

Wireless World: Wirelessly monitoring ECGs

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An elderly woman has a heart attack. Paramedics arrive on the scene at her home a few minutes later and begin to revive her, and hook up an electrocardiogram transmitter to her chest, and send the signals, wirelessly, to a cardiologist at the hospital, who reads the vital signs on a handheld device. That technology advance is now saving lives, experts tell United Press International's *Wireless World*. And it's just one of the ways hospitals are today innovatively using wireless devices.

A new study, conducted by cardiologists at Duke University Medical Center and the NorthEast Medical Center, located in North Carolina, found that doctors can find and remove clots from heart-attack patients in half the time that they previously took, because of wireless transmission of ECGs en route to the hospital. Reducing the amount of time before surgery begins is vital, for the faster the doctors open an artery, the higher the odds are that the patient's heart muscle can be saved.

The study involved just one hospital, with a single ambulance service, and a small team of cardiologists, and examined ECGs from a kind of heart attack known as an ST-segment, elevation myocardial infarction. Duke is now planning another study, at 12 hospitals across the United States.

"We've seen a significant increase in hospitals seeking a common infrastructure to manage all of their wireless applications and devices," Rick Gentry, vice president of healthcare for InnerWireless, a Richardson, Texas-based provider of in-building wireless systems, told

Wireless World. "For clinicians, having complete mobility throughout the hospital is a huge benefit, and it helps improve patient safety and the overall patient experience."

According to Gentry, at least 25 leading hospitals across the country have installed medical-grade wireless networks, including the University of Chicago hospitals, the Children's Memorial Hospital of Northwestern University and the National Institutes of Health.

It's not just small technology companies that are serving the hospitals -- major technology players are as well. Cisco Systems, the networking technology developer, has an integrated wireless network that it is offering to hospitals what is called the connected health environment, a company spokesman said. The network has an array of capabilities, including:

- Nurse call, enabling real-time alerts, like patient and caregiver locations, to let nurses directly communicate with patients, or their colleagues, wirelessly;
- Patient monitoring, which provides real-time event alerts on patient status, via text and wave form transmission to wireless IP devices;
- Location-based services, using radio frequency identification technologies to find IV machines and missing wheelchairs.

Missing assets, like wheelchairs, or IV devices, can be quite costly for hospitals. "Misplaced or missing assets degrade a hospital's financial situation, especially when equipment is often over-purchased to ensure availability," said Gentry of InnerWireless.

Customers using the Cisco asset and patient tracking technology include Boston Medical Center, a 550-bed facility, and the Bronson Methodist

Hospital in Kalamazoo, Mich., the company told Wireless World.

Others use technology from InnerWireless, called Spot. "With Spot, we can tell you in which room your crash cart, for example, is located," said Gentry. "Not where it might be."

Another study, conducted at St. Agnes Hospital, Baltimore, found that wireless voice communications were also helpful in medical care. Communications badges, provided by Vocera Communications, reduced the overall mean time for completing a patient request by 51 percent. That's a potential savings of \$37,700 per year, per unit. What is more, the study also demonstrated that doctors have more control when prioritizing patient requests.

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