

Adoption of Electronic Health Records in the United States

By Molly Porter, February 2013

Molly Porter is director of Kaiser Permanente International, a nonprofit educational subsidiary of Kaiser Permanente. Recognized as one of the leading health care providers and nonprofit health plans in the United States, Kaiser Permanente has fully integrated health information technology, and all of its caregivers use multifunctional electronic health records (EHRs). The following paper seeks to examine the overall adoption rate of EHRs in the United States as well as the barriers to universal adoption based on a literature review.

Executive Summary

Electronic health records (EHRs) have been available for decades, and yet hospitals, doctors, and other caregivers have been slow to adopt them. This is true even though 74% of U.S. physician EHR adopters in 2011 said that using their systems enhanced overall patient care, and 85% reported being somewhat or very satisfied with their systems (Jamoom, Beatty, Bercovitz, Woodwell, Palso, & Rechtsteiner, 2012). The adoption of EHRs enables telephone, email, and video consultations between caregivers and patients as well as electronic decision support for providers and Internet-informed patients who can better manage their own health. It has been shown to improve health care quality in many ways (Berkowitz & McCarthy, 2013).

The pace of EHR adoption in the United States has been accelerating since passage of the HITECH Act in 2009, which offers economic incentives for providers to use health information technology in a meaningful way. Eligible professionals can qualify for incentive payments from the Centers for Medicare and Medicaid Services (CMS) of up to \$44,000 per professional over five consecutive years through Medicare; implementation must start by 2014 and the last incentive payment takes place in 2016. Medicaid will pay up to \$63,750 over six years, but implementation must start by 2016 and the last incentive payment takes place in 2021. Hospitals can qualify for incentive payments totaling \$2 million or more (healthit.gov, 2013).

As of 2012, 69% of U.S. primary care physicians were using EHRs, compared with 46% in 2009 – a 50% increase (Terry, 2012). However, fewer than half of those doctors have EHRs with multifunctional capabilities that make the technology more valuable, such as electronic prescribing and decision support. Clearly barriers still remain to universal adoption and full use of electronic health records.

Barriers to Adoption

The HITECH Act has made money available until the year 2021 to encourage hospitals, doctors, and other caregivers to adopt electronic health records. However, these incentive payments do not address all the barriers to adopting EHRs. A systematic literature review of 22 articles published between 1998 and 2009 revealed the following eight barriers (Boonstra & Brokehuis, 2010):

Financial

Financial barriers include the start-up costs of hardware and software, ongoing costs of system administration and maintenance, uncertainty over return on investment, and maintenance to keep systems working effectively. The CMS dollars may not be enough for all practice settings.

Technical

Technical barriers include lack of computer skills or support staff, lack of technical training and support, lack of reliability or customizability, and problems with standardization and interconnectivity with other systems. In general, EHRs must interconnect with other systems in order to generate benefits, such as improved access to information and patient care.

Time

Productivity is initially reduced when caregivers start using EHRs due to the learning curve, which may decrease revenue. In addition, time is required to convert paper records to electronic and to select, purchase, implement, and learn the system.

Psychological

Implementing EHRs means a change in working styles and processes, and people often resist change. In addition, physicians may be concerned about their loss of control of patient information since the data may be shared and assessed by others.

Social

For physicians and others to accept EHRs, it's important that everyone in their environment also use connected systems to facilitate smooth social and professional interactions with vendors, insurance companies, patients, administrative staff, and managers. In addition, physicians sometimes fear that computers will disrupt their communication with patients, and this fear must be addressed.

Privacy or Security Concerns

Physicians seem to be more concerned about privacy than patients themselves. While the U.S. has strict privacy laws regarding patient information, some other countries lack clear security regulations to ensure privacy and confidentiality.

Organizational

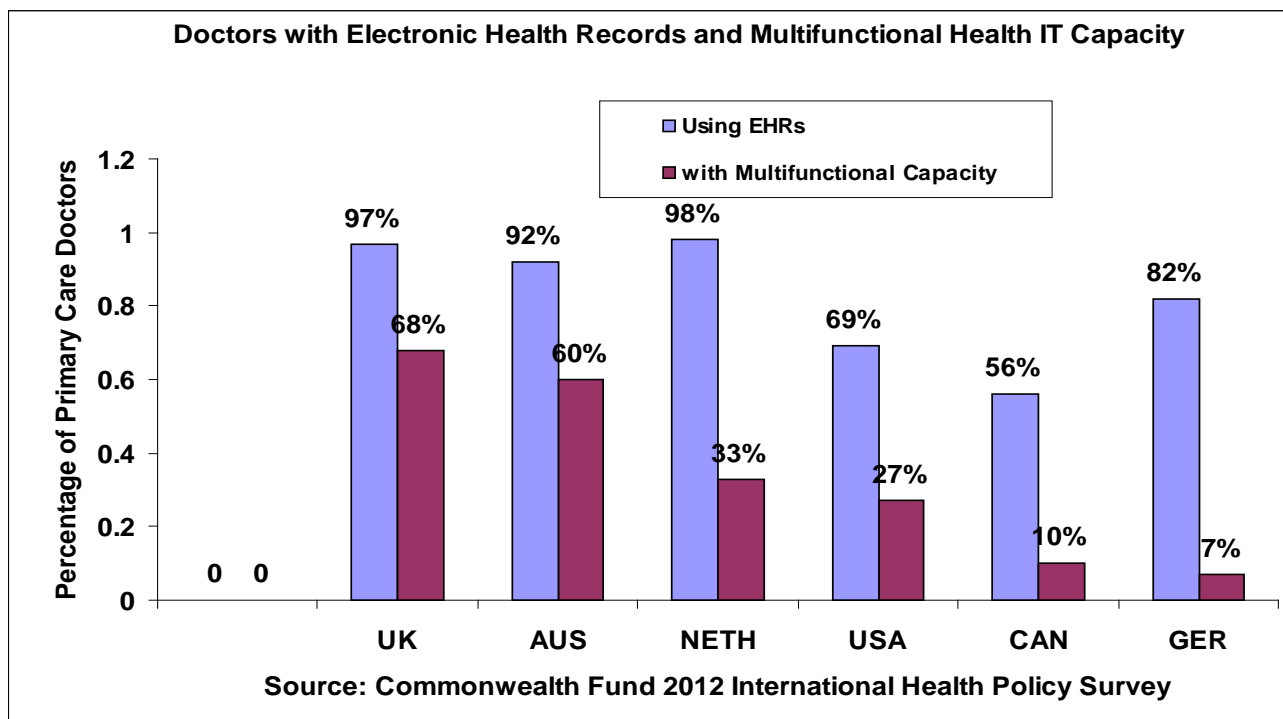
Physicians in different sizes and types of practices may well have different attitudes toward EHRs. Physicians in larger medical practices – who tend to have more extensive support and training programs – have a higher EHR adoption rate and are more likely to use the available functions than those in smaller practices.

Change Process

Organizations must support organization-wide use of EHRs, with leaders championing and motivating physicians, nurses, and administrative staff to participate in the change process. All eight of the barriers listed here must be taken into account, and the process of EHR implementation should be treated as a change project. Project leaders/champions must lead, encourage, and support the change and be willing to bear the risks in order to realize the benefits. It is their role to motivate others to participate in the change process. Indeed, the quality of change management plays an important role in any successful implementation of something new.

Assessing the Current State of EHR Adoption

The purpose of this research was to look at progress in U.S. adoption of EHRs over the past few years. The news is mixed. In 2012, 69% of U.S. primary care physician reported using EHRs, but this number dropped to 27% when doctors were asked if they had EHRs with multifunctional health information technology (IT) capacity. That's a lower percentage than countries such as the United Kingdom (68%), Australia (60%), and The Netherlands (33%) but higher than countries such as Canada (10%) and Germany (7%) (Schoen, 2013).



To be considered multifunctional, EHRs had to have at least two of the following four capabilities:

- Generation of patient information, such as lists of patients' medications
- Generation of patient registry and panel information, such as lists of patients due for preventive care
- Order entry management, such as electronic prescribing
- Decision support, such as alerts about potential adverse drug interactions

In 2012, only 36% of U.S. doctors reported that their patients refill prescriptions online; 34% said patients could contact them by email; and 30% said patients could make appointments online (Terry, 2012). Meanwhile, a 2010 survey of U.S. hospitals showed only 15% had even a basic EHR (Jha, Burke, DesRoches, Joshi, Kralovec, & Campbell, 2011).

How can these numbers be so low in this electronic age, when more than 85% of Americans use the Internet (Berkowitz & McCarthy, 2013) for everything from social networking and shopping to banking and pursuing their education?

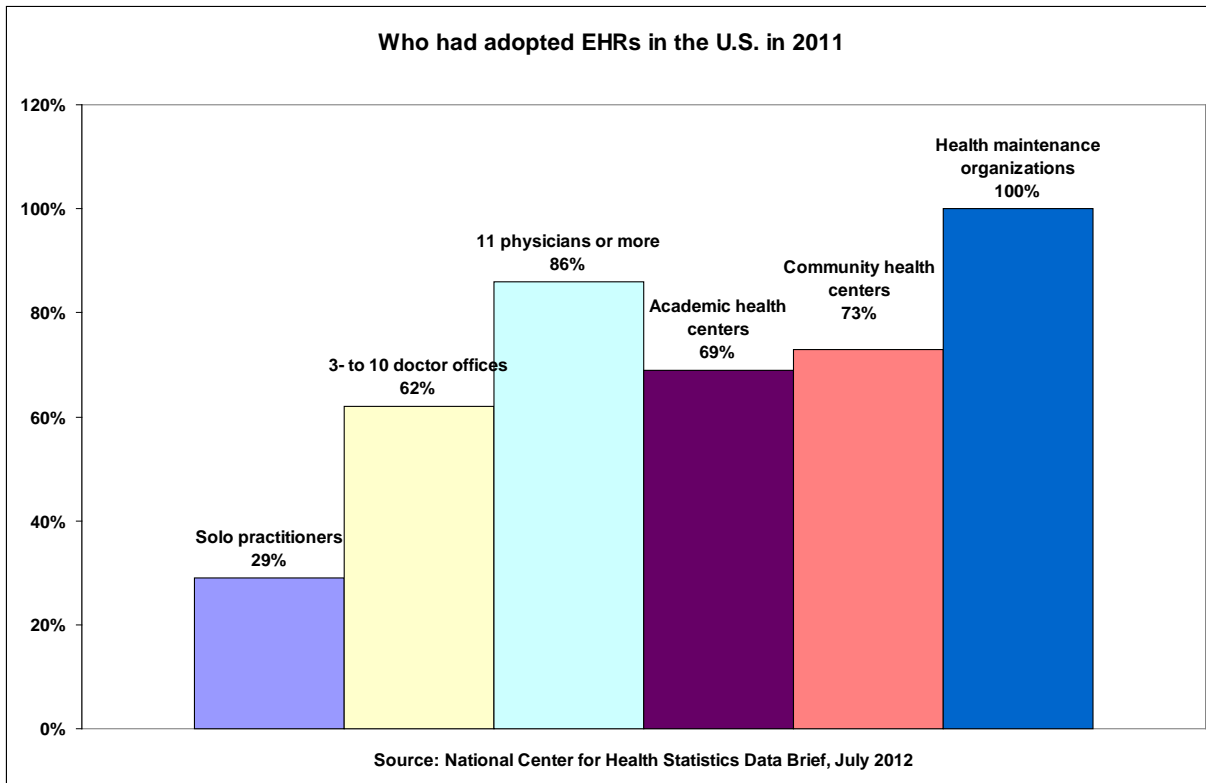
A good summary can be found in the Report of the Digital Innovation in Healthcare Working Group 2012, titled *The Digital Dimension of Health Care*:

Healthcare...has not been disrupted by outsiders, in the way that the book-publishing, music, and news industries have been. Patients have fewer self-service options than they have in other sectors, and less access to trusted information on the quality of care on offer. Healthcare has only just begun to tap into the power of digital technologies to improve its services. Today's technology readily enables the analysis of quantitative, outcomes-based data across large population groups; it allows online and video consultations; it provides intelligent self-diagnosis and self-management tools, and a wide array of other innovations that could improve cost, quality, and access. There have been experiments, pilots, and isolated rollouts, but not universal adoption (Halvorson, Goldsborough, Kent, Close, and Becker, 2012, p.9).

This same report calls for expanded use of technology to create a fourth space in health care – a digital space in addition to the traditional settings of hospitals, clinics, and homes. In fact, this space has already been created at large, integrated health care systems such as Kaiser Permanente and the Veterans Health Administration, and dozens of examples of digital innovation can be found in a new book titled *Innovation with Information Technologies in Healthcare* (Berkowitz & McCarthy, 2013). But advanced health IT and integrated systems are still in the minority in the United States; most patients receive their care in a fragmented way and may well have medical records (perhaps some electronic and other paper) in multiple locations, such as hospitals, physician practices, laboratories, pharmacies, and other settings.

EHR Adoption in Various Practice Settings

In order to understand why some physicians and organizations are using EHRs effectively while others lag, it's worth taking a look at the breakdown of who is adopting electronic health records. While no differences were observed in EHR adoption status due to physician gender, race, or ethnicity, age has played a role and – to an even greater extent – so has the kind of setting in which physicians practice.



In 2011, 54% of all physicians had adopted EHR systems. Among those under age 50, 64% were adopters, while about 50% of those over age 50 were adopters. In addition, 29% of solo practitioners had adopted EHR systems; 60% of physicians in two-doctor offices; 62% of physicians in 3-to-10 doctor practices; and 86% of physicians in practices with 11 or more physicians. In academic health centers, 69% of physicians had adopted EHRs, and in community health centers, 73%. Virtually all physicians practicing in health maintenance organizations (HMOs) in the U.S. had adopted electronic records (Jamoom et al., 2012).

Clearly adoption of EHRs increases with the size of the physician practice, as the work and costs associated with adoption can be spread out over a larger group of people.

Government Incentives Related to Reform

As stated earlier, the U.S. government has created incentives for everyone working in health care to adopt information technology and use it in meaningful ways. Enacted in 2009 under Title XIII of the American Recovery and Reinvestment Act (also known as the stimulus bill), the HITECH Act includes as much as \$27 billion over 10 years in spending to create a nationwide network of electronic health records (Blumenthal, 2010). The criteria for “meaningful use” of EHRs include e-prescribing, electronic exchange of health information to improve quality of health care, and submission of clinical quality and other measures. Eligible professionals can be paid up to \$44,000 per professional over five years through Medicare and up to \$63,750 over six years through Medicaid. Hospitals can qualify for incentive payments totaling \$2 million or more.

In addition, effective in 2012, The Centers for Medicare and Medicaid Services (CMS) financially rewards Accountable Care Organizations (ACOs) that lower growth in health care costs while meeting quality standards. The idea behind ACOs is to provide incentives for doctors, hospitals, and other providers to better coordinate care across settings in order to help prevent disease and

illness and reduce unnecessary hospital admissions. A Shared Savings Program makes it possible for ACOs to keep some of the savings gained from the new model as long as they meet or exceed quality performance standards. It defines an ACO as: “a group of providers and suppliers of services (e.g., hospitals, physicians, and others involved in patient care, that will work together to coordinate care for the patients they serve with Original Medicare (that is, those who are not in a Medicare Advantage private plan).” Participation in ACOs is strictly voluntary for both providers and patients (healthcare.gov, 2013).

Also in 2012, the Affordable Care Act established a hospital Value-Based Purchasing System (VBP) for traditional Medicare, offering financial incentives to hospitals to improve the quality of care. In 2015, a new provision will tie physician payments to the quality of care they provide, so that those who provide higher value care will receive higher payments.

What does this have to do with health IT? According to a 2011 article by Jha et al.:

ACOs will have a far more difficult time managing the care of their patient population without broad-based EHR adoption. The CMS is required by the Affordable Care Act to reduce payments for certain types of readmissions. It will be significantly more difficult to manage discharges and prevent readmissions without electronic clinical data sharing with ambulatory providers...future value-based purchasing programs that require more robust performance across a wide variety of metrics are likely to spur many hospitals to adopt EHRs. If the Medicare and Medicaid EHR incentive programs do not adequately support adoption of EHRs, it will make these other reform efforts substantially more difficult to achieve (SP123).

Even with these incentives, however, it's important to address the many barriers to successful EHR implementations that remain.

Conclusion

The adoption of electronic health records by hospitals and medical practitioners is not yet universal in 2013, but the pace of adoption is now accelerating in the U.S. A number of leading organizations have shown how health IT can improve health care quality and service. Government reforms of the past few years have created incentives for everyone in the health care industry to use health IT. For EHR implementation projects to be successful, however, they must be treated as change projects that address all the barriers to adoption. This means they must consider not only the financial barriers but also the technical, time, psychological, social, privacy, organizational, and change process concerns that providers have about electronic health records.

There are many lessons to be drawn from studying what makes a change process successful. A general saying in change management circles is that people don't fear change – they fear the transition needed to realize the change. Fear of letting go of the past and moving into an unknown state makes people anxious. EHR projects need champions with a vision who motivate others to let go of their fear and participate in the transition. Feedback should be gathered from those who will be using the EHRs (physicians, nurses, administrative staff, etc.), and accomplishments should be celebrated along the way. Finally, leaders of health care organizations as well as vendors and government must support EHR adoption and do whatever is possible to ease the transition.

References

- Berkowitz, L., & McCarthy, C. (2013). *Innovation with information technologies in healthcare*. London: Springer-Verlag.
- Blumenthal, D., & Tavenner, M. (2010, August 5). The “meaningful use” regulation for electronic health records. *The New England Journal of Medicine*, 363, 501-504.
- Boonstra, B. & Broekhuis, M. (2010) Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. *BMC Health Services Research*.10, 231.
- Halvorson, G., Goldsborough, P., Kent, J., Close, K., & Becker, D. The digital dimension of health care. (2012). *Report of the Digital Innovation in Healthcare Working Group 2012*. Sponsored by The Global Health Policy Summit, Imperial College London, and Qatar Foundation.
- Healthcare.gov (2013). Key features of the Affordable Care Act, by year, and Accountable Care Organizations: Improving care coordination for people with Medicare. Retrieved from <http://www.healthcare.gov/law/timeline> and <http://www.healthcare.gov/news/factsheets/2011/03>
- Healthit.gov. EHR incentives and certifications: EHR incentive programs, retrieved from <http://www.healthit.gov/providers-professionals/ehr-incentive-programs>
- Jamoon, E., Beatty, P., Bercovitz, A., Woodwell, D., Palso, K., & Rechtsteiner, E. (2012, July). Physician adoption of electronic health record systems: United States, 2011. *NCHS Data Brief*, No. 98, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Jha, A. K, Burke, M., DesRoches, C., Joshi, M., Kralovec, P.D., Campbell, E.G., & Buntin, M.B. (2011, December). Progress toward meaningful use: hospitals’ adoption of electronic medical records. *The American Journal of Managed Care*, Vol. 17, Special Issue, SP117-SP123.
- Schoen, C. 2013. On the front line: primary care doctors’ experiences in eleven countries. *Findings from the Commonwealth Fund 2012 International Health Policy Survey of Primary Care Physicians and Health Affairs article*, November 2012. Retrieved from <http://www.commonwealthfund.org/events>
- Terry, K. EHR adoption: U.S. remains the slow poke. (2012, November 15). *Information Week*. Retrieved from <http://www.informationweek.com/healthcare/electronic-medical-records>