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How emerging wireless techs are transforming healthcare

Advanced wireless technologies will allow large data to be transferred directly from patient to service provider
By Brad Reed , Network World , 09/08/2009

When carriers announce plans to build out faster [4G wireless networks](#) or to ramp up the speeds of their current [3G network](#), talk typically turns to how it will benefit consumer applications such as mobile gaming or high-definition video streaming.

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But perhaps an even more important aspect of increased mobile data speeds will be their impact on the [mobile "telehealth"](#) devices that doctors are increasingly using to [keep track](#) of their patients' conditions. A study released this summer by ABI Research projects that there will be approximately 15 million wireless telehealth sensors and devices in use by 2012, or more than double the number of wireless telehealth systems in use today. ABI says that these systems will be used primarily to "monitor and track the status of patients with chronic conditions" so that their providers can detect early warning signs before they become dangerous.

"We're going to see a lot more use of embedded cellular technology in telehealth applications," says ABI analyst Sam Lucero. "What we're looking at is embedding cellular connections into remote card devices to monitor chronic diseases as well as a separate category of telehealth called ambient assisted living where you have sensors in your home or facility to monitor a person's activity."

One organization that has been a strong advocate of adopting remote telehealth systems has been the Center for Connected Health, a Boston-based division of the PartnersHealthcare organization. The center has approximately 2,000 patients in Massachusetts signed up for its programs that include initiatives that use technology to help patients manage their hypertension, diabetes and weight. Essentially, the center's programs work like this: let's say that you have chronic hypertension and that you need to constantly monitor your blood pressure. Under the center's SmartBeat program, you would take your blood pressure twice a week on a digital

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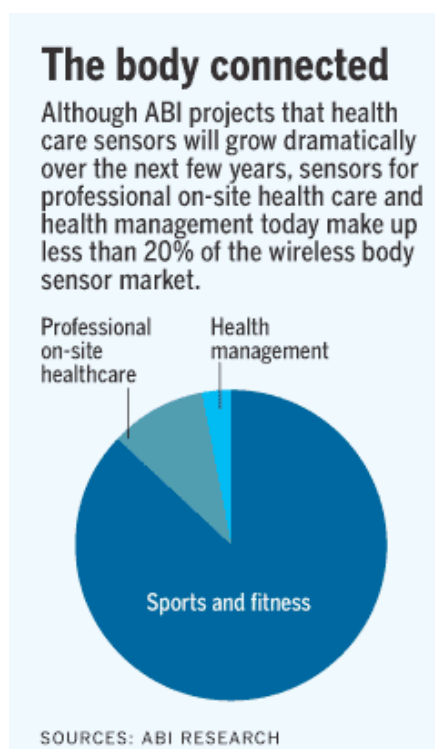
monitor that connects directly to the Web.

Once you've taken your blood pressure, you would then send it over the Internet to the center's main database. From there, the center collects the data and compares it with data taken from the past few days. The center makes a chart of the data that tracks your progress over the last few days, weeks or months. It then sends you periodic notices telling you whether your blood pressure is improving or deteriorating.

Doug McClure, the corporate manager of technology services for Partners Telemedicine, says that while the system is helping to give healthcare providers a more accurate and up-to-date picture of how their patients are doing, it is inhibited somewhat because most digital medical devices are limited to wireline access that require patients to hook up the device to their computer before sending it out to the center's database. McClure says he expects this system to be improved when more devices either hook onto cellular technologies such as GSM or IP-based technologies such as WiMAX.

"Where we're going with these devices, whether it's with GSM or with WiMAX, you're going to see the data completely disappear into the device," he explains. "It will make the whole process for how we're able to gather information for people easier. We can avoid making it a chore for the user by making devices smarter and giving them the ability to take advantage of the ubiquitous networks out there."

As one example of what wireless telehealth sensors could soon be able to do, McClure points to devices such as the Vitality GlowCap, a medicine bottle whose cap sends a signal out through a Wi-Fi connection every time it is removed to let providers know that patients are taking their medications. With true wireless broadband connectivity, McClure imagines that large and more complex forms of medical data can be sent wirelessly and automatically to the center's data server, thus removing the burden from patients of having to send the data manually.



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Wireless telehealth devices aren't only being developed by the relatively small industry players. Earlier this year,

Intel and General Electric made waves when they announced that they were spending a combined \$250 million over the next five years to research new home health technology, as well as to jointly market their current telehealth devices. Intel says it is working with GE to research and prototype devices specifically for assisted living situations. One overarching goal for the partnership, according to Intel, is to develop technology that would give users access to health care applications on their smartphones and would let them send and receive information about their personal health status through their personal mobile device.

"We are going to see more use of mobile phones to act as gateways devices," Lucero says. "Essentially you'll have sensors on the body that will connect to your own mobile phone and that will act as a gateway for the service provider."

For his part, McClure says the most exciting advances in mobile telehealth devices will come not only when health applications can be accessed from smartphones but when telehealth devices all become interoperable.

"We've gotten 200 leading companies in the field to come together to make sure these devices are as interoperable as possible," he says. "While going through a whole bunch of interoperability standards can sound dry at first but in the future they'll enable you to go into a Best Buy and you can know that the devices you purchase will talk to each other so you don't need to buy extra accessories... this will also make it easier for users to get data to us more easily. That's going to be a big breakthrough for us."

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