Connections to Care: How Technology Makes Information Accessible

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by Sara Pearsaul

Healthcare grows safer and more effective all the time, due in part to Internet-based technology. In this article, learn how healthcare facilities are using the electronic medical record, telemedicine, personal digital assistants, and more to transform healthcare delivery.

Hardly a day passes without a story in the news about a new technological development that practically guarantees an improvement to healthcare. Some are panning out, thanks largely to the Internet and its ability to connect far-flung people and places. In short, this technology makes critical information accessible where it's needed most.

The electronic medical record (EMR) is gradually moving into healthcare settings and saving time, money, and paper. Telemedicine enables doctors and sick patients to meet without the expense and discomfort of travel. Personal digital assistants (PDAs) dramatically increase the amount of information available to clinicians at the point of care and can reduce medical errors. These advances, and many on the horizon, all point to the same result: better care for patients.

Beyond the statistics and feasibility studies, how do these developments actually work? Below, find out how the EMR can speed medication orders and charges, how telemedicine serves disabled children, and how PDAs are making life easier for home health nurses.

The EMR: Worth the Trouble

The EMR can improve care in a variety of ways, some simple and some complex. For example: the EMR can put an end to missing or incomplete paper records, move order input from illegible handwriting to direct computer entry, cross-check medication orders with standard dosages and drug interactions, and generate charges automatically. Test results can be transmitted in a flash, complete with diagnostic images. Specialists in remote locations can consult online. Decision support systems can recommend clinical pathways for treatment of a specific condition. Massive amounts of health data can be compiled and analyzed to uncover emerging public health concerns and determine best practices.

Overcoming Resistance

While the EMR offers tremendous benefits, perhaps the biggest hurdle to its adoption is convincing people they need to change the way they work. Many physicians and other clinicians have been resistant to move from paper to electronic record-keeping systems. According to a recent survey of physicians by the American Medical Association, only "13 percent of those surveyed said electronic medical records would make it easier to manage the medical practice or to practice medicine."[1] By most reports, physicians tend to see the EMR as more trouble than it is worth, especially when they are required to enter data themselves on a computer.

"The fundamental difficulty with the EMR is largely not technology, but how to get people to use the EMR," says Michael Kienzle, MD, chief technology officer, University of Iowa Health Care, Iowa City. "There are perceived incompatibilities with the record and the normal work flow. The difficulty is in convincing people that it enhances efficiency, because it always takes longer at the beginning." Kienzle and others point out that the extra time it takes to input information on the first visit becomes considerably less on subsequent visits. Initial input time is more than offset by avoiding lost records and test results and reducing adverse drug events and other medical errors.

Further down the line but equally promising is the adoption of voice recognition software. While such systems have long held out the promise of being easier to use than computer keyboards, especially for doctors who are accustomed to dictation systems, the complicated terminology and customization needed for each medical specialty have hampered its use in many areas. Still, voice recognition capabilities are expected to increase enough over the next few years to make the technology practical for most healthcare applications and to streamline additions to the EMR.

Better, Faster Care

When the University of Illinois Medical Center at Chicago decided to consolidate its outpatient clinics into one new facility and institute the EMR at the same time, Joy Keeler, chief information officer, says they overcame clinician resistance with strategy: "We started with the intention not to mandate change but to drive change through benefits. Our key strategic mantras were to share the wealth, always lead with a carrot, not a stick, and get to where our users would find so much value in the system, they would choose it over the alternative—paper." Keeler spearheaded a cooperative project that involved both information technology and healthcare professionals in the development of the EMR.

"In 1999, we successfully moved 28 clinics into a new building designed without space for paper records," Keeler says. Since then, the Medical Center has also moved a significant portion of its inpatient records to the new system. Now clinicians, whether on campus or off, can view inpatient and outpatient records online in one integrated system called Gemini.

"On the hospital side, all of our orders flow through Gemini. Medication orders flow to the pharmacy for verification—they're not reentered—and we also have a robot in the inpatient pharmacy that performs dispensing. Once the medications are up on the floor, the nurses chart it in the electronic medication administration record and then the charge flows to the financial system."

While this advanced technology is impressive in itself, Keeler says the real excitement is in what this electronic information means for improved patient care. The physicians appreciate the ability to view the patient record online at different locations, especially when consulting with colleagues, she observes. The next phase of the EMR is to expand knowledge management and provide automated decision support to improve patient care. "Now that data is available for analysis, we are looking to track and measure improvements in patient care and then take the next step, incorporating our findings into the patient care process—closing the loop," she says.

The Mayo Clinic in Scottsdale, AZ, also has moved to a paperless environment, building its new hospital to function with an EMR and equipping the outpatient clinic with computers in every exam room and even in the corridors for residents to use. "We can access everything through a single screen. It's a definite benefit to the patient," says Debbi Jaskowski, RHIT, director of medical records. For example, a clinician can pull up the patient's x-rays on the computer and go over the findings in the exam room. Despite initial reluctance by some physicians and the pull of Mayo's long tradition, she says that the EMR has been well received there.

Changing Skill Sets

One of the biggest cultural changes came for the medical records department, where jobs went from entry-level responsibilities to positions requiring a great deal of technical proficiency. The new job "requires a lot of detail and a lot of focus," Jaskowski says. "We require 100 percent [accuracy]. We don't allow for errors because it's our legal record." Shifting the skills of the medical records staff to handle the EMR has been a challenge, she reports.

But the main problem she has encountered with the EMR has been on the back end, when a paper report becomes a necessity. "Attorneys still aren't used to working with electronic records," Jaskowski explains. "The most difficult issue is the release of information and the retrospective need for the record. Vendors think about the record for concurrent use in patient care and nobody thinks about it later when we have to produce this record."

Because Medicare and legal requests for documentation are a constant challenge, she is working to enhance the back-end reporting capabilities. "Clinic visits aren't as well-defined as hospital visits," she notes. "You can't put a patient's care in a specific episode so it's difficult to produce a record that captures everything," she cautions. Nevertheless, she says the EMR "is a wonderful tool."

Telemedicine: Care across the Miles

According to University of Iowa's Kienzle, their forays into telemedicine have fundamentally changed the way they deliver services, especially to rural Iowa.

"We changed the way we provide consultative services to disabled children and their families," he says. "These kids often have problems involving lots of different specialties, such as psychiatry, pediatrics, and speech and hearing. [The children] are also very hard to move."

In the past, the patient would come to the University of Iowa for an all-day series of visits to specialists. Now, the child and the parents stay in their own hometown, work with their local physician, and receive consultation through a simple teleconferencing set-up. "The quality of care given is as good or better," he says, because all of the specialists confer at the same time. "It saves the families about $1,000 out of pocket" on travel expenses.

Kienzle also sees high interest in delivering home care electronically. Their work with video home nursing has netted great patient satisfaction. "In a rural setting, a visiting nurse can see six to eight patients a day (in person) versus 25 a day with video conferencing. Home telemedicine is really one of the fastest growing areas, along with prison telemedicine."

Despite the myriad advantages of the electronic, obstacles to implementation exist, not the least of which is funding. One financial concern is how to compensate clinicians who provide services online. Specialties such as radiology have embraced telemedicine and addressed reimbursement issues effectively. But many compensation issues have yet to be resolved, such as whether or how primary care physicians might charge for consultations given online or for e-mail correspondence with patients.

PDAs: A Link from Home

Echoing Kienzle's enthusiasm for the EMR in home health is Jeneane Brian, BSN, MBA, CEO of the Visiting Nurses' Association Home Health System in Santa Ana and Covina, CA. "Of all the healthcare environments, home health is the best suited for a mobile IT solution," she says.

Brian wrote her own clinical applications using a commercial software program and equipped her nursing staff with PDAs so they could update patient records wherever they go or via the Internet. The idea was to provide a record that any caregiver could access to improve continuity of care, which has been hampered in the past by different nurses making the rounds each day.

"We've replicated the communications available in a hospital environment for the home health team," Brian explains. "I'm very excited about the opportunities to link up with providers outside of our organization and that we might break down the traditional barriers that divide disciplines. One physician wants to get a device so he can monitor his patients with us. The quality of patient care just has to go up."

Brian also believes that the EMR is a selling point for attracting nurses. "We had to do something about the paperwork problem. The primary reason for our new technology was not just for the business but for the lifestyle of the nurses." While not every nurse has warmed to the new technology, most are finding it more efficient to use than paper—and a lot easier to carry. Their PDAs, for example, come equipped with the nursing drug manual in electronic form.

Health on the Web: Secure and Reliable?

Another major development is in direct patient access to one's own medical records. Barry Hieb, MD, research director for Gartner Healthcare, Tucson, AZ, says that some Web sites are offering people the opportunity to build their own personal medical record online, but clinicians are likely to be leery of using patient-driven data. With all of that personal medical information floating around in cyberspace, privacy may be a concern. But Hieb says that privacy is easier to ensure with the computerized medical record than with a paper record, because an automated system can scramble data for transmission (through encryption) as well as restrict and track who accesses or changes data.

Among consumer health sites, the University of Iowa runs the Virtual Hospital (www.vh.org), which provides an abundance of health education to patients online. The Mayo Clinic Web site (www.mayoclinic.com) is among the "most trusted" medical

sites for consumers, according to Yahoo! Internet Life, along with www.medscapehealth.com, www.mywebmd.com, www.nih.gov (National Institutes of Health), www.ama-assn.org, www.medlineplus.gov, and www.merck-medco.com.[2] In the top slot as the most popular health site is webmd.com, according to Yahoo's research.

There's no question that Internet-based technology is redesigning healthcare processes for the better. Immediate access to health information has become a necessity, both to prevent errors and to improve care, and the EMR, telemedicine, PDAs, and online resources are paving the way. HIM professionals, clinicians, and patients have much to look forward to.

A Record Revolution?

The EMR is not just a new way of maintaining records, but a new way of delivering healthcare services that promises to improve the quality of care.

"The healthcare system needs a major redesign," says Don Detmer, MD, chair of the Institute of Medicine's Board on Health Care Services. "The nature of medicine has changed, the knowledge base is huge, and it's hard to keep up with it all. Human memory needs assistance today to deal appropriately with the sheer volume of relevant evidence."

Detmer believes that the EMR, with its standardized terminology and decision support tools, can help clinicians deliver high-quality care more effectively. "Care needs to be evidence-based, patient-centered, and highly cooperative and coordinated. In the past, it has been more hospital- and doctor-centered." The EMR, he says, can "help doctors and patients make better decisions at the point of care."

He points to the 2001 Institute of Medicine report, "Crossing the Quality Chasm," which recommended systemic change to address the uneven quality of care. "It's not a little gulf but a chasm. Information technology is a key part of the bridge across that chasm," he asserts.

Part of the government mandate is to reduce medical errors by 50 percent, but it's difficult to gather data across the continuum of care, and therefore difficult to know where to begin. "The computerized patient record is still an institutionally funded system," Barry Hieb, MD, research director for Gartner Healthcare, Tucson, AZ, says. "Patients are notoriously mobile, bouncing around from the ambulatory clinic one day to the surgery center the next. The need is for a longitudinal medical record, which is still pretty elusive."

The record may be electronic in one part of an organization and paper in another. "Which pieces of the record get automated first really depends on how the organization wants to use the information in the end. Most people are not automating everything, but instead are automating chunks of the record," observes Diane J. Aschman, chief operating officer of SNOMED International, in Northfield, IL. "Our goal is to help clinicians, researchers, and healthcare administrators capture information once in an encoded, electronic format and use it for other purposes, such as statistical reporting, disease tracking, and billing."

Getting the many parties involved in healthcare to agree to standards, including both technology and nomenclature, remains an obstacle to the adoption of the EMR, which may only be overcome by consumer demand. According to Detmer, a public education campaign is critical to the development of an EMR that extends beyond institutional boundaries. "In the past, we focused on acute, episodic care. Nowadays, chronic illness is becoming the big deal." The ability to chart a long-term illness or a lifelong medical problem is one of the advantages of a comprehensive EMR.

"The thing we're talking about here is communications and accurate records of those communications. Information technology is the way to make that happen. Today a useful computerized record system is—or should be—within the financial reach of every hospital. Our goal," Detmer says, "is a government initiative to see this happens by 2010."

Notes

1. “2001 Technology Usage in Physician Practice Management (Benchmark study).” American Medical Association, December 2001. For information on the study, go to www.ama-assn.org/ama/pub/article/1616-5600.html.

2. O’Neill, Meaghan. “Health on the Net: Seven Most Trusted Sites.” *Yahoo! Internet Life*, February 2002. Available online at www.yil.com.

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