Hearing Aid Compatibility With Digital Wireless Cell Phones:

PHOTO: Oticon

An Update for Audiologists, Physicians, and Hearing Instrument Specialists

What you Need to Know about Cell Phones and Hearing Aids

Hearing aid wearers may experience audible interference when using a digital wireless telephone due to radio frequency (RF) emissions from the phone, regardless of whether acoustic (microphone) or inductive (telecoil) coupling is used. RF interference does not occur for all combinations of digital wireless telephones and hearing aids. However, when interference does occur, the buzzing sound can make understanding speech difficult, communication over cell phones annoying and—in the most severe cases—render the phone completely unusable to the hearing aid wearer.

When a wireless phone is in communication with its network, an electromagnetic field is present around the phone's antenna. During communication over a digital wireless phone this field pulses. It is this pulsing energy that may be picked up by the hearing aid's microphone or telecoil circuitry and heard as a buzzing sound (i.e., interference) through the wearer's hearing aid. Telecoil users may also experience electromagnetic (EM) interference which originates from the cell phone's electronic elements such as its backlighting, display, keypad, battery and circuit board.

The FCC Ruling

In 2003 the FCC partially lifted the exemption to hearing aid compatibility (HAC) for digital wireless cell phones and developed a phase-in period for compliance by the wireless industry. The ruling requires that cell phones be rated according to their hearing aid compatibility in terms of RF emissions and telecoil coupling. These ratings are determined

by the ANSI C63.19 Test and Measurement Standard. Labeling on the outside packaging of cell phones will indicate "how compatible" a cell phone is with hearing aids. The new rating will only apply to how compatible a cell phone is to a hearing aid with regard to its being able to be coupled acoustically or inductively. The FCC ruling does not dictate any requirements for cell phone volume controls.

Acoustic Coupling to a Hearing Aid's Microphone

As of September 2005, the FCC rules require each digital wireless phone manufacturer to provide wireless carriers with at least two commercially available cell phones with reduced RF emissions. In addition, each nationwide wireless carrier must offer its customers a minimum of four cell phone models with reduced RF emissions for each transmission technology. There are four types of transmission technologies being used by wireless carriers in the United States: CDMA, iDEN, GSM, and TDMA.

Cell phones will be tested for reduced RF emissions according to the ANSI C63.19 standard. Those that are considered passing (those with a rating of "good" or "excellent") for use with hearing aids set in microphone mode will be assigned a HAC rating of M3 or M4. The "M" stands for microphone so that the consumer will know the phone has been tested and rated for acoustic coupling purposes.

The higher the "M" rating, the less likely the hearing aid user will experience interference when the hearing aid is set in the microphone mode while using the cell phone.

PHOTO: Oticon

Inductive Coupling to a Hearing Aid's Microphone

By September 2006, the FCC will also require that each digital wireless phone manufacturer provide wireless carriers, with at least two commercially available cell phone models that provide telecoil-coupling capability for each transmission technology.

As with acoustic coupling, cell phones will be tested for their telecoil coupling capability according to the ANSI C63.19 standard. Those that are considered passing (those with a rating of "good" or "excellent") for use with hearing aids set in telecoil mode will be assigned a HAC rating of T3 or T4. The "T" stands for telecoil so that consumer will know the phone has been tested and rated for inductive coupling purposes.

The higher the "T" rating, the less likely the hearing aid user will experience interference when the hearing aid is set in the telecoil mode while using the cell phone.

Purchasing a Cell Phone for use with Hearing Aids

Only those phones that meet a minimum rating of M3 or M4 will be labeled for HAC compliance for acoustic coupling.

Only those phones that meet a minimum rating of T3 or T4 will be labeled for inductive coupling.

Labels showing HAC compliant ratings will appear on the product's packaging, on the display card by the phone in service provider operated retail stores and in the product's manual or packaging insert.

Because these ratings do not guarantee performance, it is strongly recommended that individuals who use hearing aids take the opportunity to "try before you buy" any wireless device and to closely examine the return policy for the device and the service provider's policy on early termination of contracts before signing up for service.

After September 2005, stores owned and operated by larger wireless carriers should allow customers who use hearing aids to try HAC labeled handsets in the retail store. It is not always obvious which stores are owned and operated by service providers, so it is always a good idea to ask before purchase.

Important Points
My Clients Need to Know

- If the hearing aid will be coupled acoustically, look for cell phones rated M3 or M4 (as of September 2005).
- If the hearing aid will be coupled inductively (telecoil), look for cell phone rated T3 or T4 (as of September 2006).
- These M or T ratings should be used as a general guide to narrow the search for a cell phone to try out before making a purchase.
- Be sure the cell phone has an easy-to-use volume control.
- The ability to control backlighting of the display and keypad may be an important consideration for telecoil users. Interference from backlighting is not considered when determining a cell phone's HAC ratings. The ability to control some of these variables is available on some handset models.
- Hands-free Accessories: The M and T ratings will not preclude the need for hands-free accessories in some situations, such as use in the car or in noisy areas. The use of headsets or other accessories may still be necessary for cell phone use in some situations.
- Try before you buy!
- As of September, 2005, most stores owned and operated by wireless carriers will allow hearing aid users to try out cell phones in stores before purchasing them.
- Customers who want to try a cell phone outside of the store should ask how long they have to cancel the service and return a phone without penalty if the cell phone doesn't work with his/her particular hearing aid.
- It is the customer's responsibility to make sure any cell phone that doesn't work with his/her particular hearing aid is returned before any early termination fees go into effect.

Hearing Aid Requirements

In the United States, hearing aids are also rated for immunity to RF interference. The rating system is also defined by the ANSI C63.19 standard. The US ANSI C63.19 system gives a higher rating for hearing aids with better immunity. So, a hearing aid with an ANSI C63.19 rating of M4 should be more immune to interference than a hearing aid with a rating of M3. The rating of wireless devices uses the same principle.

The hearing aid ratings and the cell phone ratings can be combined to help identify combinations that will be more likely to provide a positive experience for the individual. A hearing aid rated M2 and a wireless device rated M3 combine to a rating of 5 and would likely provide "normal" use. A ratings combination of 6 would likely provide "excellent performance". Every individual's hearing loss is unique; therefore these ratings do not guarantee performance.

Most new digital hearing aids will have an immunity rating of at least M2. However, Audiologists, Physicians, and Hearing Instrument Specialists should be aware that not all "new" hearing aids will use RF immune components. Some older hearing aids may not use components that are immune to RF. Many older components that provide no immunity to RF are still on the market.

If the Audiologist, Physician, or Hearing Instrument Specialist has a question as to the immunity rating of a hearing aid or whether a hearing aid is using RF immune components, it is recommended s/he contact the individual hearing aid manufacturers.

Where Can I Find More Information?

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