

Electronic Medical Records:

Where Medicine and Information Technology Meet

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Merging technology with medicine.

Safety, efficiency, and easier access to information are just a few of the factors to consider.

Is the hardware and software too expensive?

Information Explosion

The Twentieth Century witnessed an explosion of knowledge in nearly every field, accelerated by the invention of the personal computer and the advent of the internet. Computers excel at managing high volumes of information very, very fast, making them an ideal tool for the knowledge-intensive and high stakes field of medicine. Likewise, the internet makes information – and the power it brings – accessible to all, changing roles and relationships in every segment of society.

As the Twenty-first Century begins to take shape, the merger of medicine and information technology is taking center stage. Electronic medical records (EMR) technology is rapidly gaining attention for hospitals and physician offices. The driving forces are unmistakable:

- Patient safety has become a focal point for national policy makers in the wake of recent Institute of Medicine reports, putting institutions on the alert for systems that offer hope for error-reduction, consistency, and continuity of care.
- Every physician is looking for operational efficiencies that enable them to do more with fewer resources, and to balance their personal and professional lives.
- Consumers (patients) are becoming more informed and more vocal about their healthcare choices, and expecting to be treated as collaborator in medical decision processes.
- Medical knowledge, pharmacological solutions, and non-invasive interventions continue to grow more rapidly than ever before, making it impossible for physicians to keep up only through the traditional journals and CME conferences.
- The federal government is eager to modernize medicine for both economic and social benefits. President Bush recently appointed David Brailer, M.D., Ph.D. as the new Healthcare Information Technology Commissioner to lead the national dialogue on how to accelerate the adoption of IT in medicine.

The Hope and Promise

EMR had a slow start with expensive and cumbersome software solutions built on simple word processing technology. But rapid developments in both hardware and software capabilities in the past ten years have dramatically improved the offerings and reduced the costs, setting the stage for a ground-swell of acceptance by medical groups. According to a recent article in *Health IT World* (January, 2005), "One in five group physician practices in America now has some sort of electronic health record with a database containing patient medical and demographic information—not just a scanned image of a paper chart—according to new research from the Medical Group Management Association (MGMA), Englewood, Colo." The market

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The major benefit EMR offers is the overall improvement of health-care delivery.

share may be approaching the tipping point, the level at which acceptance of the technology becomes the norm rather than the exception. The president's goal is to have every physician using EMR in ten years. If the prevalence of EMR vendors at national MGMA conferences is any indication, he'll likely get his wish.

Contemporary EMR systems come in a wide range of packages and capacities, offering choices to fit every kind of practice. From a simple word-processor to a fully relational database, and from drop-down menus to free-text, physicians can choose systems to match their own comfort with technology, and increase the robustness of their computers as they benefit from its utility. They can also choose an internet-based month-to-month service agreement if they are not ready for the flexibility and customization of a standalone system housed in their own office.

The value of EMR systems, however, is emerging not so much as just a cost-effective way to document patient interactions, but more in what it can do to improve healthcare delivery. For example:

- Patient safety – EMR offers the ability to automatically protect patients from adverse drug reactions when it recognizes conflicting orders. It can also allow physicians to screen for patients who can benefit from preventive care based on their history or health profile. And it makes it easy to collaborate with colleagues to, using consistent information about the patient.
- Coding improvements – Consistent documentation standards allow physicians to get paid for everything they do rather than to rely on the limited documentation of hand-held or dictated notes created under significant time pressure.
- Readability – Computer fonts dramatically increase the readability of documentation over hand-written notes, which is vital to safe prescribing practices as well as for a strong legal defense.
- Efficiency – Physicians who are proficient with EMR are done at the end of the day in contrast to the days of hand-written notes scribbled at the end of a busy day under the old systems.
- Reduce redundant testing – When physicians had difficulty finding test results in a large paper chart, or receiving consultation reports in a timely manner, they may have ordered more “just to be sure” resulting in excess costs to the health-care system. EMR eliminates time wasted looking for test results, charts, other relevant information, and assembles it efficiently over time.
- Shared decision-making – When physicians share access to records with their patients, they empowers them to be informed partners in their own health. Graphs of progress measurements over time helps people understand their medical story, and to be engaged in complying with medical interventions that show results.
- Research – EMR is a fundamental tool for research to improve patient care, both within practices and within the medical community. As more information becomes digital, the potential for tracking the value of alternative therapies will enable the medical community to refine its approaches and improve its outcomes.

Changing the Culture

There are many barriers to physicians' acceptance of EMR systems, despite the growing evidence of its clinical value. The financial investment is still daunting,

The biggest challenge for physicians in accepting EMR technology is a change in mindset.

Physician stories offer a compelling reason to consider EMR.

although prices have come down and options have increased substantially in the past few years. [Recent retrospective research](#) on practices that have implemented EMR systems shows the return on investment to average 73% in the year following implementation, which is more positive even than many sales pitches project. As the price of the technology comes down and the utility goes up, the economic value is becoming clearer over time, matching the clinical value.

Another argument used to delay adoption of EMR technology has exhibited itself in various forms of techno-phobia. Learning to type and becoming comfortable with computers has been a convenient excuse for some, especially those in the latter stages of their career who didn't grow up with computers. The benefits of internet and email use have helped to win some over while menu-driven templates and voice-recognition technology has encouraged others. For the die-hards, there is still the option of dictation, leaving the EMR data entry up to the transcribers, although the economic gains are diminished under this option.

Perhaps the biggest challenge for physicians in accepting EMR technology is the change it requires in their mindset. Adopting EMR requires physicians to think differently about their relationship with their patients and their role as physicians. For example:

- EMR systems challenge physicians to share the power of medical decision-making with their patients, placing them in a relationship of mutual accountability that may seem like a threat to professional autonomy. When patients bring in copies of their own internet research about health issues, physicians may find it challenging to sort through the helpful from the un-helpful material, and all the while encouraging and respecting patients for their initiative.
- Email communications with patients are a natural extension of EMR systems, but they are viewed very differently by patients than by doctors. Patients want it, but doctors don't. Companies like Relay Health (www.relayhealth.com) offer portals for fee-based, medically appropriate email consultations as a way to bridge the gap, but physicians who are accustomed to playing phone tag with patients are still showing reluctance. In the future, secure email may become the dominant mode for making appointments, reporting test results, educating patients, and addressing non-urgent medical questions cost-efficiently.

Testimonials

Despite the challenges, EMR is catching on with physicians. Their stories may offer the most compelling reasons to consider EMR.

"The patient feels more engaged in their record. At the end of the appointment, particularly with an annual exam, I will turn the screen toward them and we will skim through it together. That way I can make any last-minute changes and they have the opportunity to clarify any past medical history to make sure it's up to date." (Tim Smith, M.D., Holland , Michigan)

"EMR has enabled our practice to become more efficient and expand to meet demand. Patients are happy because they receive more attention and quality of care has improved due to many of the reporting and reminder functions of the technology. Our physicians and staff even refer to the practice as 'the house the EMR built.'" (Thomas Bat, M.D., North Fulton , GA)

Patients express similar sentiments and generally sense greater confidence in physicians who use EMR systems. They may be less able to judge the quality of medical care in the same way physicians do, but they use surrogate measures like

EMR Technology: A giant leap forward toward improving healthcare delivery.

respect, the ability to participate in decision-making, and the efficiency of the visit to gauge the effectiveness of their relationships with their physician.

Technology is propelling social change at all levels, and the move toward widespread adoption of EMR systems strikes at the core of physician-patient relationships. But the benefits for both physicians and patients are compelling, and the transition will likely be viewed as an historic giant leap forward in the quality and efficiency of medical care delivery systems.