

## The Digitization of Medical Care

*Digitization: The shift to a society where computers are ubiquitous; to carry out, control, or conduct activities by means of a computer. -- Adapted from Professor Michael Gerhard, Ball State University*

### Great Ambitions and Great Expectations

*Health information technology (HIT)* aims to electronically link providers, payers and patients with detailed files containing utilization, outcomes, quality, costs and health status data, all flowing through a national health information network.

HIT is the over-arching and underpinning infrastructure to radically transform American medicine. HIT enables the PHR that incorporates and relies on development of the EHR that in turn, incorporates and relies on implementation of the EMR in physician practices and hospitals.

The *electronic health record (EHR)* forms a comprehensive repository of individual health information accessible to and shared among qualified users – somewhat like a person’s record of purchases and credit status. The *electronic medical record (EMR)* is created and controlled by the individual provider. While patterned after the traditional paper chart, the EMR is far more flexible and functional thanks to the power of computers and communications.

The *personal health record (PHR)* is a structured summary of important health information kept by an individual. This potentially lifetime document is actively managed using a personal computer or an online service with links to helpful applications such as bill paying, appointment setting or provider ratings.

These ambitious goals face numerous obstacles. A Wall Street Journal survey found nearly 60% of individual respondents thought doctors should be responsible for updating a patient’s PHR. Doctors say there is no assurance sensitive data will remain secure and reliable. So far, HIPAA protections would not apply once data leave a provider’s files and are transferred into a patient’s PHR.

Many fear protracted fights over release of proprietary and, more importantly, sensitive clinical data. Questions are being raised as to what constitutes “the medical record,” potential liability from using “cut & paste” notes, or subsequent alterations to electronic records by staff other than the responsible clinician.

### Making The Transition to the EMR

The EMR will be a valuable advance in the technology of patient care. However, conversions have been costly and unpredictable. Many applications or installations turn out to be a poor fit under actual practice conditions. 400 or more vendors sell products labeled as EMR’s, while 20-30% exit the market every year.

The ability to knowledgeably compare features, performance, and total cost of ownership is beyond the expertise of most groups. Often the merits and flaws of the final selection aren't known until months after installation. First-year failures or breakdowns of 10% and more are being reported among clinics.

Electronic records cannot be implemented on a "going forward" basis. Existing charts and documentation from at least the last 2-3 encounters should be scanned and organized into comprehensible files. Prior to that, essential demographic and vital clinical data must be entered into the EMR database for immediate access. Undetected errors and oversights are added concerns during this transition period.

Successful EMR adoption requires revisions in practice routines and workflows. Existing practice management systems must be integrated, reworked or replaced. Few groups have the expertise to manage a transition on their own while vendors vary widely in their willingness to help once installation is declared done. Without such changes, the ability to harness the power of the EMR is greatly diminished.

Faced with these facts but feeling pressured to adopt an EMR, the few remaining truly independent practices around the country are giving up and selling their dwindling practice value to large medical groups and health systems.

## Patient Care and the EMR

Nearly all doctors and nurses support the use of the EMR once past the early transition hurdles. Basic functions like checking histories, making referrals, ordering tests and writing prescriptions win high marks. The resulting chart is more complete, timely, accurate and accessible. Few would go back to cumbersome paper records.

However, doctors criticize inflexible templates and formats that inflate charting time and policies that require them to complete all required encounter fields. Documenting a routine visit with the EMR, as a result, can take as long as a complex visit. Cut & paste notes and built-in templates meant to speed up charting can, unfortunately, encourage rote entries and meaningless over-documentation.

Nurses appreciate readily accessible charts and readable entries but dislike working around poorly designed systems and badly organized electronic files. They dislike picking up the slack for doctors whose pace of practice has declined noticeably because they are slow to adapt or are passively resisting the EMR.

Patients dislike doctors and nurses who screen-gaze and keyboard while they are trying to describe conditions and concerns. Conversations with patients and among staff can easily fall by the wayside as pressure to meet charting duties ramps up (incomplete, incorrect and late charts are easily monitored.)

Symptoms of data overload and alarm-fatigue from extended EMR use are being reported. Traditionalists say the art of medicine (*observing, listening and thinking*) is being replaced by an undue faith in data and a depersonalization of care.

## Hospital Systems Take the Plunge

Every hospital system is making a sizeable investment in their EMR and say it's a top priority for ratcheting up quality and safety. The VA medical system believes their EMR (an in-house system dating back to the 1980's) helped them earn a designation as one of the best care systems in the US.

One observer said the real insight into the VA's success is that EMR's are more likely to work well in tightly structured organizations with consistent operating rules and treating relatively comparable populations.

The notion of a straight line connecting EMR investments with a substantial or least measurable payback in quality and safety is undecided. The more reliable assessments so far (as opposed to vendor reports) have been conducted in controlled settings such as academic medical centers. How well EMR systems fare over time in less structured, more open settings such as private practices and community clinics remains to be seen.

Vendors claim a national commitment to health information technology built around widespread use of the EMR will radically cut medical errors. Design and deployment problems remain a challenge. One widely used computerized physician order entry application (key element of the EMR) promoted medication errors as the result of fragmented functions, inflexible formats, and glitches such as pharmacy inventories mistaken for dosage guidelines.

In contrast, experiments in which ICU staff consistently used simple paper checklists of tasks (like pilots before a takeoff) cut infection rates dramatically at little added cost or time. The Federal Office of Human Research initially shut down the study saying the trials required informed consent. They relented after severe criticism while denying that EMR's constituted a similar concern.

## Slow but Steady Adoption

The US has been slow to promote basic electronic record investments. Australia has focused on physician practices, Canada – hospitals, Britain – infrastructure and connectivity. The US opted for glamorous goals like *performance transparency* and *consumer power*, belatedly recognizing a solid foundation at the practice and hospital level is required before loftier goals can be pursued.

Generally, electronic documentation of notes, viewing of lab and radiology results, prescribing and test ordering, and exchange of data define the basic EMR package. Modern Healthcare reported about 14% of physician practices have adopted

“minimally functional” EMR’s – 30% for larger and multi-specialty groups and under 10% for solo and single specialty groups.

About 10% of Minnesota hospitals say they have fully implemented an EMR and about 60% have partial systems, about the same rates as the rest of the country.

Few studies are out yet documenting total costs for a practice. EMR packages are a complicated mix of software, hardware, installation and implementation elements. Pricing and financing arrangements vary widely reflecting required or desired features, and the practice’s present technology investment and expertise.

One comprehensive study indicated relatively sophisticated EMR’s are running cumulative 3-year average costs of \$39,000 per physician. Simpler packages are averaging \$19,000 over three years. Follow-on costs vary greatly with inevitable upgrades required. The rate of obsolescence of today’s EMR’s remains unknown.

Large health systems require far more complex, customized EMR’s but few sources confidently documenting how much big systems are investing. Few systems would likely consider their present EMR’s fully functional as the bills keep rolling in for ongoing modification, training and support.

### Getting the Rivers of Data Flowing

HIPAA (the Health Insurance Portability and Accountability Act of 1996) aimed to force adoption of health information technologies and promote the movement of data. HIPAA was meant to protect sensitive patient data while enabling its release for purposes of monitoring and managing care. The transformation has been slow and contentious.

The State of Wisconsin wants data *not* restricted by HIPAA to be released without a patient’s consent; all part of the governor’s advocacy of faster implementation of health information technologies. In Minnesota, the governor’s *Healthcare Transformation Task Force* recently called for full use of information technology to promote transparency of cost and quality, and empowerment of consumers.

HIE’s (Health Information Exchanges) are intended to be essential state-level building blocks in a *National Health Information Network*. Few are making much progress as the result of limited participation and uncertain funding.

The commercial financial system is anxious to get in the business of processing transactions, managing databases and moving information. RelayHealth, which sells patient and doctor communications software, is adding products to enable patients to organize and pay their medical bills through financial giants like J.P. Morgan Chase and Bank of America. The recent financial meltdown may slow this trend temporarily.

## Dance to the Music of the Market

Private and public payers are determined to use information technology to create a competitive care market through the empowerment of consumers. Cisco Systems, a global technology firm, says simply: *The next revolution in healthcare is not about medicine; it is about using information to drive patient-centric, safe and efficient care.*

Critical to transparency of performance and a workable market place are consistent standards. Cisco Systems went on to say: *Without ruthless standardization, the benefits of interoperability and system-wide efficiencies will not be achieved.*

Pay for performance (P4P) is a logical next step in the digitization of medical care. P4P is touted as central to creating consistent mechanisms to rate, report and recognize clinical performance. Doctors say P4P will further confuse clinical accountability, and that erroneous reports will damage careers. Researchers add that excessive emphasis on external rewards weakens professional motivation.

## From Passive Patient to Empowered Consumer

GE Healthcare, McKesson, Perot Systems, Siemens, Cisco, Cerner, Google, IBM, Microsoft and many others are racing to mine what they see as a rich lode of profitable business in selling proprietary health information applications.

Google and the Cleveland Clinic are piloting a PHR based on *Google Health* to enable patients to store and import records on line, search for doctors and use medication tables and immunization reminders. Microsoft and the Mayo Clinic plan to use Microsoft's competing product, *HealthVault*, in a similar venture. Aetna recently announced agreements with Microsoft to promote *HealthVault*.

Blue Cross-Blue Shield and America's Health Insurance Plans (1,300 insurers covering 200 million Americans) announced a PHR featuring Web-based tools to help consumers manage insurance claims, pay medical bills and keep their health records up to date.

Wal-Mart, AT&T and other large employers are sponsoring similar projects including a PHR called *Dossia*. Hospitals, physicians and pharmacies have been told they will be expected to update enrollees PHR's or lose preferred status.

In the Twin Cities, *Carol.com* touts its eBay-like site as an e-medical shopping mall. *TheHealthCareScoop.com* (related to Blue Cross Blue Shield of Minnesota) invites consumers to post online provider reviews. The sponsors hope members largely self-police unfair or inaccurate postings. Not as sanguine about this, New York State has proposed physician-rating standards to deal with questionable criticisms and biased ratings.

## The Digitization of Medical Care

The Internet and the World Wide Web, built on the power of networked computers and high-speed communications, have upended traditional ways of selling and buying goods and services. Expect the same as we computerize medical practices and digitize patient care. Concepts like "my doctor" or "a physician visit" or "the patient chart" as well as traditional pricing and reimbursement methods will fall by the wayside as consumer-driven and payer-driven innovations emerge.

**END**