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Health Care

Doctors and PDAs proved a good match, helping give the industry an early lead with wireless. **By Heather Havenstein**

THE HEALTH CARE INDUSTRY — traditionally known as a laggard in the IT arena — is now emerging as a leader in adopting mobile and wireless technology.

In an October 2004 study of wireless adoption in various vertical industries, market research firm IDC found that more than 80% of 34 health care organizations polled said they have deployed wireless LANs or plan to deploy one in the next 12 months. And according to the 2005 Healthcare Information and Management Systems Society Leadership Survey, which was published in February, 79% of 253 health care executives responding to an online questionnaire said they will use wireless information systems this year while 54% said they will use handheld devices.

“Doctors were the first large worker

base that started using PDAs on the job,” says Ellen Daley, a principal analyst at Forrester Research Inc. “Here are a bunch of people who have an appetite for carrying PDAs, and here is a cheap way for wirelessly enabling a hospital. Hospitals decided to put the two together to see how they can improve patient care.”

This marriage of clinicians armed with mobile devices and hospitals moving to deploy WLANs as a cheaper and more effective way to provide connectivity in aging buildings is resulting in the growth of health-care-specific wireless applications.

In the IDC study, more than 60% of the respondents in the health care industry reported using industry-specific wireless applications. That dwarfs the percentage of respondents in other industries, such as banking and manufacturing, who reported using tailored wire-

less applications.

Within health care, some of the most popular uses of wireless technology include accessing and updating electronic medical records (EMR) at patients’ bedsides, matching bar-coded patient wristbands and medication packages to physician orders, and using wireless badges for voice communication.

Reducing Medication Errors

Pairing mobile devices with doctors and nurses who are almost always on the move could reduce errors by allowing data to be accessed and entered into systems at the point of care, according to industry observers.

However, wireless technology often brings new challenges. Among other things, health care organizations must secure patient data, guarantee the usability of devices and find a way to deploy

wireless access points without disrupting care.

Children's Memorial Hospital of Chicago has tapped wireless technology as part of its efforts to eliminate medication errors. In December, the hospital completed the rollout of a broadband distribution system from InnerWireless Inc. that acts as a utility to support WLANs, personal communications services, cell phones, handhelds and two-way radios.

Nurses now scan bar codes on patient wristbands and on medications with a scanner attached to a thin client. The device sits on a cart linked by a wireless network to an application that contains physician medication orders, says William Brook, the hospital's director of IT.

"This way, the nurse knows she has the right drug for the right kid at the right time of day," Brook says. "It's a quality assurance issue for us."

Although Brook says nurses are already reporting increased accuracy in medication administration, the system has presented some problems. During the pilot of the bar-coding project, the hospital used laptops on rolling carts but found that they were vulnerable to viruses and unauthorized access by medical students, Brook says. So the hospital turned to remote access technology from Citrix Systems Inc. to deliver applications on thin clients.

In addition to the challenges around

the use of laptops, Brook found installing the wireless access points to be more difficult in the hospital than it would be in an office building. Workers often had to install the access points at night when there was less activity and use sterile curtains to ensure that no dust or other material would get into patient rooms, he explains.

However, the wireless infrastructure has also allowed the hospital to eliminate dead spots in its paging system, and it will be used as the hospital deploys an EMR system to support the use of handheld devices to enter data, Brook notes.

Keeping Patient Data Secure

Sutter Health in Sacramento has installed WLANs in about 75% of the 27 hospitals it operates in Northern California. Like Children's Memorial Hospital, Sutter is focused on pairing bar-coding technology with thin clients at the bedside to reduce medication errors.

In addition, Sutter has included wireless access via handheld devices in its plans to begin rolling out an integrated EMR system to all its hospitals by the end of 2006, says John Hummel, Sutter's CIO.

By using Citrix remote-access technology with thin clients, Sutter can control what type of information doctors can access and download to mobile devices and thus meet patient data security and privacy guidelines, Hummel says.

"In most cases, the only thing [doctors] are downloading is just a view of a screen," he says. "We limit what they can download so it is not patient information or sensitive data. As soon as they log off, that form evaporates. Nothing is stored locally."

But going wireless has given some doctors the expectation that they can use the hospital's WLAN like a public Wi-Fi hot spot found in a coffee shop or an airport, Hummel adds.

"We have a secured Wi-Fi site, so you can't just walk in and drop in on one of our nodes," he says. Hospital officials are now looking for a way

to ease the frustration of users who want to use their own wireless cards in their laptops and other devices instead of being required to use cards provided by the hospital, according to Hummel.

Although these leading users are moving ahead with wireless, barriers still prevent many others in the industry from following, according to analysts. Wireless-enabled handhelds usually work well for online prescriptions or other single-purpose applications, says John Quinn, principal at Capgemini Health, who serves as chief technology officer for the IT services firm's provider practice. But for the clinical documentation generally needed for EMR systems, handhelds have "too little real estate for the amount of information to be managed," he says.

Interest in using tablet PCs for wireless access to clinical systems is increasing, but designing the architecture so the wireless application can handle the data influx without suffering performance problems and ensure that no patient data is stored on devices has proved difficult for many vendors, he adds.

"You wind up with some very, very big databases that have to be local to the device, and that becomes a challenge for the architect," Quinn says. "What am I loading onto it, and how do I keep it synchronized yet keep performance up so people will use it?"

In addition, even the slightest performance degradation with a wireless device is likely to prompt physicians to balk at using the wireless application, he says.

"The primary reasons why these projects fail is lack of physician buy-in," Quinn says. "It could be because they find some mistakes in how the system is set up . . . and lose faith in it and feel like they are better off sticking with paper and pen."

Still, despite the challenges, wireless is taking hold in the health care market.

For example, Sutter's Hummel says that as his organization moves forward to rebuild all existing hospital buildings to meet earthquake construction codes, "we have not been able to figure out how to justify wired other than for specialized [medical] equipment."

MOST POPULAR APPLICATIONS: Accessing and updating electronic medical records at patients' bedsides, matching information from bar codes on patient wristbands and medicine packages to physicians' orders, and using wireless devices for voice communication.

SOME LEADING ADOPTERS: Sutter Health, Children's Memorial Hospital of Chicago, The Cleveland Clinic, Beth Israel Deaconess Medical Center in Boston

TOP CHALLENGES: Ensuring that systems comply with the security guidelines of the Health Insurance Portability and Accountability Act, getting physicians to use the wireless applications, and designing architectures to handle large data loads.



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