utilize facial speech cues. Amplifier apps with earbuds or headphones may provide for a "just-in-time" solution for communicating with someone without hearing aids, as may be the case in emergency situations or in the case the hearing aid wearer has lost or damaged the aids. There are now speech-to-text apps that convert the visual speech cues to text that may be used in a manner similar to an interpreter.

Audiologists should be well trained on and knowledgeable of the technology and application of hearing aids. Many audiologists are proficient at addressing their patient's needs and connecting that patient to an appropriate set of hearing aids. Following the selection of appropriate hearing aids, the audiologist should be knowledgeable about any accessories available to the patient which work well with those hearing aids. These accessories are usually produced by the same manufacturer as the hearing aids. The next step should be to think beyond what the hearing aids can do with or without the accessories. That next step, based on a successful needs assessment, may include use or additional use of wireless technologies, such as Bluetooth, DECT, or smart device apps. Assistive technology is changing at a rapid pace and audiologists acting as advocates for their patients should feel compelled to keep pace with these changes.