ELECTRONIC MEDICAL RECORDS: WILL THEY IMPROVE THE QUALITY OF CARE?

By Linda Anderberg

Kaiser Permanente touts HealthConnect, its new electronic medical record (EMR) system, as the "missing link between current inconsistent care and best care." The nation's largest HMO promises an infrastructure that will "reengineer care" and help Kaiser "enter the decade of health information technology." But can EMRs really deliver on such promises? And are they worth the initial start-up costs, which can range from thousands of dollars for smaller practices to billions of dollars for a large HMO?

These are questions that Executive Associate Dean Thomas Rundall has set out to answer. Since 2005, Rundall, John Hsu of Kaiser Permanente, and colleagues have been studying the effects of the HMO's implementation of HealthConnect in Northern California. Specifically, they are assessing the impact of the electronic medical records on

clinicians' use of evidence-based care processes and patient outcomes for five different chronic illnesses: congestive heart failure, coronary artery disease, hypertension, diabetes, and asthma. This focus speaks to the negative impact of chronic disease, which affects more than 100 million Americans, and the potential of EMRs to improve chronic disease management.

The research is timely—currently about 28 percent of U.S. doctors employ some form of an EMR, and the federal government has set a goal of 50 percent by 2012. The reason for the government's interest in expanding use of EMRs is that, as Rundall says, "a strong case can be made that a good EMR will improve physicians' access to important clinical information about their patient, increase caregivers' compliance with evidence-based care guidelines, reduce medication errors, and improve coordination of care across multiple providers."

It's clear that process improvements are needed in the health care industry. While other sectors like banking, retail, and auto repair have implemented continuous quality improvements and advanced information technology, the health care system has remained a cottage industry. As a result, workflow is inconsistent, and quality varies from one physician's office to the next.

EMRs are one tool that could help unify and standardize the industry, and therefore improve quality control. They offer the ability to better monitor health progress, laboratory and test results, and pharmaceutical prescriptions and potential drug interactions. They also allow doctors to communicate with each other and patients more regularly, and can provide patients with a way to educate themselves about their health and self-monitor their diseases.

Given the pending increase in chronic disease as the baby boomers age, Rundall believes that increased self management of chronic disease is essential to reducing the cost and improving the quality of health care. "The financial well-being of our nation's health care systems is dependent on doing this," he says. "Having so many patients with chronic illnesses will overwhelm everything else that health systems need to do, unless we do a better job of providing care and helping people to acquire the skills and motivation to do a better job of self-managing these diseases—that's really what it's all about."

Rundall thinks information technology like EMRs offer a chance at "that rare double win" of improving quality while cutting costs. He says, "EMRs have the potential to improve patients' quality of life and health and to reduce health system costs through the reduction of expenses in care for patients whose chronic disease is out of control. It's a rare opportunity, which is why progressive, forward-thinking health systems are investing heavily, not only in information systems, but in care management improvement programs. They hope to achieve exactly these kinds of outcomes."

While some studies over the last six or seven years have indicated that EMRs have beneficial clinical effects, others have found no clinically significant effect, and in a small number of cases harmful effects have been observed that may have been introduced by the EMR. But most of these studies have only looked at the effects of the EMR at one point in time, usually within a year of implementation. Rundall's study has a longitudinal advantage.

"Kaiser is a very special context in which to examine this question because it is a highly integrated delivery system," he explains. "It's possible to follow a large number of patents over a long period of time and have fairly complete data on them because they are enrolled members of the HMO. This is not true in most health systems."

Rundall and Hsu's research will examine not only the immediate effect of implementing HealthConnect, but will look at improvements over a period of four years. It's Rundall's guess that—because of the

time required for people to adopt and implement good care practices and also the time it takes to change physiological processes—the team is much more likely to see clinically significant effects three or four years out.

Initial data analyses indicate that HealthConnect is having some of its intended effects. For example, one year after implementation, the percentage of physicians reporting that they have access to all relevant clinical information at the point of care has increased from 43 to 65 percent. And preliminary results with respect to hypertension patients indicate a clinically significant improvement in patient condition. But the team is just finishing Year Two of data collection and won't publish any clinical results until after Year Four.

Concurrently, Rundall is studying interventions with low-income individuals with diabetes, for whom EMRs may not provide much, if any, assistance. As a co-investigator with Dean Schillinger at UCSF, he is working with these patients to find ways to help them manage their diabetes. Their solution has turned out to be relatively low-tech and inexpensive: a package of services including automated weekly telephone calls, with nurse practitioner follow-up as needed and group medical visits to provide personal support for patients.

"Even with a low income population—many of whom may be uninsured, live in transient housing conditions, or have limited English literacy—there are innovative care management programs that are not particularly expensive," says Rundall, "but rather rely on old-fashioned communication and relationships developed with patients."

It's a good reminder that EMRs, while beneficial, are not the only possible savior of health care. "I wouldn't want everyone to think the only answer to chronic disease is an expensive electronic medical record," Rundall says. "There are ways in which EMRs are very helpful, but there are other approaches that can work and should be implemented by providers."

Measuring the Quality of Care

Dean **Stephen M. Shortell** has a long-standing commitment to evaluating the quality of health care practices. Since the year 2000, he and his research team have been focused on care delivered to patients with chronic illness, specifically asthma, depression, diabetes, and congestive heart failure. Over the course of the National Study of Physician Organizations (NSPO), of which Shortell is the coordinating principal investigator, they have developed measures for evaluating physician performance and gathered robust data on what practices are associated with high-quality care.

Last year, the team—which also includes Kaiser Permanente Distinguished Professor of Health Economics James Robinson and researcher Robin Gillies from the UC Berkeley School of Public Health, Lawrence Casalino at the University of Chicago, and Diane Rittenhouse at UCSF—conducted an NSPO update to determine if care has improved over time. They discovered that progress is slow.

"The bottom line is there has been some improvement, but not a lot." Shortell, who is the Blue Cross of California Distinguished Professor of Health Policy and Management, says, "On average, physician practices still implement less than half of recommended practices for patients with chronic illness." This finding suggests several new paths of study that will delve further into the factors that contribute to high-quality care, with the NSPO variables serving as a base.

The team is pairing with investigators at Dartmouth College who have Medicare data files on patient outcomes, which they are linking with the NSPO data. "Our hypothesis is that those practices that do more of the things that evidence suggests they should be doing will have better patient outcomes," says Shortell, "And those that aren't doing them will be worse. If the data show that, then there will be a stronger evidence base for making changes in physician practices."

They are also beginning to look beyond large practices. The majority of physicians in the United States are in practices of less than 20—a lot are in solo practices or partnerships. "Our prediction is the smaller practices will be doing even less because they won't have the resources," says Gillies. The team will begin examining these smaller practices in a project funded by the Robert Wood Johnson Foundation—which also funds the NSPO project, along with the California HealthCare Foundation and the Commonwealth Fund.

The Commonwealth Fund has also funded a project begun in early 2008 to generate in-depth comparative case studies of 12 of the practices included in the NSPO data set. The group contains both high- and low-performing practices. Researchers will perform site visits to gather detailed information about the governance and management of the physician organizations; their relationship with health plans; their culture and leadership; and barriers and facilitators to the implementation of care management, disease prevention, and quality improvement practices.

"We're going to try to identify some of the key aspects that distinguish high performers from low," says Shortell. "And then we'll have some suggestions and recommendations for others to follow."

Finally, the team is working on a project to merge data with the Integrated Healthcare Association in order to evaluate California's Pay for Performance program—the country's largest Pay for Performance initiative—which offers financial incentives to physician organizations for achieving quality of care goals. "This work should be quite interesting as we examine the relationship between our measures and those used in this program," says Shortell.