BY KIM RIBBINK

Connected HEALTH

THE *PUSH* FOR ELECTRONIC MEDICAL RECORDS

While the medical profession has lagged on the use of technology to manage and communicate patient information, increased focus on the use of electronic medical records — **FROM THE FEDERAL GOVERNMENT, DOCTORS' GROUPS, AND PATIENTS** — is expected to improve uptake.

The Internet is a way of life in the United States, and increasingly it is a way to research health information. Around 74% of U.S. consumers are online, and 72% of those use the Internet to look for health information, according to a Harris Poll.

Among doctors, there is broad consensus that Internet access has a positive impact on the practice of medicine, with 93% saying system incompatibility across healthcare organizations is a barrier to realizing the full potential of Internet-enabled systems in medicine, according to a survey by Harris Interactive, PricewaterhouseCoopers, and the Institute for the Future.

Yet adoption of Internet-based solutions to store, retrieve, use, and communicate health information has been slow, and according to a Wall Street Journal Online/Harris Interactive Health-Care Poll, has lagged other service sectors and professions.

The benefits of health information technology (HIT) and in particular electronic health records (EHR) or electronic medical records (EMR) to improve healthcare are broadly accepted.

According to industry experts, HIT allows comprehensive management of medical information and its secure exchange between healthcare consumers and providers.

John Loonsk, M.D., director, Office of Interoperability and Standards, at the Office of the National Coordinator for Health Information Technology (ONC), U.S. Department of Health and Human Services, says there are a number of secondary public outcomes from having interoperable health information and systems that can share data appropriately and confidentially.

"First, we can anticipate a reduction in medical errors and second, there are public health and population health benefits," he says. "With interoperable health systems, we can understand disease spread and disease activities much better. We can also potentially understand the usefulness of different treatments and therapies better, which would tremendously benefit research."

DIDI DAVIS, *IHE*

THE BIGGEST OBSTACLES TO HEALTHCARE PROVIDERS ADOPTING EMRS OR EHRS ARE educating patients, providers, and payers on what an EMR/EHR can do; funding to get these systems and networks up and running and linked; and developing a sustainable business model to support ongoing use and expansion.

For the healthcare system, the promise of efficiency, timeliness of care, better quality, and patient safety are important, says Floyd Eisenberg, M.D., MPH, business manager, health surveillance, at Siemens Medical Solutions Health Services.

"There is considerable cost, inconvenience, and excessive rework when multiple care providers document the same information for use in different workflows," Dr. Eisenberg says.

EMRs enable physicians to look at patients as a population and manage them as a group, says Andrew Ury, M.D., VP and general manager of Practice Partner, a McKesson company.

"By looking at the patient population as a whole, doctors start to take a more holistic view of certain disease categories, such as diabetes or high-blood pressure, and can take better care of all the patients who have that condition," he says. "By looking at results as a whole, doctors can look at trends and pick out patients who aren't doing well and help them improve their disease management."

Use of EMRs facilitates immediate access to important patient-related information, quick access to new and previous test results, entry orders for prescriptions and tests, decision support functions, computerized administrative tools, disease reporting functions used for patient safety, and biosurveillance, according to a report from Kalorama Research titled U.S. Market for EMR Technologies.

In addition, the opportunities to use electronic health records to recruit for and conduct clinical trials are immense, say Frost & Sullivan analysts in a recent study, Convergence of Electronic Health Records and Clinical Trials.

THE UPTAKE

Researchers from the George Washington University (GWU) and Massachusetts General Hospital (MGH) conducted comprehensive research to assess the level and spread of adoption of EHR. While they estimate that one in four doctors (24.9%) use EHRs to improve how they deliver care to patients, fewer than one in 10 is using what experts define as a "fully operational" system that collects patient information, displays test results, allows providers to enter medical orders and prescriptions, and helps doctors make treatment decisions.

Several factors can contribute to slow adoption of EMRs.

Dr. Loonsk says concerns include uncertainty about which product to select, fears that the use of a computer during a consultation would affect the doctor/patient relationship, and the fact that clinicians tend to move from room to room so computers that have to be stationary may not be ideal in an ambulatory setting.

"Many of the benefits of EMRs accrue to people other than the doctor, meaning there are benefits to the healthcare system, benefits to the insurance carrier, and benefits to the patients in terms of quality of care," Dr. Ury says. "So while I do believe there's a nice return on investment for doctors' practices, they're usually shouldering the entire financial burden for the benefits derived by many parties."

The Kalorama report notes that implementation of a standardized EMR includes many costs, such as for developing standards, modifying or developing EMR software programs, purchasing third-party software, implementation, and maintenance, support, and repair.

"The EMR industry is very fragmented, with more than 200 EMRs available in the market," says Raj Singh, VP and general manager at Formedic. "EMRs require constant service and maintenance, and the back-end costs can be sizable. HIPAA adherence, confusion,

DR. ANDREW URY, *PRACTICE PARTNER*

COMMUNITY-BASED ACCESS TO MEDICAL RECORDS BENEFITS BOTH PATIENTS AND PROVIDERS BY improving access to patient data across the spectrum of healthcare.

and the perceived lack of need to change from present paper-based systems also are factors that prevent their immediate appeal to many physicians, especially in smaller practices."

Privacy is an issue for physicians and patients; in February 2007, Harris Interactive revealed findings from three surveys that show people are concerned about the potential for privacy abuses in EMR systems, though most have read or heard nothing about EMRs, so public opinion is waiting to be formed.

"It is not the electronic system alone, but local policies and procedures that are required to successfully manage privacy," Dr. Eisenberg says.

Adoption may be particularly onerous for small physician practices.

Elizabeth Boehm, principal analyst at Forrester Research, says the majority of physicians are in small or solo practices and don't have an IT department to help install and maintain the systems.

"The challenge for small practices is twofold; one challenge is that the technology implementation can be overwhelming, because at the same time they still have to maintain their paper records," she says. "The second

ELECTRONIC medical records

challenge is understanding the savings from an EMR in terms of time and workflow. A big physician practice might have several people devoted to time-consuming tasks and may be able to reduce headcount, but the benefits are less clear for a small practice because those doctors can't let go of their one support person."

OPTIONS AND SOLUTIONS

Despite concerns, experts say uptake is increasing and those physicians who have been through implementation like the capabilities EMRs offer.

A question that arises with regard to HIT is whether to adopt a centralized architecture, meaning having data accessible in a central source for everyone to link to, or a federated or decentralized repository, where the data remain at the collection source and authorized users, such as physicians or a hospital, link to it.

Didi Davis, director of Integrating the Healthcare Enterprise (IHE), says a centralized

ADOPTION IN PRACTICE

While reports show that the adoption of electronic medical record (EMR) systems is low — just one in four doctors' practices — those practices that have scaled up EMR find it hugely beneficial.

Stephen M. Egge, M.D., family physician at Summit View Clinic, says there is no question that EMR allows for better patient care.

Even so, the practice grappled with several issues, such as figuring out how to get new information into the chart that would suit each provider, getting previous medical data into the chart, cost, and the impact on patient interactions.

Dr. Egge adds that because the practice currently uses medical billing software, it was also important to find a program that would do both EMR and medical billing.

The impetus to adopt came when Dr. Egge, another doctor from the practice, the clinic manager, and the billing manager conducted a site visit.

"During the visit, we realized that the way in which we dictated our charts didn't have to change while adopting the EMR," he says. "We also saw concrete examples of how we could construct templates and modify them for our practice and each individual practitioner could adopt them as his or her comfort level changed with time. We obtained ideas on how to perform a chart summary and get the needed data into the EMR. We were thrilled to see that we could start dictating our office notes immediately, before we even had any software in our office. The data flowed into the EMR once it was implemented, which gave us a huge head start on current patient status once we were up and running on the software. Seeing the billing component work helped allay many of our fears. The cost is always an issue but it is offset by more efficiency and less staff over the long haul."

With EMR operating, Dr. Egge says the practice has been able to demonstrate to patients important health issues, for example using trend vitals and graph labs to convince patients they have real health issues that need to be addressed.

"Showing patients that they weren't 'just having a bad day' and that their blood pressure was indeed high, and had been that way for several visits, has helped get the patients on board with their treatments," he says. "Drug interaction checks at the time of prescription give patients confidence in their medication and save call backs from the pharmacy."

Real benefits are improved patient communications, for example, through "lab results" letters that flag potential problems. Patients also have more confidence that the technology helps to manage their healthcare because doctors are able to quickly recognize health problems.

"EMRs are evolving and improving, which allows more possibilities — tablets, wireless, and so on — for EMR use," he says. "I would encourage physicians to thoroughly evaluate products that they believe would suit them, make a site visit to see the software in a real-world situation, and get on board."
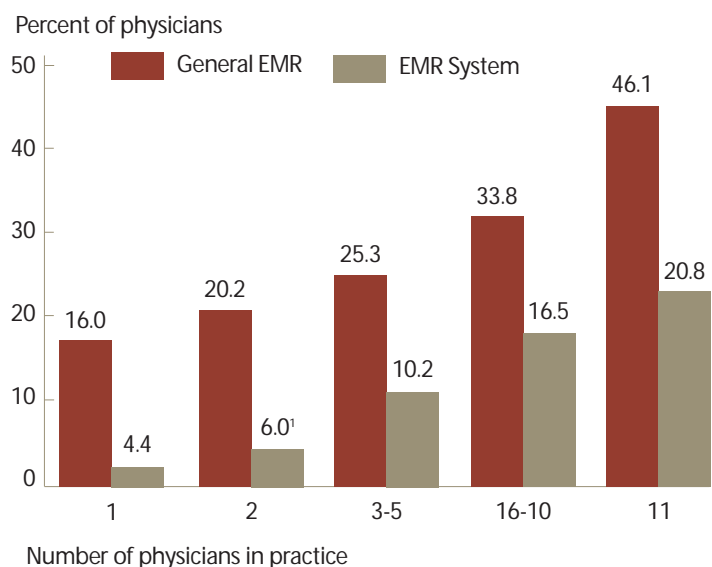
U.S. OFFICE-BASED PHYSICIANS
WHO REPORT USING EMR 2001-2005

Percent of physicians

- 2001: 18.2
- 2002: 17.3
- 2003: 17.3
- 2004: 20.8
- 2005: 23.9
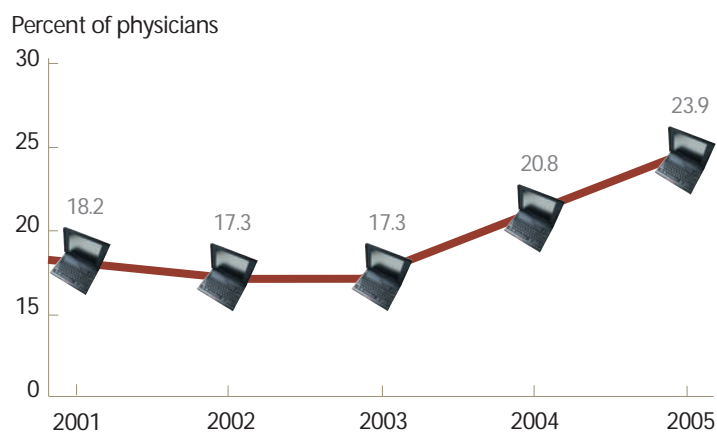
Notes: Trend is significant (p<.05). Includes nonfederal, office-based physicians who see patients in an office setting. Excludes radiologists, anesthesiologists, and pathologists
Source: CDC/NHCS, National Ambulatory Medical Care Survey, 2001-05 CDC/NHCS, National Ambulatory Medical Care Survey, 2005, Atlanta. For more information, visit cdc.gov.

U.S. PHYSICIANS USING EMR BY PRACTICE SIZE-2005

Percent of physicians

Legend: General EMR | EMR System

Number of physicians in practice	General EMR	EMR System
1	16.0	4.4
2	20.2	6.0[1]
3-5	25.3	10.2
16-10	33.8	16.5
11	46.1	20.8

*Figure does not meet standard or reliability or precision
Notes: Both trends are significant (p<.05). General EMR is positive response to single question on full or partial EMR use. EMR system is a positive response to four minimal features: computerized orders for prescriptions, computerized orders for tests, test results, and physician notes; includes nonfederal, office-based physicians who see patients in an office setting: excludes radiologists, anesthesiologists, and pathologists.
Source: CDC/NHCS, National Ambulatory Medical Care Survey, 2005, Atlanta. For more information, visit cdc.gov.

VINOD S.M., *FROST & SULLIVAN*

THROUGH THE USE OF ELECTRONIC TOOLS, THE ADDITIONAL BENEFITS, ASIDE FROM BEING CUSTOMER-CENTRIC, INCLUDE: increased efficiency through reduction in errors, reduced cost for resources, and improved and timely access to patient data.

DR. STEPHEN EGGE, *SUMMIT VIEW*

WITH EMR OPERATING, THE PRACTICE HAS BEEN ABLE TO DEMONSTRATE TO PATIENTS important health issues that need to be addressed.

personal health record repository has distinct advantages.

"Such a system would be helpful in that only one front-end graphical user interface/portal would be needed for the repository that would include the proper security/authentication code to ensure secure access to information from the repository, and it would be a good aggregation point for all the patient information," Ms. Davis says.

She adds, however, that as the repository grows it could become costly to maintain all feeds from the different venues of care to consolidate the patient information, and this would require in-depth mapping to normalize the data.

Mr. Singh says an EMR system that is accessible to all physicians is unlikely.

"This would require a uniform national system with universal adoption by all physicians of that system," he says. "I do not envision this happening soon. The big unknown here is the pressure being put by the government and that may have somewhat of an accelerating effect, but there are many obstacles to surmount."

While a centralized database may not be the preferred option, a number of different options exist for EMR systems, from storing data at the source of clinical care for secondary purposes to repositories of de-identified data to personal health data banks where patients can manage their health data. Dr. Loonsk says many believe health data banks controlled by patients hold great promise.

"What's being worked through is how to relate the activity to the broader goals of avoiding medical errors and doing disease surveillance and getting good quality of care," he says.

The IHE, an initiative of healthcare profes-

sionals and the healthcare IT industry, has been developing a framework to improve the way healthcare information systems share patient data. IHE has developed a foundational set of standards-based Integration Profiles for information exchange with four interrelated efforts: Cross-Enterprise Document Sharing (XDS) support for document content interoperability; a security framework for protecting the confidentiality, authenticity, and integrity of patient care data; cross-domain and facility

patient identification management to ensure consistent patient information and effective searches for patient information within a health information exchange; and enterprise communication of patient-care device data.

Dr. Eisenberg says there needs to be more explicit guidance about data sharing for clinical-care delivery.

"Allowing patients to have control over who has access to what data could centralize the rules for the patient and simplify manage-
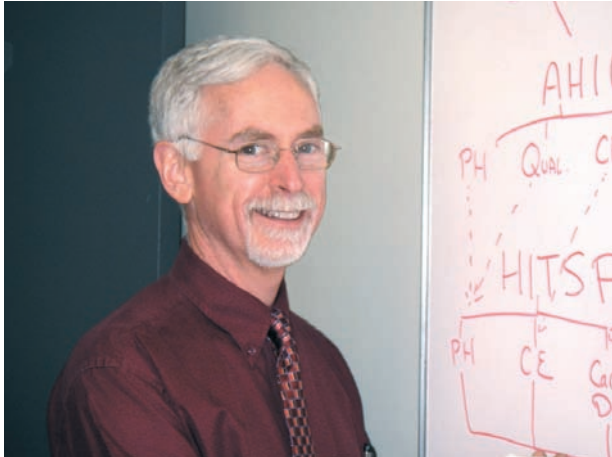
DR. FLOYD EISENBERG, *SIEMENS MEDICAL SOLUTIONS HEALTH SERVICES*

FOR THE PHYSICIAN, THE ABILITY TO COORDINATE ACTIVITIES BASED ON PATIENT SCHEDULING or on census and to access information about each patient in a unified method is a significant benefit with respect to resources.

PILOT STUDY DEMONSTRATES NEW, SCALABLE METHOD
OF AUTOMATICALLY TRANSFERRING DATA FROM EMR TO EDC SYSTEM

Researchers at the Technical University of Munich and Siemens Medical Solutions have developed a method of electronically transferring clinical data gathered at the point of care for use in prospective clinical trials.

The solution offers a scalable, automatic transfer of data between an electronic medical record (EMR) and an electronic data capture (EDC) system, overcoming interoperability challenges associated with systems that function on different technical standards and work within distinct business environments.

"The university's academic medical center is using a hospital information system for administrative and clinical processes to ensure high-quality patient care," says Dr. Ulrike Schwarz-Boeger, project manager, Technical University of Munich. "We see a great benefit in using data from our existing clinical information system for clinical-trial activities and we will continue to explore and use all relevant data sources at the medical center to support our clinical-research activities. External clinical-trial sponsors can now access higher quality data more quickly and in an electronic format."

The pilot implementation was designed to create an automatic electronic data transfer platform for two studies focusing on women's health. One of the trials is evaluating the effectiveness of the various types of chemotherapy on women with breast cancer. The second trial will evaluate the diagnostic value of the use of motion correction algorithms on magnetic resonance imaging (MRI) and is slated to begin in October.

The solution achieves the goal of connecting disparate systems using Siemens OPENLink and Soarian Portal. Now, clinicians and research staff can automatically view, retrieve, and disseminate clean data, while reducing the effort of manually collecting and entering trial data. The solution is highly flexible and compatible with any EMR product and EDC system.

"Based on our understanding of the varying regulatory and standards environments, we've overcome a significant hurdle in the evolutionary process of clinical efficiency," says Janet Dillione, president, Healthcare Information Technology Division, Siemens Medical Solutions. "We know that hospitals rely on research funding — it can be up to 30% of their income — and pharmaceutical companies rely on the clinical and research expertise of leading healthcare systems. This successful pilot is a crucial step in bringing these two worlds closer for the universal benefit of more timely patient care."

"Having a solution that significantly improves efficiency and enables real-time data availability for clinical-trial sites will increase motivation and enhance the quality of studies," says Hugh Donovan, general manager, Clinical Trials Business, Siemens Medical Solutions. "Today, the pharmaceutical industry manages many studies looking through the rear-view mirror. The availability of real-time data, as demonstrated through this pilot, will transform study management, enabling midcourse corrections, and ensuring consistency across study sites, ultimately yielding more timely and accurate outcomes."

Source: Siemens Medical Solutions, Malvern, Pa., is a division of Siemens. For more information, visit usa.siemens.com/medical-pressroom.

ment from the perspective of individual care providers," he says.

Ms. Davis says patient data can be secured from unauthorized access with IHE integration profiles.

"The XDS profile grouped with audit trail and node authentication (ATNA) would provide a secured node-to-node authentication using digital certificates to ensure a secure tunnel between machines," she says. "And the audit trails for any access to patient information can be maintained in a centralized audit log for access to all data, whether in a central or federated distribution."

MOVING THE AGENDA

In an effort to move the nation forward on EMRs, President George W. Bush outlined a plan in his 2004 State of the Union address to ensure that most Americans have electronic health records within the next 10 years.

The ONC, which provides counsel to the Secretary of HHS and departmental leadership for the development and nationwide implementation of an interoperable HIT infrastructure, has made several advances on that front, including establishing an advisory committee — the American Health Information Community (AHIC) — to make recommendations on accelerating the adoption of interoperable electronic health IT in a smooth, market-led way.

"One of the things this office did was help support the establishment of the Certification Commission for Health Information Technology, which tests electronic health records to show that they perform functions they need to perform, that they're secure so they protect patient data adequately, and that they are interoperable or on the road to interoperability, so they'll work with other information systems as they become available," Dr. Loonsk says. "Having that seal of approval is another helpful step for clinicians

DR. JOHN LOONSK, *ONC*

THE QUALITY OF HEALTHCARE CAN BE GREATLY SUPPORTED BY having exchangeable, interoperable health information systems.

who then can know when they invest in electronic health records that they're investing in something that will be there for them, performing the functions they need."

Frost & Sullivan analysts say the commission on systemic interoperability is expected to lead to a highly integrated national network.

"One of the main challenges would be the practical issues of implementation, but there are a number of benefits, such as significantly improving the quality of care and patient safety," says Vinod S.M., research associate, healthcare (EIA) – LSIT, at Frost & Sullivan.

Much is being done to encourage the uptake, with professional associations, such as the American Academy of Family Physicians and the American College of Physi-

cians, encouraging their members to adopt EMR, Dr. Ury says.

Policies that offer financial incentives for HIT adoption include changing payment structures to reward good healthcare performance, according to the GWU/MGH report. Other policies focus on reducing costs, for example reimbursing providers for using HIT in clinical care, providing grants or low-interest loans to providers who purchase HIT systems, providing equipment or software free of charge, and reducing uncertainty about software performance.

In September 2006, results from a study conducted by Harris Interactive and commissioned by McKesson showed that three-quarters of the nation's physicians plan to adopt EHRs for their practices, with 91% planning to do so within three years.

The recent WSJ/Harris poll on HIT adoption indicates that the availability of online services could influence to some extent how patients choose healthcare providers. Not all agree, however.

"A number of things are encouraging the uptake of EMRs — President Bush's national health initiative, insurers asking for claims to be sent electronically — but at the moment, nothing I've seen suggests that the presence or absence of EMRs will effect patients' decisions to the extent that it's going to force doctors into it," Ms. Boehm says.

Consumer demands will likely have some impact, experts believe.

"I think consumers are going to play an increasing role in moving the agenda forward," Dr. Loonsk says. "They do find the convenience of using the Internet to be powerful for them in other aspects of their lives and want to have those types of capabilities for their healthcare as well." ◆

PharmaVOICE welcomes comments about this article. E-mail us at feedback@pharmavoice.com.

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