

Wireless technology offers providers new communication options for patients

By Dave Wilcox

A trio of unrelated trends leads inevitably to the doorsteps of the nation's hearing healthcare professionals: an aging baby boomer population, the Internet's increasing role in daily life, and the surge of wireless technology.

Even as hearing aid technology rapidly evolves, people with hearing loss must still adjust to limits on their ability to communicate. That's especially true for those needing or desiring mobile communication.

As hearing professionals providing answers to our patients (and as business people), finding ways to incorporate the latest wireless technologies in their lives promises to boost our bottom lines and build patient loyalty.

Simply put, boomers know the ABCs of PDAs (personal digital assistants). So, hearing healthcare providers who understand the latest wireless devices are positioned to capture more of this emerging market. Those who seize this opportunity will become a resource for patients desiring a total communications solution.

That wireless devices are becoming a dominant form of communication can no longer be debated. Wireless use is expected to grow by about 65% annually during the next 3 years, with more than 1.3 billion users worldwide projected by 2004.

As the Internet and wireless technologies converge, a new world of services and devices is becoming available for both the general population and for people with hearing loss. Mobile communicators are tapping into Internet-ready cell phones and PDAs, flexible tools that allow them to remain connected around the clock.

MATCHING DEVICES WITH PATIENTS

There are two basic types of wireless communication: voice-based and text-based. Voiced-based communications include analog and digital phones. Text-based communicators are such devices as PDAs and interactive pagers. Patients can take advantage of either one, depending on their individual needs and abilities. Text-based communication, however, minimizes the limitations imposed on persons with hearing loss.

Gauging patient needs is a crucial task for the hearing professional. For example, a few relevant questions might be:

Is the patient dexterous enough to use a device? How comfortable and/or familiar with technology is she or he? Is the person retired, or about to retire? What is the nature of the person's career? Does the disability limit communication?

Creating patient "mobility profiles" with answers to these kinds of questions will enable practitioners to tailor communication solutions that fit a patient's specific lifestyle.

Patients who wear hearing instruments, for example,

sometimes encounter problems using cellular phones. Digital cell phones pulsate radio signals that can interfere with the hearing instrument itself or its telecoil, causing a buzz or a squeal in the hearing aid. Coupled with typical background noise, voice-based communications often leave users frustrated.

While some assistive technologies, such as neck loops and magnetic couplers, address some of these issues, people who need to use devices in a mobile environment or in an environment that is inherently noisy, may remain hampered.

One of the newer options on the wireless market is text messaging. Products like Palm's PDA and Wynd Communication's WyndTell Service, operating on a two-way pager, often help people with hearing loss because the text messages deliver clear, ungarbled communication regardless of environment.

Additionally; while the technology is "mainstream" in look, feel, and performance, some devices have begun to incorporate features specifically designed for people with hearing loss. For example, WyndTell's Go.Web feature allows users to surf the Internet, and subscribers to the WyndTell Service can send and retrieve e-mail as well as use voice-to-text and text-to-voice features.

AN OPPORTUNITY FOR PROVIDERS

As hearing healthcare providers, you have an opportunity to leverage this new technology and the explosion in the wireless communication market to expand the services you offer your patients. At a minimum, the technology extends communication options, bridging the gap between your commitment to help patients communicate and their need for workable mobile communication.

Perhaps more importantly; the technology also strengthens connections between patients and the people who are important to them, thereby making a significant impact on quality of life.

As this journal noted in October 2001, "fundamentally, dispensers...are not in the business of selling hearing instruments; they are in the business of restoring human communication and social involvement."

New technology can help make that happen.

Dave Wilcox, a media relations consultant in San Luis Obispo, CA, frequently writes about the wireless industry and hearing technology. To send correspondence or for further information on mobile communication solutions for people with hearing loss, contact Josh Pruett at iosh@bar-nettcox.com.

REFERENCE

1. Whelan C. Key trends are predicted for the next decade in the U.S. hearing industry. *1-icarj*2001;54(10):32-35.



The Benefit of using an FM Radio Aid over distance and in noise, with the Nucleus ESPrit 3G Speech Processor

Wood EJ¹, Flynn S¹, Eyles J¹ and Greenharn P² (aj(Ai i svr. Soovt ctc
University of Southampton¹ Cochlear Europe²



nine whether the Nucleus ESPrit 3G speech processor gave beneficial results when
:h four FM radio aids.

d
onnick Automated Toy Test (ATT) were used to evaluate speech discrimination In noise
L The ATT uses an adaptive technique . The pink noise level is fixed at 55dB(A) and
ch level adapte.The maximum presentation level for the speech is 70 d B(A). A result is
when the subject scores 71% correct (Fig1)
eta the effects of distance subjects were also tested In quiet at 3m and >10m (Fig.2).
sting the speech processor sensitivity was left on the user setting.

Tests and Radio Aids

jects were tested, data is presented for 3 adults and 4 children. Four UK radio aids
ted: Connevens CRM220, Phonic Ear Solaris, Connevene Genie and Phonak MicroLink
roLink is connected to the Nucleus ESPrit 3G via a special adapter under development
leer

children and 1 adult had used an FM radio aid for at least 6 months

Experimental Design

experiment acted as their own control.

In noise
tests were used in a balanced order
quiet without radio aid
quiet with FM radio aid
noise without FM radio aid
noise with FM radio aid

B. Benefit over Distance
2 conditions were used
ATT In quiet at 3 metres
ATT In noise at >10 metres
Subjects also rated the quality of sound

Figure 1

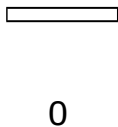
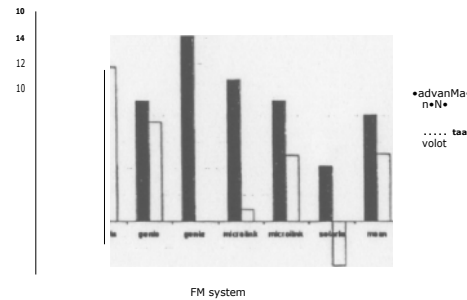


Figure 2



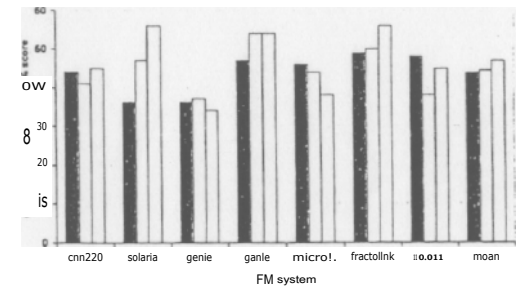
Results in noise

Benefit of using FM radio aid in quiet and in noise



Results over distance

Speech discrimination using FM radio aids at different distances



Results

Data is presented from 7 of the 11 subjects who reported in the questionnaire that the FM signal was either clear or there was slight hissing or buzzing at 3 and >10 metres. The remaining 4 subjects who used the MicroLink reported that the FM signal was not clear at these distances. The MicroLink was used, as recommended, with the HandyMic transmitter, the antenna attached, the batteries fully charged and the gain set to the 2 dot position. Possible causes have been identified, equipment is being checked and these issues are being addressed for a future study.

The results of significance testing have not been reported as the power calculation shows the power to be too low (<50%) due to the small numbers.

Results in Noise

The mean score at which subjects identified 71% toys correctly was:-

- in quiet without FM aid = 48.8 sd=3.2
- In quiet with FM aid = 43.7 dB sd =5.6
- In noise without FM aid = 60.2 dB sd=2.3
- In noise with FM aid = 52.2 dB sd=4.4

Results over distance

The mean score at which subjects identified 71% toys correctly was:-

- 1m in quiet without FM aid = 49.0 dB sd 3.2
- 1m in quiet with FM aid = 43.7 dB sd 5.5
- 3m in quiet with FM aid = 44.4 dB sd 6.3
- 10m In quiet with FM aid = 46.9 dB sd 8.8

Discussion

-The data collected so far shows that when using the FM in quiet, subjects are able to score 71% at speech levels which are 5dB better than the levels required without the FM.

-There is no effect on performance of increasing the distance to 3 meters with the FM. At 10m scores are slightly worse than at 1 and 3 meters.

-When noise was introduced without a radio aid the mean scores were 11dB worse than in quiet. When the FM system was used the effect of the noise was reduced by 8dB.

*Conclusions cannot be generalised to the population as a whole until more data is collected

* number of areas of improvement were identified which will be addressed in further studies. These relate to programming parameters to optimise the signal from the FM to the Nucleus ESPrit 3G, verifying the level of the input signal to the FM transmitter and gain settings used for FM receivers