

EHR vs. CPR vs. EMR

Whatever you call it, the vision is of superior care through uniform, accessible health records.

by C. Peter Waegemann

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Some 40 years ago, people thought there must be an alternative to a healthcare system that almost never provides practitioners timely and efficient access to a patient's complete health history. As the intricacies of healthcare increased, it became more and more likely that practitioners would not be fully informed about their patients' previous treatment. Practicing healthcare in this "partially blind" manner had become a habit. Clearly, the quality of care could be improved substantially if all relevant information were available to each practitioner. Thus the idea of electronic health records (EHRs) was born.

What can EHRs do?

The concept of an EHR--electronic storage and instant availability of information to authorized practitioners--is often combined with the advantages of an electronic healthcare system, including enhanced access to medical information and greater efficiency. EHR promoters even claim that full access to health information might bring cures for certain diseases, such as AIDS.

Healthcare is getting more complex every day. Today, multiple specialists are involved in most patients' healthcare, and paper records cannot keep practitioners completely informed. Records must be available electronically so professionals can review a patient's history, including allergies and medication use, and thereby deliver the best care possible. A survey conducted by the Medical Records Institute, Newton, Mass. ([www.medrecinst.com /resources/survey2002 /overview.shtml](http://www.medrecinst.com/resources/survey2002/overview.shtml)) shows that providers rank the ability to share information as the No. 1 benefit of EHRs, followed by better quality of care, improved workflow and documentation, and reduction of medical errors.

Why so few in use?

If EHRs have such an impressive list of benefits and capabilities, why has implementation of full-fledged systems been so slow? The following are four of the most important reasons.

Lack of a framework of standards. The main hurdle for EHRs is the lack of standards in 10 areas:

- Content--for uniformity, compatibility, interoperability
- Information capture--compliance with principles documentation
- Information representation--terminology, code sets, languages
- Operational dimension and data model--allocation, deployment, staging, routing
- Clinical practice--protocols, problem management
- Decision support--algorithms, triggers, logical support
- Security/confidentiality--authentication, accountability, data integrity, encryption
- Performance--measures, for example, of acceptable downtime
- Interoperability--translation modules, versioning, domains
- Quality assurance and system testing

Progress in these areas ranges from 45 percent (data content) to 60 percent (authentication), with many standards organizations working on sections of the framework. Ann Arbor, Mich.-based Health Level 7 is very active in the clinical messaging field, and ASTM Committee E31 (healthcare informatics) is working on security standards, among other things. But clearly, it will be a while before all standards are in place for a fully interoperable paperless EHR.

Lack of motivation. A patient's EHR was initially envisioned as a lifetime record of all health information--from the dentist to the psychiatrist, from the clinic to the hospital. But there is little interest in creating interoperability with, for instance, a competing clinic or hospital. Since direct benefits can be obtained with interoperable patient information systems enterprisewide, such as a clinic, physician organization, hospital, health plan or other provider organization, most activities toward an electronic record are limited to the enterprise.

The EHR benefits mentioned are for the healthcare system. Providers are concerned with return on investment, but gains from EHRs are in patient safety and efficiencies rather than in tangible and measurable financial terms.

Lack of direct benefits for practitioners. Most EHR systems require practitioners to do more computer input and less handwriting. Many perceive writing short notes as easier and, in the short term at least, more cost-effective. For example, an order entry application by computer may take twice as long as writing or dictating an order.

But this hurdle is slowly being overcome. Systems are becoming easier to use and more intuitive. More practitioners are realizing that indirect benefits, such as alerts and medication management, may compensate for the time required. Mobile health systems are providing point-of-care computing in examination rooms and during rounds that offer significant direct benefits.

Confusion about the concept. EHRs are known by various terms, each indicating a specific vision that differs from the others (see "Electronic Patient Care Terms and the Visions They Represent" at left). Ten years ago, the vision of the computer-based patient record (CPR) was in vogue. Today, most provider organizations are working on enterprisewide electronic medical records (EMRs).

While EHR seems to be accepted globally as the generic term for the vision of electronic patient care systems, terms such as CPR continue to be used in some circles, adding to the confusion.

EHRs enable data sharing through electronic information exchange, and they support the trend toward uniform documentation and better information management. A major source of medical errors is the pen. Handwriting allows illegible prescriptions and documentation, personalized shorthand entries, and medication orders that may result in side effects or drug interactions.

Even so, the key benefit of EHRs is not that they require computer entry but that they streamline processes. The most successful EHR systems improve workflow and efficiencies, enabling better management of the patient care process.

Steps toward the goal

Realizing the EHR vision is a journey. The next milestone will be implementation of enterprise-based EMR systems by the majority of providers. Three issues drive the process: information sharing within an enterprise, taking advantage of benefits derived from components of EHRs, and patient safety. Better documentation in order-entry applications and use of decision-making support (e.g., for drug management) both depend on EHR components. Therefore, the need to implement an EHR system is more compelling than ever.

Although progress in implementing full EHRs has been slow, advancements are being made. For instance, successful implementation of the order entry application, particularly computerized physician order entry for hospitals, depends on its interaction with EHR information. Therefore, demands for order entry applications will stimulate implementation of EHRs.

Another exciting development is ASTM's work on a patient care referral data set that can accompany patients when they change providers. It will take some time until all practitioners have a compatible EHR with required standards and precise, advanced interoperability. The ASTM's standard focuses on the most relevant information, such as alerts, medication list, previous service summary and care plan information. It's just one example of the progress that can be made using only a component of the EHR. *

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ELECTRONIC PATIENT CARE TERMS AND THE VISIONS THEY REPRESENT

EHR (electronic health record) Generic term for all electronic patient care systems

CPR (computer-based patient record) Lifetime patient record that includes all information from all specialties (even dentist, psychiatrist) and requires full interoperability (potentially internationally); unlikely to be achieved in foreseeable future

PCR (patient-carried record) All information contained on a token or card that patient carries; most pilots and demonstration projects have been discontinued

CMR (computerized medical record) Any document imaging-based system

EPR (electronic patient record) Similar to CPR but not necessarily containing a lifetime record and not including dental, behavioral, or alternative care; focuses on relevant information

EMR (electronic medical record) Electronic record with full interoperability within an enterprise (hospital, clinic, practice)

DMR (digital medical record) Web-based patient record using "pull" technology (minimum of messages)

PMRI (patient medical record information) Used in Department of Health and Human Services/National Committee on Vital and Health Statistics language

PHR (personal health record) Managed and controlled by patient; mostly Web-based

ICRS (integrated care record services) Term used in United Kingdom

--C.P.W.

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