EMR: Not Just a Question of When But a Question of How

BY DAVID WINN, M.D.

Aging baby boomers are obsessed with the idea of leading healthier lifestyles, and demand for greater choice and control over personal health decisions is growing. Deeper scientific knowledge reveals longer-range causes for disease and the importance of early treatment. Escalating health care costs highlight the need for strict compliance and preventative care measures.

Yet amid all of this, managed care has reduced physician-patient visitation time to a brief 9 to 15 minutes. Inefficient, paper-based routine processes—such as filling prescriptions, searching for patient histories, capturing encounters, and coding—have burdened physicians' schedules and bred inaccuracies. Critical research, too, has been limited by lack of time and easy accessibility.

Health care stands primed for sweeping change, driven by what many are calling a "technological revolution." At the center of this revolution is the replacement of antiquated, inefficient paper-based clinical and administration systems with electronic solutions, which promise to restore physicians' resources of time and money—and ultimately improve the complete cost and quality of health care delivery. Electronic medical records (EMRs), in particular, have garnered tremendous attention as potential health care "savior" technologies since their introduction to the medical world more than 30 years ago.

But the road to the new health care paradigm that these technologies promise hasn't necessarily been smooth; challenges to the adoption of EMRs, and all information technology (IT) solutions, abound. Nonetheless, what equals competitive advantage today in terms of technology adoption will be an operational requirement tomorrow. The question is not if EMRs will become the *de facto* standard, but when, and how?

Health Care Tests Rough Waters

When faced with the sea of possibilities offered by information—and, specifically, Web-based—technologies, many companies have dived right in. Admittedly, some that tried to ride the Internet wave have sunk, along with capital market indexes. But many more have swum, buoyed by the incomparable real-time reach provided by Internet access to key audiences and the administrative efficiencies achieved by advanced information technologies. Today, industries such as finance and retail are forever altered by the "digital revolution." Yet health care still lags, tentatively dipping toes into the waters of technological change.

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The Institute for the Future notes that surveys show even in the late 1990s, "Few physicians used computers in their everyday practice."[1] While a recent American Medical Association (AMA) survey reveals that 70 percent of physicians surveyed use the Web—up considerably from 37 percent in the AMA's 2000 survey—the top five physician activities online remain unchanged since 1997. Physician use of Internet products offered to record data, write prescriptions, order lab tests, and carry out other such tasks has been close to nonexistent.[2] EMR solutions have been in existence for almost three decades, and a plethora of applications have been brought to market over the past decade. Still, it is estimated that less than 5 percent of physicians today use even basic automated record systems.[3]

The commonly accepted reason for this has been that physicians are conservative technophobes, stubbornly resistant to changing their ways. But the AMA survey results belie this explanation. They indicate that most physicians do use the Web, for such things as e-mail, collecting travel information, and managing their finances. Approximately one out of every four physician Internet users even has a Web site.[4] A Luddite group they are not.

So what is the more realistic explanation? The blame for early EMR systems' failures lies less with their users than with the systems, themselves. In some cases, technologies were developed without proper consideration to physicians' unique workflow and did not take into account the context of the products' use. Often, applications were difficult to learn and complicated to use. In most cases, the cost of internal EMRs was prohibitive, and many times a system became outdated within months of being installed. Adding to these technology "horror

stories," vendor histories have been shaky, leaving some physicians wondering which companies will stay in business, and for how long.

Certainly in the past, and even today, one of the leading barriers to the more widespread adoption of EMRs has been the investment of time and effort required by physicians to become familiar with, and effectively use, the systems. Physicians are used to sitting down with patients, not with computers.

Can't Fight the Tide of Change

The health care industry stands at key crossroads of change—cultural, environmental, regulatory, and technological evolution—that cannot be ignored. These converging trends and forces are beginning to overshadow past worries and barriers to technology adoption with the promise of the Internet as a platform to allow doctors, hospitals, and health plans to operate in unison. Within this vision, Web-enabled EMR technology promises universal access to critical information, when and where needed, by the right people—with privacy rights insured. On a more prosaic level, EMRs mean no more searching for paper charts, no more puzzling over scribbled notes, and fewer hasty mistakes.

What exactly is changing in the industry to make this vision a reality? Just about everything.

From a product standpoint, technological advancement has created tremendous improvements to EMRs. Computers now combine tremendous processing power, such as that provided by the 32-bit Intel® Pentium® 4 and AMD Athlon™, with huge memories and extensive hard disk storage capacities, all at greatly reduced costs. These hardware advances are coupled with powerful software developments—object-oriented programming languages, such as Borland® Delphi™ and Microsoft® C#, as well as communication standards, such as XML (Extensible Markup Language), HL7 (Health Language 7) and SOAP (Simple Object Access Protocol)—to capabilities never before possible in EMR systems. In addition to increased technological capabilities, the maturity of the EMR marketplace, coupled with the application service provider (ASP) Internet delivery option, has produced far more affordable solutions.

As importantly, while technologies and products have become more sophisticated, so have their user base. A whole new generation of tech-savvier physicians and health care administrators are entering the marketplace and stand to embrace EMR and other e-health solutions. In fact, an Association of American Medical Colleges survey of 1999 medical school graduates found that nearly 75 percent feel well prepared to use a computer-based clinical records system, as compared to only 31 percent who felt prepared in 1988.[5]

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EMR solutions are becoming more physician-friendly, and physicians are becoming more tech-friendly. But the catalysts that will drive universal EMR adoption go beyond technological innovation. EMRs and other Internet-enabled health care IT solutions will become practical norms in response to overwhelming industry trends that are forcing the need to reduce costs, improve the quality of care, and cater to increasingly informed and empowered consumers.

Cost and Care: A Balancing Act

The ultimate goal of the health care provider is to provide the highest quality care possible to improve the wellness of the population. Yet beneath this altruistic aim lies the reality that health care, too, is a business. The need, therefore, must be to provide the highest quality care at the least possible cost. Achieving this balancing act will require the adoption of new technologies and processes that can at once improve accuracy and efficiency in the delivery of care.

It is no mystery that the entire health care system is rife with inefficiencies of time and money. The health care system, for example, spends 20-30 percent of its money on scheduling, billing, recording, and other tasks unrelated to patient care.[6] According to the Medical Records Institute, data capture alone—particularly transcription—for paper-based record keeping costs the health care industry approximately $15 billion annually.

As well, providers spend an average of $8 per claim for check-in, eligibility verification, and billing, totaling roughly $250 billion spent annually on medical claims paperwork. Through the use of electronic data interchange, that figure could be trimmed as much as 80 percent, and online claims processing could cut it more than 10-fold. [7]

Money is not the only valuable commodity that providers lose due to the inefficiencies of paper-based systems. On average, 30 percent of patient charts are not available during a patient visit, according to a Gartner Group research study, adding up to 52 hours a year physicians spend waiting for charts, instead of seeing patients.[8]

Keeping an eye on the bottom line, the need for IT solutions to the inefficiencies of health care delivery are easy to see. But looking at the bigger picture, the even greater need for IT solutions to the inaccuracies of health care delivery

are blatantly obvious—and frightening.

When Human Nature Falters

In 1999, the National Academy of Sciences threw a spotlight on the prevalence of medical errors across the health care system in a now infamous report entitled *To Err Is Human*. The report revealed shocking statistics—for example, that between 44,000 and 98,000 Americans die each year because of medical mistakes—that awoke consumers, the government, and the health care industry to the acute need for a better system of care.[9]

Examples of medical mistakes noted included improper medical procedures, medications, or dosages, incorrect diagnoses, and delays in treatment. Prescription errors—often due to mistakes in interpreting physicians' notoriously poor handwriting—were believed to have contributed to almost 20 percent of the 98,000 deaths due to medical errors. According to the Institute of Medicine, an estimated 7,000 deaths occur each year due to preventable medication errors in hospitals alone, and tens of thousands more occur in outpatient facilities.[10]

Awareness of medical errors, combined with greater Internet savvy, has heightened consumer knowledge of, and interest in increased control over, personal medical care.

More than 52 million Americans—50 percent of Internet users—have used the Internet to obtain health information. These e-health consumers are becoming an influential segment of the health care market, and their numbers are expected to reach 88 million people by 2005.[11] They are coming to expect such online services as disease management education, medical record access, claims administration, plan and provider selection, interaction with physicians, and other personalized services. And they are being backed by the government in their bid for greater control over their personal health records, benefits, and care.

HIPAA Pushes, Consumers Pull

The pivotal role of compliance with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) becomes clear when you consider HIPAA's basis in the overlapping technological, cultural, environmental, and operational trends currently affecting the health care industry.

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Despite advances in health care organizations' ability to process and share information, the ability of health information systems to revolutionize care delivery stands at an evolutionary crossroads. Consumers are increasingly utilizing self-service features via the Internet and demanding greater flexibility and choice in the design of their health benefits. As the New Economy drives businesses to become more reliant on the Internet in order to survive, e-health initiatives promise to streamline health care processes, decrease costs, and improve patient care and satisfaction.

However, two obstacles have stood in the way of such progress: (1) concerns over privacy and (2) a lack of uniform standards within the health care IT industry.

HIPAA was designed to promote improved privacy and security, as well as better cooperation and integration of payers, providers, and other business partners through more efficient, accurate, and complete information flow. The beginning of the first phase of HIPAA was marked by the August 11, 2000, adoption of rules to establish standards for administrative transactions. But the adoption of the first HIPAA standards has implications that far transcend simplification of administrative transactions. The proposed privacy rules require all health plans, providers, and related organizations to develop comprehensive technical, administrative, and physical mechanisms to guarantee the confidentiality of member or patient medical records which payers transmit electronically. As an additional liability, the rules also make payers responsible for the compliance of contracting providers and businesses.

In sum, HIPAA effectively mandates, among other things:

- Privacy of health care information in an electronic format, meaning that patient data must be protected
- That the security and privacy policies of the provider organization be recorded and audited for compliance
- The adoption of standard identifiers for providers and consumers, which will facilitate the implementation of long awaited and sorely needed EMR systems
- Documenting a detailed audit trail of anyone who accesses a paper medical record

HIPAA doesn't outright demand that providers adopt EMR system. It does, however, seem to have this as an ulterior motive; HIPAA compliance requirements for paper-based medical records and related communications are so stringent and complicated, they make it extremely difficult for providers not to adopt EMRs. The assistance EMR systems can provide in achieving compliance

with HIPAA's security and privacy requirements is irrefutable, through features such as:

- Role-based authentication
- Recorded and audited access
- Protection of health information through encryption or de-identification
- Data integrity
- Data archiving

Legislation and consumerism are clearly urging providers in the direction of universal EMR adoption. The "push" for EMR use is there; but what about the "pull?" The question many physicians still have on their minds is, "What's in it for me?"

Advantages Physicians Can't Ignore

What physicians want is, at the heart of the matter, no different than what their patients, business partners, and legislators want: the most efficient, effective, accurate, high-quality care possible, at the lowest cost. It is EMRs' ability to improve health care—in both the altruistic and business sense—that will ultimately win over physicians.

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Consider the key advantages:

- **Increased Access/Efficiency**: With EMRs, patient information is immediately accessible, which can save every doctor approximately an hour per week that would normally have to be spent waiting for charts to be delivered.
- **Security**: EMRs can be configured to restrict access to only portions of the medical record, or can be programmed to have multiple levels for office personnel, who are authorized or restricted access based on job function. Many EMRs, too, have audit trails that identify anyone who has accessed or added to a record.
- **Improved Documentation**: Test and lab results, EKGs, and X-rays can all be entered automatically into an EMR, reducing the risk of data entry errors and omissions. In many systems, health maintenance prompts alert physicians and office staff to incomplete patient information. Contributing enormously to the reduction of prescription and other notation-related errors, EMRs also remove the problem of illegibility of patient notes, since the information is stored electronically.
- **Quality of Care**: EMRs can provide decision support at the point of care, which has been shown to reduce adverse antibiotic reactions by 85 percent.[12] EMRs can also be used to track patient follow-up activity, patient compliance, and patient progress.
- **Increased Resources**: Once an office successfully converts to an EMR, the space typically used for paper records can be utilized for additional exam rooms, patient education areas, or increased office space. In addition to saving space, EMRs also save valuable time; office staff time will no longer be utilized hunting down records and filing, and multi-user access will allow staff to update patient records immediately.
- **Reduced Malpractice Costs**: Insurance companies have been known to reduce malpractice premiums as much as 10 percent because of EMR use.[13] This is attributable to the EMRs' positive affect on quality of documentation and care.

According to the Robert Wood Johnson Foundation and the Institute for the Future Health and Health Care 2010 forecast, IT will be one of the biggest catalysts of change in the health care industry over the next 10 years. EMRs are expected to be one of four areas where health care will be most affected by IT.[14] Still, despite the strong "push-pull" effect of industry forces—cultural, environmental, regulatory, technological, and financial—on physicians' adoption of EMRs, the EMRs have a long way to go before they achieve critical mass in the industry.

Learning to Walk First

EMR technology still has a number of obstacles to overcome before it is fully embraced by providers. Many physician practices remain wary not only of the costs of implementing an EMR system, but also of choosing a vendor and solution that will be viable over the long term. Physicians remain naturally resistant to workflow and behavior changes; they don't want to take the time to learn about complicated solutions and how to use them.

The challenges to EMR adoption in hospitals are even greater; costs and complications top the list. Different types of data reside on different systems, and integrating them presents a virtually impossible challenge. Even while the implementation of EMRs may make data immediately available, it is contained in multiple systems. Asking doctors to log on to several different systems, each with its own interface, is just

not realistic.

Physician adoption of EMR systems resides at a scant 3-5 percent today.[15] Yet the market is estimated to grow exponentially over the next decade. How will that tremendous growth curve be achieved?

The answer is that the health care IT revolution will be more of an *evolution*. Embracing of these technologies will be done gradually, step by step—beginning with basic, core solutions and building feature by feature to eventually encompass advanced, complex systems. Providers can't "bite off more than they can chew" when it comes to EMR solutions; they have to walk before they can run.

The market is gradually responding to physicians' need to start simple, providing scalable solutions that can ease users into a technology-enhanced workflow, and then grow in complexity based on user needs and capabilities. For example, physicians can learn to "walk before they run" with an incremental approach to EMR adoption that establishes and builds upon an EMR technology foundation, without requiring a complete system to be implemented all at once.

The foundation can be tailored to the specific needs and behaviors of a practice's physicians; it can include transcription software, or medication management solutions, or it could simply be an electronic repository that provides universal and simultaneous access to patient charts. As physicians become comfortable with the technology and how it fits into their workflow, they can add more sophisticated EMR system components that provide enhanced functionality with time. Through this incremental approach, physicians can eventually find themselves comfortably and competently enjoying the advantages of a complete, advanced EMR solution.

That advanced EMR systems will soon be the standard is evident, because the EMR is one of the few tools available that can positively impact both the clinical and the administrative efficiency of a practice. The vision for tomorrow's health care delivery system is one of quality and cost-efficiency—enabled by timely, productive, accurate, and secure generation of, access to, and exchange of detailed health information by payers, providers, administrators, and consumers. EMRs will play a pivotal role in realizing that vision; physicians, therefore, need to start today learning to "walk the EMR walk" so they will be able to "run" smoothly and confidently as the health care industry evolves in the years to come.

References

1. J. Carroll. 2000. Electronic Medical Records: If Not Now, When? *Managed Care*, MediMedia USA, July 2000.
2. American Medical Association. *2001 AMA Study on Physicians' Use of the World Wide Web*, based on a survey of 1,001 physicians in the United States between June 15 and September 9, 2000.
3. J. Stringer. 2000. Broken Records. *Red Herring Magazine*, September 1, 2000.
4. American Medical Association. *Op. cit*.
5. Electronic Medical Record Usage Expected to Skyrocket, press release courtesy of BAI Clinical Software, *ADVANCE for Health Information Executives*, June 4, 2001.
6. R. Korpman. 2001. Managed Care and e-Health. *Health Management Technology*, February 2001. 22(2): 12-14.
7. E. DeJesus. 2000. Claims Processing Speeds Up. *Healthcare Informatics*, June 2000. 17(6): 45-50.
8. The Advantages of an EMR. 2001. <www.expert-system.com/emradvantages.htm>, from Electronic Medical Records, <www.expert-system.com>. Expert System Applications, Inc. Web site, August 30, 2001.
9. L.T. Kohn, J.M. Corrigan, and M.S. Donaldson. 1999. *To Err Is Human: Building a Safer Health System*. Report from the Committee on Quality of Health Care in America, Institute of Medicine, The National Academies, November 29, 1999.
10. *Ibid*.
11. G. Pallett, J. Girzadas, K. Fleming, and R. Given. 2000. Winning the Loyalty of the E-health Consumer: Building an E-business Roadmap. Health care study by Deloitte Research—Healthcare Institute, a Deloitte & Touche and Deloitte Consulting group, p. 8.
12. The Advantages of an EMR. 2001. *Op. cit*.
13. *Ibid*.
14. Electronic Medical Record Usage Expected to Skyrocket, press release courtesy of BAI Clinical Software, *ADVANCE for Health Information Executives*, June 4, 2001.
15. J. Stringer. 2000. *Op. cit*.

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