March 2004

Features

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Early A-Doctors

Improving patient care and saving lives—one handheld at a time.

By Randi Rosenberg

Improving clinical care and patient outcomes has always been priority one for physicians, but the healthcare system in the U.S. is notoriously plagued by antiquated systems that can impede even the most dedicated doctor. Fortunately for all of us, mobile technology is fast becoming a therapy of choice to empower doctors to spend more time with more patients, expedite diagnosis and treatment, reduce medical errors and, ultimately, save lives.

We all know the image of the kindly

doctor who is notorious for his completely illegible handwriting. But these days, even something as innocuous as bad handwriting can impact the safety and wellbeing of a patient, and even spell life or death if prescribing information is incorrectly captured and communicated.

Data released in the now-infamous Institute of Medicine report “Too Err is Human: Building a Safer Health System” in 2000, revealed that an estimated minimum of 44,000 people die each year because of medical errors—more deaths than from motor vehicle accidents, breast cancer or AIDS. Medication errors alone are responsible for more than 7,000 fatalities annually. Poor record keeping, inefficient processes and human error are all contributors to this pervasive problem that costs the U.S. healthcare system $2 billion a year.

In addition to the healthcare community’s need for finding both systemic and systematic solutions to the medical error quagmire, several other market factors are colliding and initiating a push toward mobile solutions.

Paging the Next Generation

As the next generation of medical professionals makes its way through residency and fellowship programs—and into the clinic—a groundswell of PDA-powered practitioners has begun to infiltrate the healthcare system. In its 2003 report, “Healthcare Without Bounds: Trends in Mobile Computing,” Spyglass Consulting Group found that more than 90 percent of clinicians under age 35 use handheld reference software, such as Physicians Desk Reference (PDR), drug databases, manuals and medical calculators on a daily basis, leading a grassroots push to purchase handheld devices at their own expense.

The survey also uncovered disparities in attitudes and needs among age groups: Gregg Malkary, Spyglass’ managing director, explains, “The 25 to 39 crowd are comfortable with technology and hold a more idealistic view that evidence-based medicine can save the world; doctors 40 to 49 have a bottom-line, financial focus: ‘How many patients can I see in a day?’ and want revenue maximization applications like point-of-care charge capture. Those 50 and over love mobile computing—just not for themselves!”

Dr. Donald E. Girard, professor of medicine and associate dean for graduate and continuing medical education at Oregon Health & Science University (OHSU) in Portland, Ore., can attest to this. With oversight of all 600 of OHSU's residents and fellows, he has observed a dramatic saturation of handheld technology use in younger doctors. "As of 2004, virtually all of our residents across all specialties use handhelds, as compared with only 25 percent just three to five years ago. Faculty is the lag. I'd estimate only 50 percent are using them—however, the leaders within evidence-based medicine and medical informatics are fully invested, older faculty who are as literate in computers and handhelds as anybody."

According to Girard, the most popular applications are the PDR, Griffith's 5 Minute Medical Consult (a resource for information on medical disorders), ePocrates Rx (a drug and formulary database) and medical calculators. "Residents are actually downloading entire textbooks onto their handhelds, and some are even writing their own applications. The programs available now are metastasizing rapidly—they are absolutely essential."

Maverick MDs Transform Patient Care

Despite these bottom-up initiatives, hospitals and health systems are slow to adopt mobile technology on a campus-wide basis due to organizational and cultural factors. According to Malkary, the main hurdles include the complexities involved in integration with legacy-based systems, patient privacy under HIPAA requirements and, of course, significant funding challenges. Ironically, physician adoption was also cited as one of the key obstacles hindering mobility. Administrators believe that docs will push back against any mandated technology that might feel intrusive and reduce time with patients. Sounds like the docs and the administrators might benefit from a meeting of the minds! Less than 5 percent of healthcare facilities interviewed for Malkary's survey are deploying next-generation mobile solutions that link handhelds to existing hospital systems.

Nonetheless, maverick MDs and some forward-thinking hospitals are leading the way with handheld applications and deployments that are dramatically changing the way patient care gets done.

Quelling a Physician Rebellion

Dr. David Espenschied remembers a colleague at Sacred Heart Hospital in Sarasota, Fla., showing him the PDR running on a brand new PDA. He bought his own device in short order. Around this time, a movement toward Electronic Medical Records (EMR) began in Sacred Heart's Radiology Department. The result was a desktop PC-based system containing a database of patient information, order entry capabilities and a drug interaction application. The hospital required physicians to use it, sparking a small rebellion. "There were only a few work stations that provided system access, which meant waiting on a long line. The doctors didn't want to do it," explains Espenscheid. "It made our long days longer and required more effort with fewer patient visits. We said: 'We'll go to another hospital!'"

Executives at Sacred Heart brought in Cogon Systems, hoping that its Moment of Care Information System (MCIS) would help them consolidate data from different systems into a relational database with a more user-friendly approach. The pilot included five diverse physicians including Espenscheid and a 75-year-old internist! The doctors purchased their own PDAs—make and model didn't matter as long as they were equipped with wireless capability—and were provided brief training on the software and how to sync using a Wi-Fi router in the staff lounge.

Customized for Sacred Heart and fully HIPAA-compliant, the application was loaded with disease management templates, an e-prescribing application with a built-in drug-interaction tool, patient demographic and insurance information and charge capture capability, the handhelds communicated with all of the hospital systems across departments. In addition to improved efficiency and increased ability to see more patients, use of the system's co-morbidity risk analysis features reduced deep vein thrombosis events in the cancer ward from seven per month to two, for a quantifiable in savings of $12,000 per month.

Upon retiring after 20 years of practicing medicine, Espenschied took his love of technology and experience with MCIS and joined the team at Cogon, where he serves as a liaison between physicians and technology that helps them better serve patients.

Rising High in Denver

For the faculty at Denver Health, a public facility serving the uninsured, homeless and disenfranchised, mobile technology is becoming the wave of the present and future across their 320-bed hospital and numerous clinics in the area. Several departments are using wireless technology, including the nutritionists and pharmacists who cover all 12 of the hospital's floors with real-time patient and formulary data thanks to 802.11b-enabled laptops or PCs on carts. In Medical ICU, a doctor can utilize a pen tablet both for rounds and for training residents on the spot using real cases based upon patient data stored in the device.

Jeff Pelot, Denver Health's CTO, is a born skeptic when it comes to spending any hospital resources on new technology. Still, he believed that mobility was key to providing effective healthcare. "There are many nice little devices out there but not much of an application for them unless it's custom. It wasonly when an application came along that we saw a real value."

Value for Pelot came via a flexible and scalable mobile framework called the Mobile Intelligence Platform (MIP), and a GUI product for modeling business processes and generating XML-based forms called the Mobile Intelligence Application Assembler—both from Colorado-based, Countermind. "Again, I was skeptical, so we tried it out in a very small environment where we could validate the technology," says Pelot.

The pilot took place in Denver Health's Infectious Disease Control Department, where nurses used Pocket PC devices to collect and wirelessly transmit patient data in real time to the city's public health department inside the hospital, and to the Centers for Disease Control (CDC) to monitor incidence or outbreaks in the area. The nurses embraced the ease of use and efficiency as compared to the department's old paper-heavy process.

After the success of this first test, the hospital decided to pilot the technology in a broader context, providing 12 doctors and their healthcare partners within the Public Health Department's Sexually Transmitted Disease Clinic and Control Program. Due to the very strict privacy rules and secrecy mandates required of this patient information, the STD Clinic operates on a standalone system that is not tied to the rest of the hospital's data. Unfortunately, this

homegrown system was decades old and no longer serving the staff effectively—making it a prime area to test the MIP mobile application.

Powered by Fujitsu pen tablets and an always-on wireless connection, the applications housed in the new system include customized patient registration, management and medical records. The network allows doctors to order critical lab tests stat, and get the results back from the lab in minutes rather than hours. Because the data is highly sensitive and also needs to be reported to the CDC, accuracy is critical. Digital information capture allows the staff to correctly enter patient data at bedside and transmit in real-time.

The nine-month pilot is underway, with full implementation expected in June. “We see this expanding into other areas of care, including Denver Health’s community outreach programs, jail clinic support and a bioterrorism data collection initiative,” Perlot says. “For the most part, the willingness to embrace the change is there, but users are pushing for top speed in the system. If the performance is there, they are pretty readily accepting.”

Saving Cash—and Lives

To underscore the dramatic difference that physicians using mobile computers are having on patient-centered care, staggering findings from the Skyscape PDA Usage Survey, released in December 2003, showed that increasing PDA use can prevent more than $100 million in medical errors. Of the more than 900 PDA-toting doctors surveyed, more than 85 percent felt that use of their PDAs helped reduce the number of medical errors. More than half of the doctors estimated that decrease could be quantified by greater than 4 to 5 percent. Considering that only 20 percent of doctors responding to this survey have their handhelds integrated with a larger hospital enterprise, the impact of widespread adoption of mobility could translate into many more lives and dollars saved.

And, as Spyglass’ Malkary predicts: “Handheld and mobile technology will take over medicine and improve quality care—it’s not a question of if, but when.”

For the sake of patients everywhere, we can only hope it’s soon. •

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