

Electronic Entry, Retrieval and Analysis of Patient Information: Times Savings and Cost Reductions

Introduction

The potential for significant improvements in the quality of health care delivery as well as significant time and financial savings for both health care providers and their patients centers on a robust, flexible system for electronic entry, retrieval and analysis of patient information.

Although physicians have used electronic records for many years for billing and accounting purposes, they are now faced with the need to electronically record and manage information relating to the delivery and outcomes of patient care.

Traditionally, patient information has been paper-based, but many forces are converging to make the electronic medical record (EMR) an inevitability. Will the benefits to providers and their patients justify the expense and hassle of purchasing and learning to use the new technology?

Traditional patient records:

Today the vast majority of patient information exists in some type of hard copy such as: paper-based patient records, film-based x-rays and scans from diagnostic procedures, stripcharts and outcomes from labs and monitoring equipment, and voice recordings of clinicians notes. These elements are called, in aggregate, the patient record.

The patient record has been described as the principle instrument for ensuring coordinated, continuous, and comprehensive care (Starfield 1992, Barnett 1984). Traditionally, medical record keeping stressed privacy - accessibility of the information to others was neither desired or desirable. However, with increasing multidisciplinary care, group practice, and patient mobility, the patient record now must integrate into one resource - available to the entire health care team - lengthy notes, results of investigations, labs results, and reports.

Institutional efforts to contain costs are creating new alliances of purchasers as well as of providers. At the same time, patients are becoming more mobile, routinely receiving treatment - and incurring bills - at many institutions, even within a single episode, creating an unprecedented need to share clinical and patient encounter information. Completeness and availability of records is mandated in such an environment but it is achieved at a cost: increased time, personnel, and financial resources are needed to collect and maintain accurate, reliable, confidential patient records. According to a Decision Resources report, 25 cents of every hospital dollar spent in 1990 paid administrative costs, many of which are associated with the management of patient information.

Although the paper-based patient record is familiar, portable, flexible, easily browsable, and reassuringly low-tech, it often fails to provide all of a physician's information needs during patient encounters. Many studies have criticized the variable quality of paper-based patient records, pointing out faults such as: unavailability, illegibility, sheer physical volume over time, difficult transferability and integration between providers and institutions, the necessity to record the same data many times on different documents, lack of standardization in content and format, excessive redundant information, and inaccurate diagnostic coding.

The increased complexity of health care delivery, regulatory and payer information requirements, and demands for patient-based data for clinical and epidemiological purposes has exposed the inadequacy of paper-based records to carry out a systematic, cost-effective program of health care. The answer to this information management inadequacy is the electronic medical record.

In 1991, after a study of prospective health care delivery improvements, the Institute of Medicine issued a report called "The Computer-base Patient Record: An Essential Technology for Health

Care,” which identified five basic objectives for the computerized patient record. The computer-base patient record must:

1. Support patient care and improve the quality of care.
2. Enhance the productivity of health care professionals and reduce administrative costs of health care delivery and financing.
3. Support clinical and health services research.
4. Accommodate future developments in health care technology, policy, management, and finance.
5. Ensure patient-data confidentiality at all times.

HIPAA mandates electronic data exchange

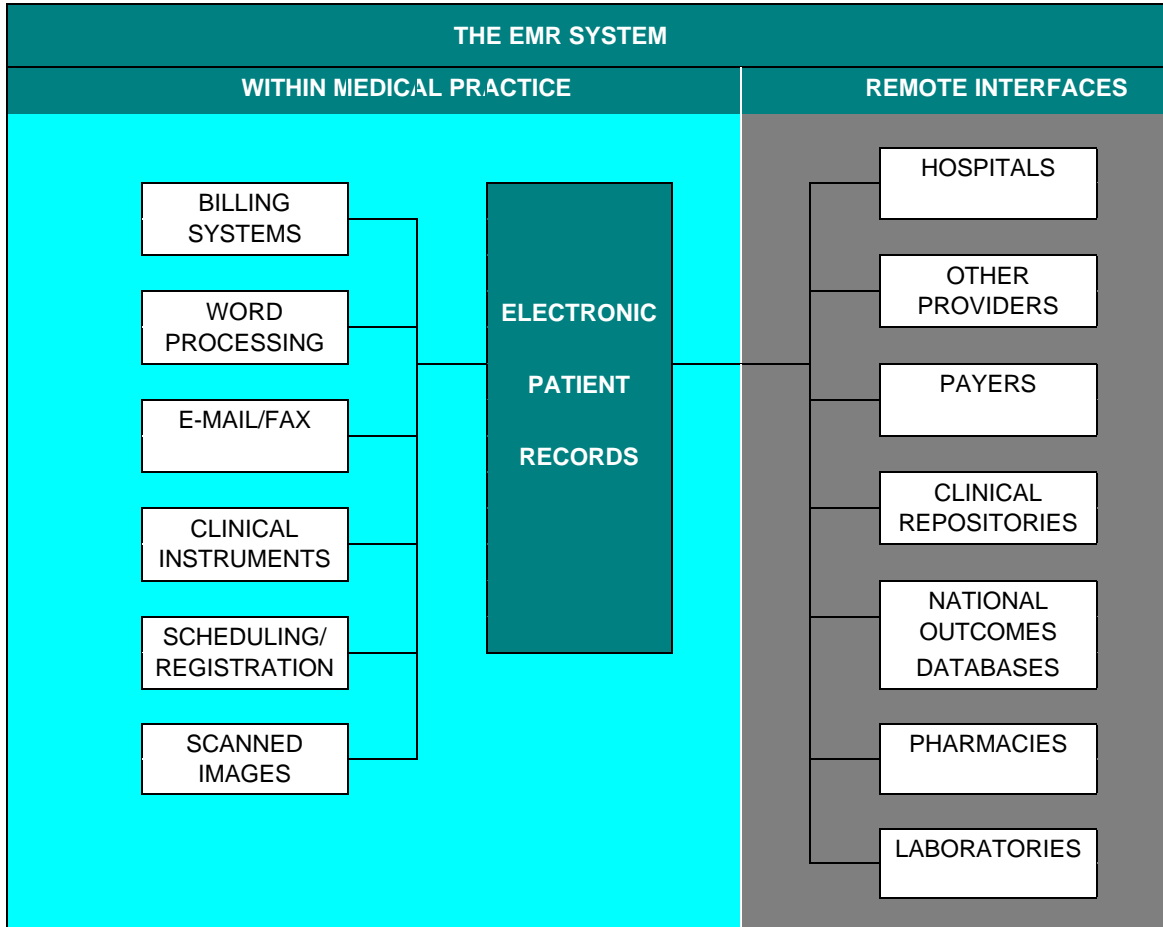
Compliance with the Health Insurance Portability and Accountability Act is mandated by the Spring of 1999. The act mandates that, over time, health care organizations must begin transmitting information electronically. Those who do not comply will be subject to fines and other penalties, including exclusion from Medicare and Medicaid contracts. HIPAA also mandates information management standards to improve the operation of the health care system and reduce administrative costs. The act greatly accelerates an inevitable trend toward utilization of the EMR.

What are the benefits of the EMR?

An EMR system can greatly improve health care delivery, increase the physician’s efficiency, reduce practice expenses, and reduce health care costs for the patient. The major benefits are summarized in the table below:

Improved Quality	Physician Savings	Patient Savings
<ul style="list-style-type: none"> • Complete, up-to-date patient data instantly accessible to any member of the health care team at any site in network • Present and manage protocols • Write, sign, send prescriptions while patient’s drug history available • Order lab tests and receive results electronically • Graph lab values, scan and store images • Provide patient’s health maintenance, i.e. alert to PAP smears, mammograms • Improve follow-up and recall tracking • Generate and document clear patient instructions 	<ul style="list-style-type: none"> • Save clerical time - less pulling of charts, filing, less misplaced, lost lab results • Reduce transcription time • Lower malpractice premiums and exposure, save time in depositions, records analysis • Generate outcomes analysis to demonstrate effectiveness and quality of care • Reduce or eliminate errors in claims that cause insurance claims rejections • Increase productivity - treat more patients in same time, or spend more time with each patient • Improve collections through management of referral and eligibility data • Track managed care contracts • Improve managed care payments/bonuses, improve coding optimization 	<ul style="list-style-type: none"> • Avoid duplication of procedures when patient visits different doctor/clinic. • Avoid ordering un-indicated tests • Reduce or eliminate unnecessary office calls and hospitalizations due to adverse drug interactions

The electronic patient record is the heart of a dynamic information system. The EMR system should be able to communicate seamlessly with other systems or devices inside and outside the medical practice while maintaining data security and confidentiality, as summarized in the diagram below.



Do EMR systems work in “real life”?

A study, completed in February 1997 offers some of the first systematic evidence of a strong business case for implementing computerized patient records in ambulatory medical practices. The study was conducted by Griggs-Anderson Research, an independent research firm in Portland, OR, and MedicaLogic Inc. of Beaverton, OR, a manufacturer of EMR software.

The research, conducted at 16 of MedicaLogic's customer sites, showed significant improvements in five areas: the quality of medical care, the quality of patient service, the productivity within clinics, the quality of medical records, and the quality of work life among clinicians and administrative personnel.

Among the findings was a strong relationship between the length of time the company's EMR product was used and the level of benefit reported by users. For example, among customers using MedicaLogic's system for one year or more, 82 percent reported that the quality of their medical records was either greatly improved (71 percent) or somewhat improved (11 percent). The remaining 18 percent reported no change or had no opinion. None believed their patient records were worse with the electronic system.

The data produced by the Griggs-Anderson study are echoed in more anecdotal terms by many clinicians who are currently using EMRs in their practices. Dr. Steve Gardilcic, a urologist in Mansfield, Ohio, says his practice was transformed after an EMR system was installed in 1996. The investment in server, networked personal computers and EMR software cost Dr. Gardilcic over \$55,000. But the investment is already beginning to pay for itself. On-line records are so easy to produce and retrieve, that within the last 12 months, his staffing costs have been reduced by \$25,000 and transcription costs by \$8,000. Within four months Gardilcic transformed his practice into a paperless office. "More importantly, patients are receiving better care because staff can quickly and effectively respond to their needs," Gardilcic says.

Dr. Duncan Postma of Tallahassee ENT, Head and Neck Surgery spoke about his group's experience using and implementing NextGen®, an EMR system from Clinitec International that can be run on PCs, laptops, and wireless handheld terminals. Postma began using NextGen® in February, 1996, with the rest of the physicians in the practice adopting the system six months later. "What pushed me to find an electronic system was the need to have patient information available at our satellite office. We specifically selected NextGen® over other systems because of its flexibility. Other systems did not have the sophistication to generate the long office notes we need."

According to Dr Postma, "There are immediate benefits to implementing an EMR system. Physicians don't have to wait for transcription for the records to be updated, and they have immediate access to charts. This is especially useful when you are on call and can access the information from a remote computer. Our nurses appreciate not having to hunt down charts or struggling for drug information. The quality of our records is unequivocally better. At the same time, transcription costs have been reduced by a third and patient records are more accessible."

Any EMR system under consideration must:

- Be easy to install and easy to learn
- Have on-line help
- Be intuitive, allowing clinicians to enter notes, create reports, and other documentation in familiar ways
- Utilize off-the-shelf components
- Be scalable, able to accommodate any size practice, from a solo practice to a large multi-provider, multi-location group.
- Allow for automatic entry of CPT and ICD-9 codes
- Permit storage and retrieval of images
- Allow for automatic entry of lab data
- Graph lab values
- Have search capabilities
- Be simple to upgrade as technology changes or practice/policies change
- Allow seamless linkage across functional boundaries
- Be backed by a financially stable company that provides excellent technical support

How can my practice implement an EMR system?

"It is a common problem for physician offices to be several years behind in information technology," according to Steve Yates, Director of Information Services at PrincipalCare, Inc., a management services company in Brentwood, New Jersey. EMR initiatives encounter obstacles in many practices: obtaining reliable information about technology options, persuading group practice members to invest in information technology, and getting them to use it correctly in order to reap the full benefits. "Physicians are not yet in enough financial pain, so they are not motivated to adopt electronic records technology. Plus, the technology is expensive, so they need to see hard evidence of savings," according to Sam Murphy III, an analyst with Wessels, Arnold & Henderson, Minneapolis.

Many practices, particularly smaller ones, lack the time and resources to devote to information technology. If it is not feasible to hire a dedicated information services expert, someone already on the practice staff needs to be willing to lead the effort to investigate, select, install, and maintain an EMR system. In this case clinicians can acquire information about EMR systems from peers, vendors, trade publications, and educational conferences.

In addition, physician and staff perceptions about EMR systems need to be managed. "We encountered physician and staff concerns that installing an EMR system would complicate normal work and fail to enhance delivery of care," said John A Duff M.D. of Cox Health Systems, Missouri. "But in fact, within a month, it reduced chart pulls by 50 percent and sped up phone-in pharmacy orders. We found a strong relationship between the length of time the EMR system was in place and the level of benefit reported by clinicians. There's definitely a learning curve. As users become more comfortable, they become more efficient and use more of the system's features."

Dr. Postma provided these insights about implementing an EMR system: "Time spent discussing the expectations of each physician is vital. Acknowledge the difficulty of changing with each physician and walk through what is expected of them. It's important to have one clinical person in charge of coordinating template development and that person should seek as much consensus as possible before writing them. Walking through the process with nursing and front desk staff not only provides reassurance, but helps anticipate problems in the work flow.

"Lastly, a phased-in approach works best. Start with twenty percent of the physicians and don't use EMRs with all patients. Gradually phase-in the other doctors. Our biggest headaches come from not being careful enough with adding new physicians. Having experienced staff provide mentoring for less experienced users and trying to pick less busy days will smooth implementation."

In summary:

Institutional efforts to contain costs are creating new alliances of purchasers as well as of providers. At the same time, patients are becoming more mobile, routinely receiving treatment - and incurring bills - at many institutions, even within a single episode, creating an unprecedented need to share clinical and patient encounter information.

The increased complexity of health care delivery, regulatory and payer information requirements, and demands for patient-based data for clinical and epidemiological purposes has exposed the inadequacy of paper-based records to carry out a systematic, cost-effective program of health care. The answer to this information management inadequacy is the electronic medical record. The potential for significant improvements in the quality of health care delivery as well as significant time and financial savings for both health care providers and their patients centers on a robust, flexible system for electronic entry, retrieval and analysis of patient information.

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Decision Resources, Inc., Waltham, MA. "Information Technology in Health Care: Succeeding in a Changing Market."

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