



Wireless Solution Links Multiple Services

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By William Atkinson



HealthAlliance Hospitals needed a wireless system that could support a wide range of technologies, from basic public cellular service to the walkie-talkies used by first and the facility's sophisticated patient monitoring and workflow management applications.

The solution was the medical-grade Wireless Utility system from InnerWireless (www.innerwireless.com), a provider of in-building wireless solutions.

HealthAlliance Hospitals, which employs more than 600 nurses and physicians, has an emergency department that sees more than 57,000 patients a year. The hospital's Leominster, Mass., campus, formed in 1902, provides patient care in northern central Massachusetts and southern New Hampshire. A second campus, in Fitchburg, Mass., consists of two small acute care areas and is mostly for outpatient services. HealthAlliance Hospitals is a member of the UMass Memorial Health Care System.

Three years ago, HealthAlliance administration began planning the long-term growth of the Leominster campus, which represents 85% of the hospital's business. The campus encompasses core inpatient units, urgent care, outpatient therapy, labs, and a regional cancer center.

Executives realized that, in addition to wireless services, they needed to introduce a powerful infrastructure that would permit a wide range of equipment to work reliably and allow caregivers to be in constant communication.

However, the concrete, lead, and other materials in the buildings often deflected the radio frequency signals used by wireless devices, resulting in areas throughout the buildings that received little or no wireless coverage.

When Richard Mohnk, VP and CIO, and Dave Duncan, VP of facilities, began researching the most reliable and low-maintenance wireless networks available, they quickly realized they had three choices:

- Deploy numerous individual wireless networks -- one for each device.
- Limit options only to a selected number of specific wireless technologies.
- Provide an infrastructure that is vendor-neutral and supports the full range of technologies.

HealthAlliance ultimately pursued the third option, which involved installing a single broadband antenna system to distribute all current and future wireless signals for the campus.

In their estimation, this option offered the lowest total cost of ownership of the three. The initial capital investment was seen by the administration as holding its long-term value, because the wireless network upgrades are easily implemented, thereby keeping replacement costs low. In addition, the solution is non-intrusive in clinical and patient areas.

HealthAlliance Hospitals agreed to deploy the InnerWireless system in November 2005. The Wireless Utility is capable of handling multiple wireless interpersonal, business, and clinical services over one easily managed infrastructure, without concern over device interference.

It enables the various wireless services used in the facility to operate reliably and at their full potential. Coverage is provided for buildings of up to 10 million square feet. It accommodates frequency ranges from 174-216 MHz (for medical telemetry and TV stations) to 5725-5875 MHz (for 802.11a WLAN, point-to-point, microwave, and medical telemetry).

The Wireless Utility is also compatible with HealthAlliance's Cisco Systems network. As such, the solution guarantees that data can be sent and received anywhere throughout the facility.

Meeting Myriad Needs

Among the hospital's current and future technologies for which Wireless Utility provides service are:

- **Public Cellular Service (PCS):** These include accommodations for AT&T, Cingular, Sprint Nextel, and Verizon networks.
- **Wireless Medical Telemetry Service (WMTS):** The hospital utilizes WMTS, including patient monitoring systems, provided by Philips (www.medical.philips.com).
- **Wireless Handheld PCs:** These are primarily BlackBerry devices used by medical staff.
- **Walkie-Talkies:** First responders, such as police, fire, and ambulance, have their own mobile technology vendors, but they can connect to the hospital's Wireless Utility infrastructure.
- **Workflow Management:** In mid-2007, HealthAlliance adopted a wireless workflow management solution called Soarian, from Siemens Medical Solutions (www.siemens.com), which is supported by the Wireless Utility. Soarian covers financial systems and clinical systems, including computerized physician order entry (CPOE), and bedside medication administration.
- **Voice-over Internet Protocol (VoIP):** HealthAlliance currently utilizes Nortel (www.nortel.com) and Cisco Systems (www.cisco.com). However, the hospital is now looking at wireless VoIP, and is considering Vocera (www.vocera.com). "Our wireless telecom person is looking at options for wireless VoIP," notes Mohnk.
- **Paging:** The hospital is in the process of adding its second wave of in-house paging systems, which USA Mobility (www.usamobility.com) began installing in January 2008.
- **Security Cameras:** "We just installed a security camera system, and we are looking at the next piece, which will be to install some wireless security cameras," he adds.
- **Wireless IV Pumps:** HealthAlliance is getting ready to sign an agreement with Hospira (www.hospira.com) to install wireless IV pumps. "This will allow us to update all of this information, so we don't over-medicate or under-medicate patients based on software," he says. "We are also looking at RFID in relation to the wireless IV pumps. This will help us keep track of the 200+ pumps that we will have."
- **RFID and RFLS:** At this point, according to Mohnk, there are too many other projects on the table to get involved with RFID or RFLS yet. However, this may occur at some point in the future.



Among all these services, the cellular carriers posed the biggest challenge, according to Mohnk. "They always had their own antenna structures, and some of them got revenue by selling their own antenna systems. It took about a year, but we now have them all connected."

Now, wherever staff or visitors go on campus, regardless of cellular provider, they get five bars on their phones, Mohnk says.

Likewise, For first responders, "All of the walkie-talkies and pagers have 100% coverage," he says. "When they come in with patients or to transfer patients, they can communicate with their home bases without losing contact."

Results and Benefits

The Wireless Utility system allows consistent and reliable wireless service anywhere in the facility, including elevators and underground floors.

And, it doesn't seem to matter how much the system is asked to do, it is able to handle it.

"Everything that vendors have challenged us with has been working with InnerWireless," says Mohnk. "One thing that people asked was what the capacity of the system was - at what point would the system get overloaded with too many devices. We haven't run into a capacity problem yet."

For example, when the hospital conducted clinical trials for its telemetry system, it put 15 people in a corner and tried to overload the system. "We couldn't do it," he reports.

Another benefit is the ease with which the system can be maintained and expanded. "If we need to change something, we aren't up in the ceilings," says Mohnk. Installation of equipment to accommodate new wireless services won't require disruption of patient care areas. The new applications can simply be added to the existing network.