SPECIAL ADVERTISING SECTION

e|Health Innovations

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inside

the E-Health Challenge

Learn from the painful lessons of healthcare tech pioneers. The benefits are huge if users have a roadmap to avoid the landmines.

Lessons Learned

from e-health pioneers

To cure healthcare's financial ailments, companies must swallow medicine.

One of the accepted facts of high-tech purchases is that — cost notwithstanding — more storage is better. Partners HealthCare System CIO John Glaser discovered, however, that that's not necessarily so with e-health.

Due to a security requirement of the Health Insurance Portability and Accountability Act (HIPAA), hospitals have severe restrictions on how patient data can be shared electronically. When planning a wireless Web application, Glaser had to design the system so that no personal data would be stored on physician handheld devices.

"Clinical data cannot be left on the portable device. It could be lost or stolen," Glaser says. "You want to design these things so they are essentially dumb terminals." The bright side is that handhelds will need much less storage for medical applications, which is a potential cost-savings.

Welcome to the complicated world of e-health, where the potential finacial payoffs are only bested by the challenges for the Information Technology staff.

Bill McKeever, an analyst with UBS Warburg, a financial services organization whose U.S. headquarters are in New York, estimates that of the $1 trillion spent on health care in the United States in 1998, $250 billion was squandered on administrative inefficiency, incompatible systems and redundant tests.

E-health proponents argue that innovations such as e-prescriptions and electronic medical records (EMR) systems are desperately needed to provide better patient care and tighter financial control.

But before any of those enhancements can help anyone, they have to be made to work. That chore falls throughout an organization — finance, IT and human resources, among other areas. A full-fledged e-health implementation has all of the roadblocks of any major computer network upgrade, but with the added aggravation of a typical hospital's technologically unforgiving environment.

Wiring for Wireless

Consider the challenge of wireless communications among systems, which is the backbone of many e-health efforts. Wireless gives doctors instant access to patient history, drug information, insurance coverage and other data in a portable device they can carry from ward to ward.

BY JOE MULLICH AND LAUREN GIBBONS PAUL

E-Health's Long-Term Prognosis

By 2003, Japan's Matsushita Electric Industrial Co. is promising Internet-enabled diagnostic toilets. These potties will be capable of analyzing urine, body weight, temperature and blood pressure. Through existing Internet connections, the data will be transmitted to the medical facility of choice, providing a physician with an ongoing snapshot of the patient's basic physical health.

As connection capabilities — both wireless and wired — and hardware processing speeds improve, a wide range of capabilities will be available for e-health considerations.

Siemens Medical Solutions of Erlangen, Germany, is trying to perfect a product called HealthMan, which is a sort of Walkman for healthcare monitoring. The HealthMan, which hooks onto a patient's belt and captures basic physical and chemical indicators such as blood pressure and blood sugar level, would require a communication hub in houses and other places the patient frequents. The information would be transmitted wirelessly to the hub and then to the physician or personal health record, says Ajit Singh, Siemens' group vice president for e-health.

Other wireless devices that may become more widely used include Medtronic's Chronicle, which allows pacemakers to communicate with physicians via the Internet; VivoMetrics' Life Shirt, which embeds electrodes and sensors into a shirt that tracks bodily functions and transmits the data via a handheld device over the Web; Health Hero Network's Health Buddy, which uploads vital patient information to a physician daily; and Agilent Technologies' Interactive Healthcare Services system, which measures data from congestive heart failure patients and transmits it to the physician.

Eventually, technicians will be able to use video-enabled stethoscopes and endoscopes in patient sessions, which will be viewed in real time by physicians in different locations and allow for remote diagnoses, says Norman Gaut, CEO of Andover, Mass.-based PictureTel.

– Karen D. Schwartz

Hospital administrators, diagnostic equipment technicians and computer managers, however, all worry that electromagnetic waves from portable wireless devices could interfere with other medical equipment. Many hospitals have banned cell phones for this reason, and a debate still rages about whether these fears are justified.

Cell Fears

Tom Machacek, IS manager for Allina Health System in Minneapolis, for example, is working with a handheld wireless device that feeds consumption data into a supply-management system. But the pilot test will be run only in the materials area and receiving dock, not in the nursing or urgent care areas. "We're stepping into this area slowly because of concern that the transmission might affect the medical devices that are literally attached to the patient," Machacek says. The nature of the transmission between the wireless device and the other computers may allow use of wireless technology at loading docks and other areas distant from patients and sensitive equipment, he says.

Others argue that cell phone interference fears are out-of-date. Early cell phones were known to interfere with electric wheelchair circuits, cardiac pacemakers and anesthesia equipment. Today's wireless devices, however, are a far cry from those first-generation analog phones. Medical equipment shielding to protect against electromagnetic interference also has improved significantly.

Memorial Healthcare System in Holly-

TIPS

Save Some Storage Pennies

HIPAA regulations prohibit storing clinical data on handheld devices, meaning that they need less storage capabilities, a potential cost-savings.

– John Glaser, CIO
Partners HealthCare System

wood, Fla., for example, has never had a ban on cell phones, nor has it ever experienced interference from cell phones or wireless devices.

CIO Dennis Miller says that he tests the wireless LAN for interference against medical telemetry devices, which are used to monitor ambulatory patients. "We take the wireless access point, which transmits the radio frequency, and put that right up to the telemetry devices," Miller says. "We've found the devices almost have to sit on top of the antenna to cause any interference at all."

Doctor Resistance

One of the biggest obstacles to improved health care and reduced cost, however, isn't regulatory or technological, but human nature — specifically, doctors'.

Take the hot area of e-prescriptions. PocketScript, a Mason, Ohio-based maker of an e-prescription system, has a deal with Kroger, the nation's largest retail grocery chain. The prescriptions will be sent from physician handheld devices to PocketScript servers and then on to a Kroger pharmacy.

No wonder Kroger loves the system, apart from its ability to reduce errors and improve workflow: "The patient can't stop at [pharmacy chain] CVS on the way to Kroger and decide to get the prescription filled there," says PocketScript CEO Steve Burns. "They've got to go to Kroger, since this is all electronic and they don't have a paper script."

The problem has been convincing doctors that e-health systems are worthwhile for them, too. A recent Deloitte Research survey found that 96 percent of physicians who use the Internet daily are not working with an e-prescription program and the vast majority of them say they are not interested in ever doing so. "The e-health systems aren't good for the doctors themselves because the devices require the doctor to do more clerical work," says Michael Barrett, senior analyst for Forrester Research in Cambridge, Mass.

Physician recalcitrance shows up in several ways. Stonebridge Technologies, a systems integrator in Dallas, Texas, has put online the entire clinical lab output capacity for a couple of hospitals. The hospital administrators thought doctors would simply go online to check the lab reports, saving the expense of having these documents couriered. Doctors would jump at this, right?

"Wrong," says Mark Muenze, Stonebridge's managing director of healthcare. "The doctors were used to having the lab reports in their charts when they saw patients."

The vendor opted instead to put color printouts of the reports in the chart folders. "Then we would note on the reports, 'By the way, these actual reports were available online yesterday at 5 o'clock.'"

The doctor persuasion process would have been helped if the technology had been crafted with medical tasks in mind. Displaying alerts on handheld screens, for example, can be an excellent way to notify a doctor that a CT scan has been completed, but actually reading the results of a CT scan on the same screen could strain anyone's eyes.

TIPS

Wireless Fears Passé?

Many hospitals today still ban cell phones, for fear of causing equipment interference. But today's wireless phones/PDAs are a far cry from the early units.

– Dennis Miller, CIO
Memorial Healthcare Systems

"At the moment, [handheld] devices dominate the discussion, but they don't have the memory or the display needed to access detailed databases, such as the *Physicians' Desk Reference,* which lists drug interactions," says Forrester Research's Barrett.

PocketScript is working on a way for doctors to speak into a handheld device and verbally prepare a prescription for a patient. But today's handheld devices don't have the power to do complex voice recognition, forcing PocketScript to do a workaround: compress the voice patterns and send them wirelessly to a server in the doctor's office. Server software then decompresses the voice patterns.

The compression makes the system work quickly enough to satisfy doctors, while saving battery life. "Doctors are already used to dictating into handheld devices, so this fits into their normal practice," Burns says.

For the healthcare industry to remain competitive, the changes required by e-health seem unavoidable. But like any powerful prescription, before the patient starts to feel better, he is going to have to swallow a *lot* of bitter-tasting medicine. ■

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Triangle Management

CEO: Larry Marion, lmarion@triangle-publishing.com

VP/Editor-in-Chief: Evan Schuman, eschuman@triangle-publishing.com

VP/Sales and Marketing: Regina Twiss, rtwiss@triangle-publishing.com

Managing Editor: Alice Shimmin, ashimmin@triangle-publishing.com

Art Director: Susan Yousem, artworks@magazinedesigners.com

E-Health Supplement Writers

Joe Mullich, jmullich@triangle-publishing.com

Karen D. Schwartz, kschwartz@triangle-publishing.com

Lauren Gibbons Paul, lpaul@triangle-publishing.com