It's time to convert your paper records into a dynamic, digital information base.

# Get a more complete picture of patient health.

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# The right clinical information in the can save lives—and money.

## The promise of an accessible health history that speaks volumes when seconds count.

The vision is simple: with a few clicks of a mouse, you can see every relevant piece of information that you are authorized to access pertaining to a patient on a computer monitor. These can be radiological images, handwritten physician notes, requisitions, and lab reports. Gathered in one place, with controlled privacy, clinicians and administrative staff can have access to an audit trail of a patient's health and benefit history.

While this vision is advancing under many names (see sidebar at right), there's broad consensus that the day of the electronic medical record (EMR) is drawing closer. In fact, in the United States it's been raised to the level of a Presidential mandate, to be realized within the next 10 years.

*We've got 21st century medical practices, but 19th century paperwork system[s]… There's a better way to enable our healthcare system to wring out inefficiencies and to protect our patients. So medical electronic records is going to be one of the great innovations in medicine.*

George W. Bush, January 26, 2005

## What's standing in our way?

Much of the required technology exists today. But according to a 2005 RAND Corporation study cited in the September 14, 2005 issue of "Health Affairs," only about 20 to 25 percent of hospitals and 15 to 20 percent of physician offices have adopted any type of patient information system, and those systems are generally limited in their ability to share information with other providers.

As any observer of the medical information scene can tell you, much work remains to be done before the EMR becomes a widespread reality. Important hurdles remain. Standards must be written. Cross-organizational rules for the exchange of information must be hashed out. HIPAA transaction and code sets are still evolving. Cultural barriers must be breached. And funding must be secured.

The elderly woman presents with an irregular heartbeat and heart palpitations. She appears dazed and confused, and has difficulty remembering her medications. "Water pills," she says finally. "And blood thinner, I think."

Meanwhile, one of the medical staff has pulled up the patient's health record at an emergency department workstation. "OK, here we are," the doctor says. "Triamterene and Coumadin. Let's work up this lady's potassium levels STAT."

Sure enough, the woman is suffering from hyperkalemia (excess potassium). A quick dose of calcium chloride and her condition is stabilized.

And thus the patient—and the hospital and healthcare system—are spared unnecessary procedures and expenses by knowing the facts.

*Headline in* Health Affairs[1]

*RAND Study Says Computerized Medical Records Could Save $81 Billion Annually and Improve the Quality of Medical Care.*

# right hands at the right time

## Build an access ramp to your future electronic patient data interchanges.

Fortunately, clinicians and healthcare administrators can jumpstart an important facet of the EMR without waiting for consensus. By digitizing documents into electronic images, reports, forms, and other types of paperwork can be posted for online sharing. This leverages mature technology proven through many years of application in highly accountable, paper-intensive industries including financial services, insurance, and federal, state, and local government.

Called infoimaging, this technology represents the convergence of image and information for presentation to users under one interface. It's a cornerstone of what the healthcare industry is driving toward with its vision of a unified EMR. It helps meet the requirements of HIPAA at the same time it simplifies consultation among clinicians. Plus, the EMR opens up new avenues to statistical analysis of disease and care. Best of all, you can start implementing it today.

*From a report published by the UK Department of Health[2]*

*Introduction of the national electronic care record...will ensure that any health processional treating a patient will have access to essential clinical information, including the medicines they are taking. This will provide increased safety in the prescribing, dispensing and administration of medicines.*
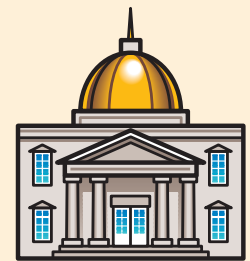
**HIPAA Briefs**

Fostering interchange of information: The Health Insurance Portability and Accountability Act (HIPAA) Transactions and Code Sets (TCS) standards should provide the cornerstone of the EMR.

Implementing digital rights management: Security and privacy is much easier to control in an electronic patient record environment compared to handling paper files.

**What's in an acronym?**

EHR (Electronic Health Record)

EMR (Electronic Medical Record)

HIS (Hospital Information System)

CIS (Clinical Information System)

CDR (Clinical Data Repository)

CPR (Computerized Patient Record)

Whether their duration is treatment plan or patient lifetime, or their scale that of an M.D.'s office or a regional HMO, all of these schemes share the goal of providing more accurate information more quickly, while controlling costs.

By incorporating document imaging, providers and payers can realize significant clinical and operational gains as part of a forward-looking patient information strategy.

**A long-term strategy
for a perennial problem**

Despite decades of predictions, the paperless office and clinic has yet to arrive. Notes, correspondence, instrument readouts, and forms from outside of your system will persist. This type of unstructured information is easy to manage with document imaging. When the time comes, you simply build associations between the incoming images and the databases in your EMR.

*From an European Union publication, quoting Vivian Reding, the European Commissioner for Information, Society, and Media[3]*

*"The European approach to eHealth should be about spending euros on patients not on paperwork!*

*"For example, electronic medical records can help doctors to diagnose illness and prescribe treatments more accurately, thus reducing medical errors. It also means cutting down paperwork to improve efficiency. Electronic patient referrals in Denmark are saving €1 million a year and could rise to €3.5 million a year, if all referrals were sent electronically."*

Imagine pulling together all of the paperwork involved in a patient's care within a practice, within a hospital, or even within a health network. Instead of searching physical locations or waiting for fax or mail, all relevant documents can be retrieved in seconds for viewing. This type of consolidation can advance the care delivery goals of Chief Financial Officers and Chiefs of Surgery. The streamlining of clinical and administrative workflows will save time and trouble for providers, payers, and most of all, patients.

But the benefits of infoimaging extend beyond paperwork automation. Diagnostic imagery and data generated by digital information systems can be added to present the full dimension of a patient's clinical history without delay. Many hospitals have started implementing small scale solutions in the radiology department or the patient record archive, which they are now expanding to enterprise-wide, fully integrated medical record systems.

## Scan your way into the 21st Century.

The tools to capture, manage, archive, and deliver document images are robust and well understood. Document management and imaging workflows have long been best practices in a variety of document-centric industries. High-value documents such as mortgage and loan applications, health insurance claims, and mutual funds are all processed as document images scanned from paper documents. Who needs to handle, file, and store paper documents or transcribe content when you can capture the valuable information they contain digitally? If imaging works for invoice processing, check processing, and national census forms, surely the same principles can apply to healthcare documents.

Document imaging sidesteps many of the obstacles inherent in the development of a common EMR scheme. Images are stored in widely accepted standard formats, such as PDF and TIFF. Software already exists to help automate the entry of indexing keys. Encryption and digital rights management software can be used to control access and maintain privacy. Compared to paper records, backup and disaster recovery are easy. Missing files or out-of-file situations are eliminated, leading to better quality decision-making.

The endpoint of document imaging is an electronic patient record that combines all paper-based information with digital information produced by modalities and other patient information systems. A history of the observations, transactions, and treatments related to a given patient provided in a searchable database, complete with signatures, handwritten entries, and marginal notations. Staff can access these records through a browser or portal, even use customized search engines to collect information across patients for statistical analysis.

# nic medical record integration tomorrow.
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**Enhance efficiency and accuracy by eliminating paper.**

Clinical and administrative staffs have more worthwhile things to do than chase paper. And guesses due to missing or late information can cost lives and resources. The benefits add up quickly.

The cost savings potential for a hospital implementing digitized patient records can range into millions of dollars:
- By reducing the time spent by clinical personnel involved in filing and retrieving hardcopy patient records.
- By reducing storage space. Most hospitals measure the volume of patient paper files in miles or tons.

Consolidation of patient information can streamline communications with health-care payers and speed up billing cycles:
- By improving hospital and practice workflow via more efficient processing.
- By accelerating the routing of information within the enterprise.

Electronic medical records can enable a higher quality of care and patient satisfaction:
- By providing instant access to all relevant patient information for a more effective diagnosis.

- By reducing the time wasted searching for and consolidating patient information from multiple sources to allow doctors and nurses to spend more time on patient care.
- By reducing the risk of errors in treatment and medication.
- By increasing the consistency of patient care.

Efficient processes in hospitals and doctor's practices speed up patient treatment:
- By shortening the time between exams and procedures, patients experience reduced waiting times and stress.
- By eliminating delays caused by slow transmission of paper documents, hospitals can reduce the length of stay for patients.

As you can see, virtually every stakeholder in healthcare stands to benefit from the implementation of digital patient record management via infoimaging.
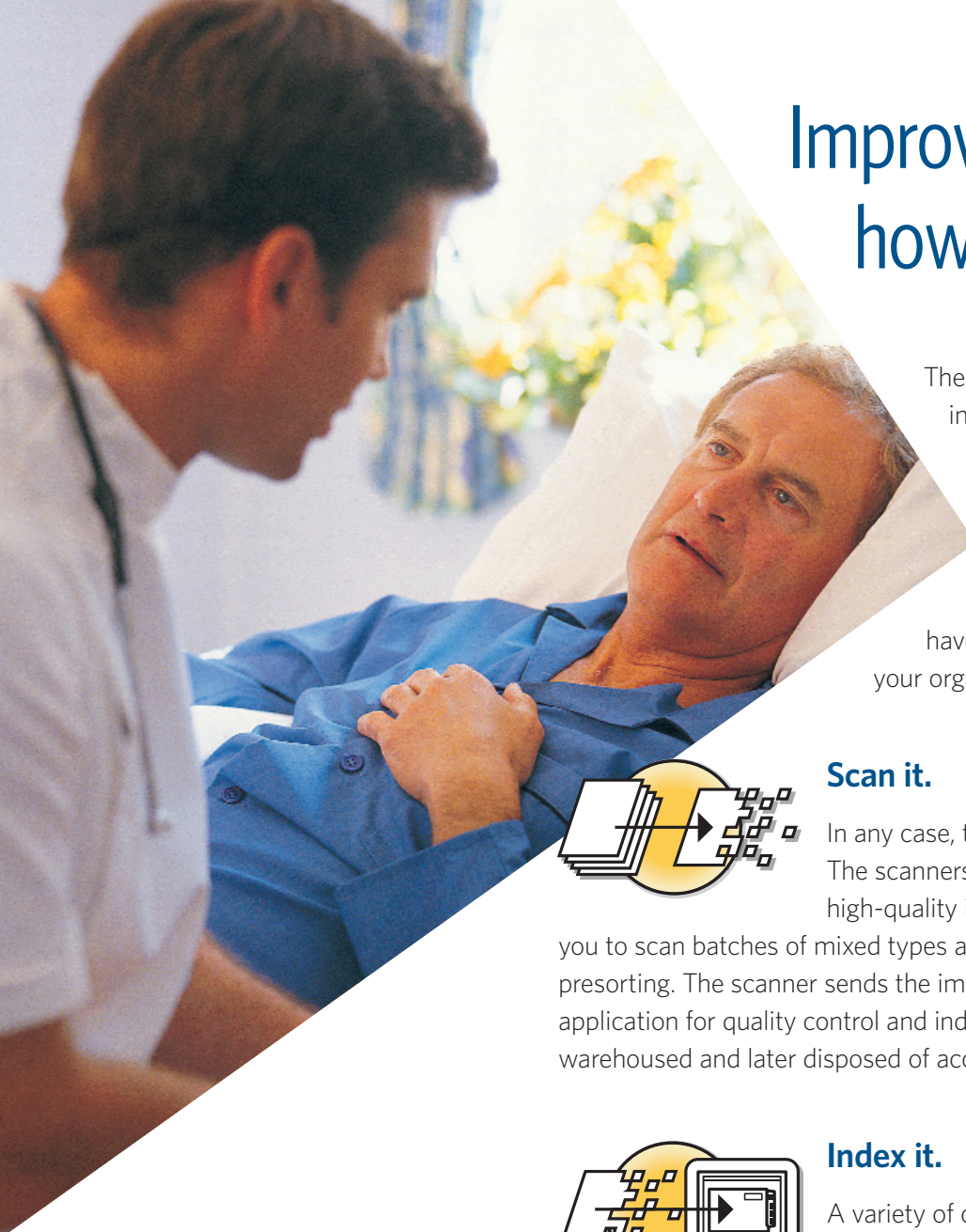
# Improve how you practice
# how you manage paperw

The process of converting paper documents into electronic images is relatively easy. Scanners can be placed virtually anywhere on your network—nurse's stations, admissions counters, and the mailroom. You can have a few scanners at central locations, or you can have many scanners scattered throughout your organization. Or a mix of the two.

## Scan it.

In any case, the paper passes through a scanner. The scanners available today make it easy to capture high-quality images. Some (like **Kodak** Scanners) allow you to scan batches of mixed types and sizes of documents to cut down on presorting. The scanner sends the images to one or another software application for quality control and indexing as necessary. The paper can be warehoused and later disposed of according to prevailing regulations.

## Index it.

A variety of options are available for indexing the incoming document images according to their type. Preprinted barcodes, which are used in many hospitals to identify blood samples, medications, and requisitions associated with a specific patient, can also be applied to documents and read within the digital document environment. Specific information on a form or the entire content can be converted to text-searchable formats in an automated process making the data instantly available to the clinical staff.

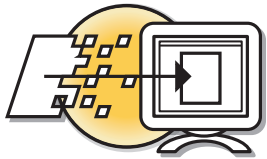**Learn more about Electronic Health Records at these Web sites:**

The Healthcare Information and Management Systems Society
www.himss.org

The American Health Information Management Association
www.ahima.org

Medical Records Institute
www.medrecinst.com

UK National Programme for IT in the NHS
http://www.connectingforhealth.nhs.uk

# medicine by changing
# work.

### Share it.

Once the indexing step is done, the document images can be accessed on wired or wireless devices by the parties who need to see them as they come in. The information can be housed and shared using the existing hospital infrastructure and information system. The host software can collect related documents into virtual file folders that take the place of paper charts. Remember, because the patient record is on line, multiple people can refer to the same report at the same time.
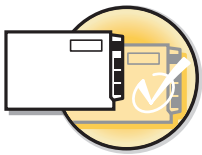
### Secure it.

Finally, backup copies of all document images can be made on off-site servers and removable media automatically, protecting you and your patients from loss or an onsite disaster such as fire, flooding, or a hurricane. The detailed documentation is also vital should the hospital get involved in a law suit. Furthermore, you have the option of copying electronic document imaging to microfilm for near-permanent archival storage.

## Move into the future with confidence from the ER to the Boardroom.

As noted earlier, an intelligently indexed database of document images should be easy to integrate with patient information systems yet to come. Already, many radiology groups have adapted systems that build association between patient data and diagnostic images, managing the two types of information as one entity. The time is getting closer to when this kind of access to meaningful patient information rolls out to be on line in practices and hospitals everywhere. By paving the way with document imaging, you can enjoy clinical benefits and cost savings today, while shortening your implementation of an EMR infrastructure when that day arrives.

Excerpted from an article that appeared in Post Graduate Medicine[6]

Physicians must have easy access to patient information if they are to provide seamless patient care. It does no good to refer patients to the most appropriate clinic location for evaluation or treatment unless the necessary medical information can also be sent there. Of course, traditional methods (e.g., sending by U.S. mail or courier, having patients hand-deliver the material) still work, but they are slow and materials are subject to loss and damage.

Enter the world of document imaging. Document imaging on computers can allow transmission of information to remote sites with none of these problems; in fact, several different care facilities can quickly send the medical data needed for a clinician to make an informed decision about a given patient. Converting documents into digital form and transmitting the digitized files across the city or the country is one of the things document imaging computers [sic] do best. And these devices are becoming more reliable, efficient, and available all the time.

# Work with a specialist in Document Imaging and Health Imaging

With a long history in both medical and document imaging innovation, Kodak stands ready with technologies and knowledge to help you migrate to an EMR environment.

For example, **Kodak Carestream** Information Management Solutions (IMS) offer a portfolio of solutions that provide hospital-wide image and data archiving. A **Carestream** IMS can integrate many different data sources into a single patient-centric database for effective storage consolidation and virtualization. This capability has been extended to incorporate clinical data held in paper form using Kodak's leading-edge document scanners, to offer hospitals the basis for the implementation of an EMR system.

**Kodak** Scanners have proven to be an ideal choice to create digitized images of patient records, which are among the most challenging document sets found in any scanning environment. Patient records consist of documents with a very wide mix of sizes including overlengths and thicknesses. Plus, they contain content that is both health-critical and extremely difficult to capture accurately and completely, such as hand-written notes. SurePath transport and iThresholding are two Perfect Page Scanning technologies from Kodak that enable the feeding of mixed documents to obtain high-quality images with minimal user involvement.

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**Source Notes**

1. September 14, 2005

2. "Building a Safer NHS for Patients: Improving Medication Safety"

3. "Document Imaging in Medicine. How long can you do without it?," http://www.postgradmed.com/issues/1997/07_97/dd_jut.htmDigital Doc

4. *Sydney Morning Herald*, January 28, 2005

5. March 8, 2005

6. July, 1997

**For more information about how Kodak can help your healthcare organization improve information access and clinical excellence, visit www.kodak.com/go/DI.**

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