Financing the Pulp to Digital Phenomenon

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Immediately after Back to the Future Part II hit theaters in 1989, we all imagined we would each have our very own hover-board in only a few short years. Technology was growing and talk of flying cars was becoming a widespread concept that everyone thought would come to fruition. Nearly a quarter of a century later, however, we are still wondering where are our hover-boards?

Similarly, when electronic medical records (“EMRs”) began to emerge as critical health care resources in the 1960s, even though the concept and technology today is reasonably widespread, many believed it would be adopted universally. Yet despite increased EMR adoption, many hospitals and physician offices are wondering where is the EMR technology? A significant number of doctors, who have integrated EMR technology into their practice, claim they would never return to a paper-based format, while only a few physicians argue the benefits to be reaped from EMR technology are not worthwhile. While many inherent benefits are associated with advanced technology for collecting and transferring medical data, numerous risks also abound. Over the past decade, primary risks attached to EMRs include privacy, security, and the high cost of implementation and operation. Privacy and security concerns surrounding EMR implementation, in particular, have come to the forefront, and solutions as to how to address such concerns are on the rise. The federal government’s attempt to create financial incentives for EMR implementation has largely overshadowed the harsh financial reality facing smaller hospitals and physician practices struggling to implement

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2 See discussion of risks infra Part III.
such technology, which goes to the question of why electronic health records ("EHRs") have not been universally adopted. More specifically, the federal government offers incentives, grants, and financing options for hospitals, providers, and professionals to implement EMR technology in their offices. The funding, however, is contingent on difficult-to-meet criteria, enormously high capital costs, and tight deadlines. Electronic records for patients, doctors, and hospitals are the logical next step in this technological era, but the implementation and financing of these systems requires mechanisms that will allow for lasting and effective change for a future of fully integrated and interoperable EMRs.

Part I of this note discusses advances in health information technology and medical records, as well as the importance of electronic medical records to the health care system. Over the past thirty to forty years, electronic medical records have revolutionized medical care. Recent federal health care legislation mandating the adoption of EMRs by 2014, along with increased government funding, has led to greater implementation of electronic records. Part II analyzes in more detail the benefits using electronic medical records derives, as opposed to utilizing paper-based records. Part III recognizes the risks associated with EMRs, despite their significant benefits. Part IV explores the primary challenge facing the widespread adoption of electronic medical records—cost. Part V reviews and critiques various proposals for financing the

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3 See discussion of costs infra Part IV.
5 See COLLEGE OF HEALTHCARE INFORMATION MANAGEMENT EXECUTIVES ("CHIME"), CHIME SURVEY FINDS HEALTHCARE CIOs LESS OPTIMISTIC ABOUT GETTING EHR INCENTIVE FUNDING EARLY [hereinafter CHIME REPORT], available at http://www.cio-chime.org/chime/press/surveys/pdf/CHIME_MU2_Survey_Report.pdf. The CHIME Report indicated 15% of respondents believed they would meet stimulus funding in the first six months of 2011, and 74% responded they believed they would be more likely to qualify during the end of stage I incentive program between April, 2011 and September, 2012. Id. Only 11% of respondents believed they would be unable to qualify for funding until 2013 or 2014. Id.
7 See infra Part III (challenges surrounding EMRs and their speedy implementation include interoperability of systems, privacy, security, and technology).
implementation of the electronic medical record system, particularly in light of the recent economic downshift in the U.S. Despite the various proposed financing methods, there is still room for improvements in financing EMR implementation for hospitals and physicians.

I. Evolution of Electronic Medical Records: From Pulp to Digital

EMRs are longitudinal electronic records that contain patient health information, such as demographics, medications, allergies, medical history, immunizations, vital signs, and notes regarding past clinical encounters. EMRs fall under the broader category of Health Information Technology (“HIT”), which also includes hardware and software used to collect patient data. EMRs contain information that a doctor or hospital staff member enter, and they are generally distinguishable from personal health records (“PHRs”), which contain information that primarily the patient

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8 See HITECH Act §13101 (amending the Public Health Service Act) (HITECH Act added section 3000(13), which is now codified in scattered sections of 42 U.S.C. section 201). A “qualified electronic health record” is:

an electronic record of health-related information on an individual that – (A) includes patient demographic and clinical health information, such as medical history and problem lists; and (B) has the capacity – (i) to provide clinical decision support; (ii) to support physician order entry; (iii) to capture and query information relevant to health care quality; and (iv) to exchange electronic health information with, and integrate such information from other sources.


9 See HITECH Act § 13101 (amending the Public Health Service Act) (HITECH Act added 3000(5), which is now codified in scattered sections of 42 U.S.C.). Health information technology is defined as “hardware, software, integrated technologies or related licenses, intellectual property, upgrades, or packaged solutions sold as services that are designed for or support the use by health care entities or patients for the electronic creation, maintenance, access, or exchange of health information.” 42 U.S.C. § 300jj(5); see AM. MED. ASS’N, Health Information Technology, http://www.ama-assn.org/ama/pub/physician-resources/health-information-technology.page (last visited May 12, 2011) (defining health information technology); CONG. BUDGET OFFICE, supra note 8, at 1 (stating EMRs are the primary health IT packages to send and receive data electronically).
enters and documents. Not only do EMRs contain statistical data and information, but they also serve as a means of communication among health care providers, as a basis for planning future patient care, and as a means of protecting the legal interests of patients. Physicists and hospitals generally favor the implementation of EMR systems because they help streamline workflow, make patient information more readily accessible, reduce delays in communication, reduce errors, save money, and improve overall patient management.

EMRs have come to the forefront of health care over the past several decades, as the United States has increased its desire to create a more efficient, cost-effective, secure, and accurate health care system. The rows and rows of paper medical records

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10 See Shana Campbell Jones et al., The Interoperable Electronic Health Record: Preserving Its Promise By Recognizing and Limiting Physician Liability, 63 FOOD DRUG L.J. 75 (2008) (noting the distinction between electronic medical records and personal health records); Paul C. Tang & David Lansky, The Missing Link: Bridging the Patient-Provider Health Information Gap, 24 HEALTH AFFAIRS 1290 (2005), available at http://content.healthaffairs.org/content/24/5/1290.full.pdf+html (setting forth difference between electronic medical records containing information gathered and managed by an enterprise and personal health records meant to address health information needs of patients through patient access).


12 See U.S. DEPT OF HEALTH & HUMAN SERVS., THE OFFICE OF THE NAT'L COORDINATOR FOR HEALTH INFO. TECH. ("ONC"); ELECTRONIC HEALTH RECORDS AND MEANINGFUL USE, http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__meaningful_use_announcement/2996 (last visited May 12, 2011) (setting forth benefits stemming from use of electronic medical records); CONG. BUDGET OFFICE, supra note 8, at 6 (suggesting adoption of HIT systems could provide savings, eliminate unnecessary services, improve quality of care, and reduce errors); Colloquy, The Dinosaur in the Office: A Consideration of the Technical and Ethical Issues Surrounding the Adoption of Digital Medical Data and the Extinction of the Paper Record, 16 ANN. HEALTH L. 353, 355 (2007) [hereinafter Dinosaur in the Office] (describing benefits yielded by utilizing health information technology and electronic medical records); Catherine M. DesRoches et al., Electronic Health Records in Ambulatory Care—A National Survey of Physicians, 359 NEW ENG. J. MED. 50 (2008), available at http://www.nejm.org/doi/pdf/10.1056/NEJMsai802005 (indicating physicians have reported positive effects of electronic health record systems on various dimensions of quality of care and patient satisfaction); Medscape One-on-One: Kathleen Sebelius Speaks Out on the Affordable Care Act at 6 Months, http://www.medscape.com/viewarticle/728589 (last visited May 12, 2011) [hereinafter Sebelius Speaks Out] [interviewing Department of Health & Human Services Secretary, Kathleen Sebelius, about the Affordable Care Act and she notes that EMRs will, “allow a patient to do one-stop shopping, have a snapshot of what's going on, and have doctors and hospitals and nursing homes work much more closely together, but around the primary care model”].

13 See generally American Recovery and Reinvestment Act of 2009 ("ARRA"), Pub. L. No. 111-5, 123 Stat. 115 (2009); Health Information Technology for Economic and Clinical Health Act,
lining shelf upon shelf in doctors’ offices are all too familiar: the manila colored folders with the bright colored labels on the edge with last names and patient numbers. Such paper-based records are a physical manifestation of all of a patient’s medical information. Information distilled in paper has limited abilities because only one person can have access to that record at any given time; labor costs are higher because greater resources are needed to copy, fax, store, and retrieve these records; and paper charts are difficult to scan to identify patient characteristics or statistics quickly and methodically.14

The push for greater implementation of EMRs has recently gained increased attention in the media due to President Obama’s Administration’s vigorous promotion of health care reform, particularly the Administration’s emphasis on implementing EMRs to improve health care services and reduces costs.15 A computerized record to contain health data, however, is hardly a new concept.16 The concept of computerized medical records developed in the late 1960s and early 1970s when both Lockheed


15 See President Barack Obama, Address at George Mason University (Jan. 8, 2009), http://www.americanrhetoric.com/speeches/barackobama/barackobamageorgmu.htm (last visited May 12, 2011) [hereinafter Obama GMU Address]. In his address, President Obama proclaimed that to improve health care and lower health care costs, a switch to computerized medical records is imperative to “cut waste, eliminate red tape and reduce the need to repeat expensive medical tests . . . [b]ut it just won't save billions of dollars and thousands of jobs; it will save lives by reducing the deadly but preventable medical errors that pervade our health care system.” Id.; see also Richard Raysman & Peter Brown, Technology Initiatives in the New Administration, 18 MEDIA L. & POL’Y 1, 2 (2009) (explaining President Obama’s proposal to invest $50 billion to expand HITt adoption, including EMRs and supporting interoperability); D. Scott Jones & Howard B. Kessler, Can Electronic Medical Records Really Improve Quality? The Obama Administration Bets Yes, 12 J. HEALTH CARE COMPLIANCE 39 (2010) (explaining President Obama’s significant reliance on EMRs to produce quality health care and reduced costs).

Corporation and IBM suggested that computer records would increase quality of care and reduce paperwork. Yet, physicians remained hesitant to adopt this unproven, slow, expensive, and unreliable technology because the financial benefits were not evident. But, by the 1980s, EMR technology markedly evolved, as computer networking became widespread and data interchange standards became necessary for health care. Furthermore, federal governmental policies and research indicating EMRs could reduce the cost of health care also shaped the increased promotion and steady improvement of EMR technology during the 1980s. Unfortunately, although technology was improving and EMRs were gaining widespread attention, the pressure in the health care industry to reduce costs dampened motivation to invest in expensive systems.

In the 1990s and early 2000s, Presidents Bill Clinton and George W. Bush both touted the move from paper-based medical records to their electronic counterparts to provide a health system that allowed for greater efficiency, cost savings, decreased errors, and increased portability. President Bush asserted the move from paper-based

17 David U. Himmelstein et al., Hospital Computing and the Costs and Quality of Care: A National Study, 123 AM. J. MED. 40 (2009), available at http://www.amjmed.com/Webfiles/images/journals/amj/AJM10662S200.pdf (describing the past history of EMRs and how they are currently utilized); Melville H. Hodge, History of the TDS Medical Information System, in PROCEEDINGS OF ACM CONFERENCE ON HISTORY OF MEDICAL INFORMATICS, 143 (1987) (noting the “unwavering goals of MIS have been to reduce costs and improve patient care,” and the origins of information systems in hospitals stem from the Lockheed Information Systems Division in 1964 that applied aerospace backgrounds to hospital environments); YouTube, IBM Film, http://www.youtube.com/watch?v=t-aiKle6uk (last visited May 12, 2011) (highlighting the early stages of electronic health records and how computerized systems benefit health care).


19 See Berner, Detmer & Simborg, supra note 18, at 4 (discussing EMR transformation through the 1980s).

20 See Berner, Detmer & Simborg, supra note 18, at 4 (noting governmental policies promoting technology in health care). An Institute of Medicine report on computer-based patient records increased visibility of electronic medical records worldwide. Id; see also INST. OF MED., THE COMPUTER-BASED PATIENT RECORD: AN ESSENTIAL TECHNOLOGY FOR HEALTH CARE (Washington Academy Press 1991) [hereinafter IOM CPR REPORT] (relaying research on EMR technology uses and users, technology, policy and implementation).

21 See Berner, Detmer & Simborg, supra note 18 (noting increased cost pressures inhibited EMR adoption).

to electronic medical records would reduce medical costs by roughly twenty percent and would “help change medicine and save money and save lives.”

Most recently, the Obama Administration has been very vocal about the implementation of electronic medical records and the beneficial impact such records will have on national health care. The enactment of the American Recovery and Reinvestment Act of 2009 (“ARRA”), the Health Information Technology for Economic and Clinical Health Act (“HITECH Act”), and the Patient Protection and Affordable Care Act of 2010 (“PPACA”), demonstrate the Obama Administration’s strong commitment to improving care and its particular focus on the implementation and use of electronic medical records.

http://www.hhs.gov/healthit/resources/HITStrategicPlan.pdf. President Bush issued Executive Order 13335 in 2004, “to provide leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care,” as well as to “reduce medical errors, improve quality, and produce greater value for health care expenditures.” ONC HEALTH IT PLAN, at iii; Wendy J. Netter, Curing the Unique Health Identifier: A Reconciliation of New Technology and Privacy Rights, 43 JURIMETRICS J. 165, 170-71 (2003) (noting President Clinton’s health identification card proposal was quickly abandoned, but it was intended to increase health information portability); see also Michael Fletcher, President Promotes Switching to Electronic Medical Records, WASH. POST, Jan. 28, 2005, at A07, available at http://www.washingtonpost.com/wp-dyn/articles/A41595-2005Jan27.html (describing President Bush’s call to doctors and hospitals to move medical records from paper to electronic files to save money and improve health care).

Fletcher, supra note 22; Spivey, supra note 16, at 1324-26 (noting President Bush’s desire to implement EMRs to reduce costs and save lives).


We know that health care is crippling businesses and making us less competitive as well as breaking the banks of families all across America, and part of the reason is we've got the most inefficient health care system imaginable. We're still using paper—we're still filing things in triplicate. Nurses can't read the prescriptions that doctors have written out. Why wouldn't we want to put that on an electronic medical record that will reduce error rates, reduce our long-term cost of health care, and create jobs right now?

Id.; see also Robert Pear, Privacy Issue Complicates Push to Link Medical Data, N.Y. TIMES, Jan. 18, 2009, at A16, available at http://www.nytimes.com/2009/01/18/us/politics/18health.html (quoting President Obama as saying, “We will make the immediate investments necessary to ensure that within five years all of America's medical records are computerized”).

Along with the Obama Administration’s commitment to implementing EMRs, as well as former Presidents Clinton and Bush’s initial efforts, many health care experts have also been pressing for the widespread adoption of EMRs because of the technologies’ potential for positive effects on the delivery of health care services. Yet as of 2011, adoption remains relatively sluggish despite health care reform proposals’ heavy focus on full implementation of EMRs over the next five to ten years.

In fact, the EMR adoption rate in the U.S. is significantly lower than other industrialized nations employing health information technology. Currently, about seventeen to twenty-eight percent of U.S. primary care physicians and roughly eight to ten percent of U.S. hospitals have basic EMR systems; whereas, in many European


28See Caitlyn Ross, Recent Case Developments in Health Law: Stimulus Bill Funds Overdue Charges to U.S. Health Care Technology, 37 J.L. MED. & ETHICS 385 (2009) (maintaining the U.S. has “lagged behind” other nations utilizing HIT); INFO. TECH. & INNOVATION FOUN., EXPLAINING INTERNATIONAL IT APPLICATION LEADERSHIP: HEALTH IT 1-58, 8 (Sept. 2009) [hereinafter ITIF REPORT], available at http://www.itif.org/files/2009-leadership-healthitit.pdf (noting Denmark, Sweden, and Finland are ahead of U.S. EMR adoption). High rates of adoption and use of EMR systems by primary care physicians were found in Sweden (100%), Finland (96%), the Netherlands (98%), Denmark (98%), New Zealand (92%), and the United Kingdom (89%). See ITIF REPORT, supra.
nations, New Zealand, and Australia, roughly eighty to one-hundred percent of the primary care physicians have EMRs.\textsuperscript{29} According to a study conducted from 2007 to 2008, which surveyed physician adoption of electronic medical records in the U.S., four percent of physicians reported having an “extensive, fully functional electronic-records system,” thirteen percent responded as having a “basic system,” and eighty-three percent of the respondents had no electronic health records.\textsuperscript{30} A more recent study, which the Harvard School of Public Health conducted, indicates that between 2008 and 2009, the share of U.S. hospitals that have adopted basic or comprehensive electronic records has risen from 8.7 percent to 11.9 percent.\textsuperscript{31} Though the number of physicians and hospitals using EMRs is modestly growing, an adoption gap continues to widen between large and small practices and hospitals.\textsuperscript{32} As a result, the U.S. health care industry continues to fall behind in realizing benefits from information technology relative to other industrialized nations.\textsuperscript{33}

II. Electronic Medical Record Benefits

EMRs are the next logical step in health care technology, and very few are opposed to the concept, particularly due to the related benefits.\textsuperscript{34} The major benefits of

\textsuperscript{29} ITIF REPORT, supra note 28 (discussing higher EMR adoption rates in other countries); THE COMMONWEALTH FUND, PERSPECTIVES ON HEALTH REFORM (2009), http://www.commonwealthfund.org/~/media/Files/Publications/Perspectives%20on%20Health%20Reform%20Brief/2009/Jan/The%20Federal%20Role%20in%20Promoting%20Health%20Information%20Technology/1230_Blumenthal_federal_role_promoting_hlt_IT_Perspectives%20pdf.pdf (describing the United States as lagging behind other industrialized nations in health care and EMR adoption).

\textsuperscript{30} Catherine M. DesRoches et al., supra note 12 (noting survey results of physicians that use EMRs in their practices).


\textsuperscript{32} See ROBERT WOOD JOHNSON FOUND., supra note 26, at 5 (describing an increase in U.S. electronic health record (“EHR”) adoption rate, but a widening gap between small and large practices); Vetter, supra note 14, at 199 (stating among all major economic segments, health care has lagged in realizing IT benefits).

\textsuperscript{33} EXEC. OFFICE OF THE PRESIDENT, REPORT TO THE PRESIDENT REALIZING THE FULL POTENTIAL OF HEALTH INFORMATION TECHNOLOGY TO IMPROVE HEALTHCARE FOR AMERICANS: THE PATH FORWARD 1 (2010), http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf.

\textsuperscript{34} See CAN SMALL HEALTHCARE GROUPS FEASIBLY ADOPT ELECTRONIC MEDICAL RECORDS TECHNOLOGY?: HEARING BEFORE THE SUBCOM. ON REGULATORY REFORM & OVERSIGHT OF THE H. COMM. ON SMALL BUS., 109TH CONG. 2 (2006) [hereinafter SMALL BUSINESS EMR HEARINGS] (statement of W. Todd Akin, Chairman, Subcomm. on Reg., Reform & Oversight). “There is little doubt that the adoption of electronic medical records
EMR adoption include efficiency, portability, reduced medical errors, and national and individual cost savings.\(^{35}\)

**A. Efficiency and Portability**

Paper-based records hinder the effortless transferability of information from one physician’s office to the next because they are bulky, must be physically present, and do not facilitate the smooth transition and physicians’ access to information.\(^{36}\) Further, using paper-based records may subject patients to increased risk of preventable errors when presenting themselves to various physicians and care facilities. This increased risk stems from the fact that the numerous doctors and care facilities do not have completely integrated information about the patient’s prior medical encounters.\(^{37}\)

On the other hand, EMRs increase efficiency because information is readily transmitted and accessed throughout the world via interconnected networks.\(^{38}\) A nationally connected health information network would also allow physicians to treat patients quickly without needing to restart the collection of a patient’s entire medical history over and over again, regardless of where a patient moves or travels.\(^{39}\) Greater accessibility to medical records results in greater efficiency because a doctor can quickly retrieve a patient’s comprehensive medical history in seconds, without sifting through years of paperwork in a medical file, thereby enabling the doctor to make more informed and timely decisions.\(^{40}\) Moreover, increased coordination of information between health departments and organizations may additionally serve as a way to detect emerging health epidemics and to preserve medical records in the event of natural

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\(^{35}\) See Sebelius Speaks Out, supra note 12 (stating important benefits of EMRs).

\(^{36}\) See Patterson, supra note 26, at 196 (discussing inefficiencies created by lack of communication within and between hospitals and physicians).

\(^{37}\) See Patterson, supra note 26, at 196 (stating inefficient care results from poor communication of patient information).


\(^{40}\) See Patterson, supra note 26, at 201 (indicating how electronic health records can improve physician efficiency and patient care).
B. Reduced Medical Errors

Electronic medical records are praised for reducing medical errors. Medical errors pose not only significant costs but also serious health risks, including death. In fact, medical error is estimated as the eighth leading cause of death in the United States, resulting in roughly eight million outpatient incidents and one hundred thousand deaths each year. Many medical errors are manual errors caused by humans working with paper-based records, including mishandled patient requests, inaccurate medical information, mislabeled specimens, misfiled or missing charts, improper dosages, duplicative testing, lack of information being entered, and more. As such, switching to electronic medical records and e-prescriptions can remedy such errors. Estimates suggest EMR adoption has the potential to save over four hundred thousand lives through improved disease prevention and management.

41 See Patterson, supra note 26, at 201 (indicating that greater interconnection of health care organizations through electronic medical records can result in better coordination of patient care and detection of emerging health epidemics); Robert Malone, Health Information Technology, E-Prescribing and Hurricane Katrina: Could Electronic Health Records Have Made a Difference?, 3 OKLA. J. L. & TECH. 58 (2007) (indicating the significant benefit EMRs may have in the face of national disasters or mass tragedy).

42 See Hoffman & Podgurski, Finding a Cure, supra note 26, at 113-14 (listing ways electronic medical records will reduce errors).

43 See Ferneding, supra note 27, at 174-75 (discussing high number of deaths and incidents caused by medical errors).

44 See Hill, Law, IT, and Medical Errors, supra note 39, at 159 (noting unacceptably high rate of medical errors).

45 See Ferneding, supra note 27, at 174-75 (discussing various medical errors); Patterson, supra note 26 at 197-98 (noting four categories of medical errors: diagnostic, treatment, preventative, and other).

46 See Ferneding, supra note 27, at 174-75 (indicating that the Office of the National Coordinator for Health Information Technology estimates that 80% of medical errors are caused by paperwork and manual errors). Technology is often implemented in response to human error and the perception that humans are inefficient and unreliable. INST. OF MED., TO ERR IS HUMAN: BUILDING A SAFER HEALTH SYSTEM 61 (Linda T. Kohn, Janet M. Corrigan, & Molla S. Donaldson eds., National Academic Press) (2000) (suggesting technology is used to automate processes to reduce errors).

47 Craig Richardson et al., Lessons from Credit Bureaus for Improving the Market for Electronic Medical Records, 44 JOURNAL OF CONSUMER AFFAIRS 546 (2010) (suggesting EMR adoption may save lives); Roger Taylor et al., Promoting Health Information Technology: Is There A Case For More-Aggressive Government Action?, 24 HEALTH AFFAIRS 1234-45 (2005), available at http://content.healthaffairs.org/content/24/5/1234.full.pdf+html (noting EMRs could eliminate over 404,000 unnecessary deaths through improvements in disease management and
decrease and the expediency of transmitting medical and prescription orders increases when the orders and medical records are computerized.\textsuperscript{48} Errors may also be reduced by superior and more thorough information contained in EMRs and through the information technology ("IT") prompts that assist physicians in diagnosing patients.\textsuperscript{49}

C. Cost Savings

The health care sector could save between 81 and 162 billion dollars through national adoption and appropriate use of EMRs.\textsuperscript{50} Currently, administrative costs associated with health care often comprise between twenty-five to thirty percent of all health care costs.\textsuperscript{51} Therefore, many of the administrative costs, which are based on the time it takes for administrative staff to transcribe physician notations, file records, process orders, and file claims, could be limited, thus greatly reducing the time spent on administrative activities and resulting in significant health care savings.\textsuperscript{52}

The Healthcare Information and Management Systems Society Electronic Health Record Association ("HIMSS"), compiled statistics on the improvements and operational efficiencies health care provider organizations experience using electronic health records.\textsuperscript{53} The hospitals, physicians, and clinics that participated in HIMSS’...
research, which notably have all adopted EMRs, demonstrated quality improvements derived from implementing the EMRs, while also increasing output and patient satisfaction.\textsuperscript{54} Moreover, operational efficiencies, the majority of which are administrative in nature, result in significant cost savings.\textsuperscript{55} Savings include reduced transcription costs, lessened malpractice insurance expenses, increased savings from decreased labor and supply costs for chart maintenance, diminished payments for medical records storage space, lowered turnaround time in prescription and medical orders, freed up funding through condensed administrative staff, eliminated radiology film costs, and improved accounts receivable turnaround times.\textsuperscript{56} Additional benefits and future cost savings may result from implementation of EMRs, but significant amounts of money must first be spent to implement these HIT systems, and many physicians’ offices cannot afford to implement the necessary infrastructure.\textsuperscript{57}

III. Risks Associated with Electronic Medical Records

A. Privacy and Security Concerns

EMRs provide many apparent benefits stemming from ease of transferability and portability, but these benefits are not without adverse consequences: EMRs also create significant privacy, confidentiality, and security risks.\textsuperscript{58} Privacy and security are

\textsuperscript{54} See VALUE OF EHRs, supra note 53, at 1.
\textsuperscript{55} See VALUE OF EHRs, supra note 53, at 2-4 (reporting reduced transcription, filing, storage, postage, referral letter writing, and malpractice insurance costs).
\textsuperscript{56} See VALUE OF EHRs, supra note 53, at 2-4 (delineating operational cost savings at hospitals and clinics in eighteen various states).
\textsuperscript{57} See Beaton, supra note 50, at 1677 (projecting high cost savings from EMR implementation); Taylor et al., supra note 47, at 1234-1235 (indicating EMR adoption can save lives); Terry & Francis, supra note 38, at 205 (describing general advantages to using EMRs); Ferneding, supra note 27, at 173 (noting cost savings possibilities from EMR adoption); see also discussion infra Part IV (describing high costs associated with EMR implementation).
primary patient concerns because health information technology has the ability to make medical information far more accessible and more easily transferable.\textsuperscript{59} Medical records contain sensitive information about patients, including details concerning interactions patients have with physicians. Consequently, proper security of such information is integral to ensure patient confidentiality; however, the federal privacy statutes that have been promulgated on this issue have not been as effective as intended.\textsuperscript{60}

In 1996, Congress enacted the Health Insurance Portability and Accountability Act (HIPAA) to protect the confidentiality of private medical information. See also Terry & Francis, supra note 38, at 683 (indicating the same advantages that EMRs provide also act as threats).

\textsuperscript{59} See Terry & Francis, supra note 38, at 696-97 (discussing how patients are mostly concerned with privacy and security surrounding electronic medical records); Miller, EMR: Potential for Misuse, supra note 58, at 353 (noting although electronic medical records have advantages, many concerns exist regarding privacy and security of EMRs); ROBERT WOOD JOHNSON FOUND., supra note 26, at 66 (commenting that privacy is at issue with electronic health records because of ability to make information more widely available); Steward, supra note 13, at 498 (stating opponents to EMRs believe electronic storage of medical information could result in major privacy violations).

\textsuperscript{60} See Juliana Bell, Comment, Privacy At Risk: Patients Use New Web Products to Store and Share Personal Health Records, 38 U. BALT. L. REV. 485, 489 (2009) (maintaining disclosure of medical information can lead to embarrassment, job loss, health care fraud, ostracism, and difficulty obtaining health insurance if not properly secured); Colin P. McCarthy, Note, Paging Dr. Google: Personal Health Records and Patient Privacy, 51 WM. & MARY L. REV. 2243, 2248-49 (2010) (noting medical records contain a wealth of personal, financial, medical, and social data, as well as administrative information like consent and authorization forms); Steward, supra note 13, at 493 (discussing the critical information stored in medical records, and the need to adequately protect the information and address privacy concerns because “[e]nconfidentiality is essential to effective health care”); see also Gotkin v. Miller, 379 F. Supp. 859, 863 (E.D.N.Y. 1974) (describing information stored in medical records). The court stated:

[A] medical record in the hospital or the physician's office is far more than a series of entries reporting diagnoses, doctor's orders and actions taken pursuant to such orders. In the hospital setting the record is a complex of communications between health professionals, including a written history and physical progress notes, nurses' notes, consultations, lab reports, operation summary, discharge summary and the like. During the course of a particular hospitalization the record may include a wide spectrum of speculation and observation as the various members of the health team contribute thoughts and observations that lead eventually to the final diagnosis. If not properly explained, many of these entries could be exceedingly disturbing to a patient already apprehensive.

Act ("HIPAA")\textsuperscript{61} to address privacy concerns related to health information.\textsuperscript{62} Under HIPAA, certain covered entities were to implement safeguards to "protect the confidentiality or integrity of medical information stored in electronic records and integrated information systems against "reasonably anticipated threats."\textsuperscript{63} While HIPAA was a first step toward safeguarding patient information, and brought the issue of medical privacy to the forefront, it was not highly effective.\textsuperscript{64} By 2008, five years after the government began officially enforcing HIPAA, approximately 34,000 complaints of privacy violations were lodged.\textsuperscript{65} Today, medical identity theft is on the rise because the increasingly high cost of health care creates an incentive for people to steal identities to obtain health insurance.\textsuperscript{66} As more people are unable to afford to pay for health care, the amount of fraud and medical identity theft will continue to increase. Estimates claim three to ten percent of national health care spending is lost to fraud and abuse, equaling between $75 and $250 billion lost each year; accordingly, without adequate privacy protections in place, EMRs could exacerbate this problem.\textsuperscript{67}


\textsuperscript{62} See id.; U.S. DEP’T OF HEALTH & HUMAN SERVS., SUMMARY OF THE HIPAA PRIVACY RULE 4 (2003), available at http://www.hhs.gov/ocr/privacy/hipaa/understanding/summary/privacy summary.pdf (explaining the main purpose of the HIPAA privacy rule is to define and limit when the protected health information of an individual may be used or disclosed by entities covered in the legislation).


\textsuperscript{64} Miller, EMR: Potential for Misuse, supra note 58, at 359-61 (outlining the history of privacy legislation for electronic medical records and the exceptions to HIPAA).


\textsuperscript{66} See generally Latour “LT” Lafferty, Medical Identity Theft: The Future Threat of Health Care Fraud is Now, 9 J. HEALTH CARE COMPLIANCE 11 (2007) (noting increased health care costs have impacted the rise of medical identity theft). See also Katherine M. Sullivan, Note and Comment, But Doctor, I Still Have Both Feet: Remedial Problems Faced by Victims of Medical Identity Theft, 35 AM. J.L. & MED. 647, 648 (2009) (averring high health care costs create incentives to steal identity to obtain insurance).

Though HIPAA did not set forth specific guidelines for privacy and was not particularly effective, it brought privacy concerns to light and led to other legislation; in addition, it prompted the federal government assigned the Department of Health and Human Services (“HHS”) with the duty of creating privacy rules.68 The Health Information Technology for Economic and Clinical Health Act (“HITECH Act”), which was adopted to promote the meaningful use of health information technology and enacted under the American Recovery and Reinvestment Act (“ARRA”), has imposed the most significant privacy and security regulations for the health care industry and its related business partners since HIPAA was adopted.69 Specifically, the HITECH Act extends the complete privacy and security provisions of HIPAA to business associates of covered entities, thus eliminating one of HIPAA’s limitations, and the HITECH Act introduces a structured approach to handling privacy and security

68 Standards for Privacy of Individually Identifiable Health Information, 65 Fed. Reg. 82,464 (Dec. 28, 2000) (to be codified at 45 C.F.R. pts. 160 and 164) (proclaiming final rule establishes first set of basic national privacy standards and fair information practices); Bob Brown, The New HIPAA Provisions of the Patient Protection and Affordable Care Act, 12 NO. 4 J. HEALTH CARE COMPLIANCE 35 (2010) (stating disappointment in the administrative simplification provisions of HIPAA that were intended to standardize electronic transactions, improve efficiency, and reduce costs); Ralph Ruebner & Leslie Ann Reis, Hippocrates to HIPAA: A Foundation for a Federal Physician-Patient Privilege, 77 TEMP. L. REV. 505, 510-11 (2004) (maintaining HIPAA was established to provide basic framework for national privacy standards); Robert W. Woody, Health Information Privacy: The Rules Get Tougher, 8 CONN. INS. L.J. 211, 212-213 (2002) (stating that Congress instructed HHS to create rules for privacy protections); R. Bradley McMahon, Note, After Billions Spent to Comply with HIPAA and GLBA Privacy Provisions, Why Is Identity Theft the Most Prevalent Crime in America?, 49 VILL. L. REV. 625, 645 (2004) (indicating Congress sought to protect transfer of personal information, but HHS created the privacy regulations); Miller, EMR: Potential for Misuse, supra note 58, at 360 (stating HIPAA did not get full authority to produce rules on privacy but the government began drawing up privacy protections for patient information); Sullivan, supra note 66, at 662 (noting Congress did not consider medical identity theft when enacting HIPAA but primarily focused on affordability and availability of health care).

69 Kirk J. Nahra, A New HIPAA Era Emerges, 1005 PLI/Pat 467, 471 (2010) (stating that HITECH privacy and security changes go far beyond issues only related to EMRs). The new HITECH Act provides “substantial new authority for enforcement and significant additional penalties for HIPAA violations, extending the effective reach of HIPAA coverage to business associates, changing certain use and disclosure rules, and creating additional individual rights.” Id. at 471; see also Norbert F. Kugele, HIPAA Goes HITECH: How the HITECH Amendments to HIPAA Impact Employer-Sponsored Health Plans, 35 MI TAX L. 19, 20 (2009) (noting prior to HITECH, HIPAA lacked a clear breach notification process); Sullivan, supra note 66, at 662-63 (explaining how HITECH extends and enforces HIPAA security and privacy provisions and addresses promulgation of regulations to handle breaches and breach notification).
breaches, increases civil and criminal penalties for breaches, imposes new notification requirements on covered entities, and applies to paper, electronic, and oral forms of information. The HITECH Act also provides consumers the right to obtain an electronic copy of their protected health information from HIPAA covered entities that use or maintain EMRs.

The recently enacted Patient Protection and Affordable Care Act of 2010 (“PPACA”) further builds upon the provisions of the HITECH Act and HIPAA, emphasizing the importance of ensuring privacy and security of electronic medical records; specifically, the Secretary of HHS is required to ensure that all data collected are protected under privacy protections at least as broad as those protections promulgated under HIPAA and the HITECH Act. As such, in September of 2010, Secretary Kathleen Sebelius, the Secretary HHS, adopted recommendations to effectuate PPACA’s mandate. The recommendations significantly improve privacy and security of data and encourage greater state efforts to promote privacy and security of data.

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70 Kugele, supra note 69, at 20 (discussing HITECH’s approach to private information breaches, including notification requirements and increased violation penalties). See also HITECH Act § 13401, 42 U.S.C. 201 (2009) (application of security provisions and penalties to business associates of covered entities), id. § 13402 (breach notification), id. § 13404 (application of privacy provisions and penalties to business associates of covered entities); see generally Nahra, supra note 69 (describing various security, privacy, and enforcement provisions of HITECH Act).

71 HITECH Act § 13405(e)(1).

The individual shall have a right to obtain from such covered entity a copy of such information in an electronic format and, if the individual chooses, to direct the covered entity to transmit such copy directly to an entity or person designated by the individual, provided that any such choice is clear, conspicuous, and specific . . . .”

Id.; see also Kugele, supra note 69, at 24 (explaining individual rights to access electronic health records).


73 See PPACA RECOMMENDATIONS, supra note 72 (highlighting Secretary Sebelius’ privacy and security recommendations).

74 See PPACA Recommendations, supra note 72 (outlining privacy and security recommendations for
Today, however, despite the existence of HIPAA, the HITECH Act, and other HHS-promulgated rules for privacy and security intended to protect EMR information, threats of security breaches remain alive due to the nature of the information. The Electronic Privacy Information Center (“EPIC”), a privacy research and advocacy organization, graded the Obama Administration’s medical privacy safeguards with a “B” in 2010 because the Administration had stalled in implementing its medical privacy protection efforts; this reflects a grade reduction, for EPIC gave the Administration an “A” in 2009 for implementing important privacy safeguards through the HITECH Act. The report praised the HITECH privacy laws set into motion in 2009, but it found the Administration’s privacy measures in 2010 to be “less clear,” and even “weak.” Trust in the technology is critical, and accordingly, widespread adoption of HIT will continue to falter without proper security measures in place. Privacy electronic medical record data).


This new federal law ensures that covered entities and business associates are accountable to the Department and to individuals for proper safeguarding of the private information entrusted to their care. These protections will be a cornerstone of maintaining consumer trust as we move forward with meaningful use of electronic health records and electronic exchange of health information.


See EPIC Report Card, supra note 76. The report card pointed to the slow implementation of 2009 privacy provisions, the lack of privacy experts involved in the process, and the White House’s preparedness “to endorse a weak data breach notification rule” as being primary weaknesses in the Administration’s 2010 policy and practices. Id.

See Statement of Deven McGraw, Dir. Health Privacy Project, to David Wu, Chairman House Comm. on Sci. & Tech. Subcomm. on Tech, & Innovation (Sept. 30, 2010), available at
complications and fears can produce additional hidden expenses for consumers and investors.  

Furthermore, storage and transfer of EMRs grant a new level of access to unprecedented amounts of private patient information. In fact, recent security breaches at hospitals have led to a myriad of stolen identities (roughly 250,000 to 500,000 per year), fraudulent activities, and invasion of patient privacy at various levels. The Ponemon Institute, a research center dedicated to privacy, data protection, and information security policy, conducted a study in 2009 that revealed costs of data breaches to U.S. organizations have increased and have led to decreased consumer confidence in health care and EMR systems. The study states, “The average


See Mark A. Hall, Property, Privacy, and the Pursuit of Interconnected Electronic Medical Records, 95 IOWA L. REV. 631, 645 (2010), available at http://www.uiowa.edu/~ilr/issues/IILR_95-2_Hall.pdf. The article points to a lack of clear privacy rights as an inhibitor for widespread EMR adoption because “Privacy protections increase costs of developing [EMR systems].” Id.  

Sharona Hoffman, Employing E-Health: The Impact of Electronic Health Records in the Workplace, 19 KAN. J.L. & PUB. POLY 409, 421-22 (2010). Transferring and storing voluminous critical medical data can be cumbersome, can lead to greater privacy complications, and can lead to larger numbers of people accessing personal health information. See id.  


See PONEMON INST. 2009 ANNUAL STUDY: COST OF A DATA BREACH; UNDERSTANDING FINANCIAL IMPACT, CUSTOMER TURNOVER, AND PREVENTIVE SOLUTIONS 1-36 (Jan. 2010) [hereinafter Cost of a Data Breach], available at http://www.ponemon.org/local/upload/fckjail/generalcontent/18/file/US_Ponemon_CODB_09_012209_sec.pdf. The study has a detailed analysis of costs of data breaches and impacts on consumer confidence through a study of forty-five organizations having experienced a data breach. Id. According to the Office of Management and Budget, a data breach is an incident that must be reported and includes personally
organizational cost of a data breach increased nearly two percent, from $6.65 million in [the] 2008 study to $6.75 million in 2009.\textsuperscript{83} The report found that “highly trusted industries such as financial services and health care” were more likely to experience data breaches.\textsuperscript{84} Each compromised record costs financial services and health care companies an average of $144 in indirect costs, and $60 per compromised record in direct costs.\textsuperscript{85} Although $204 for a breach may not seem exceedingly burdensome, a small practice may face financial ruin when the number of records a breach affects reaches into the tens and hundreds of thousands.\textsuperscript{86} The cost of electronically maintaining secure and private medical information, and the potential costs if there is in fact a breach of medical privacy, continue to prevent many physicians from assuming the risk, despite the legislative attention on the issue of privacy.\textsuperscript{87} The high costs associated with security breaches and unauthorized disclosure of electronic health information threatens the financial viability of smaller medical practices, thereby slowing the EMR adoption process.\textsuperscript{88}

identifiable information, which under its definition refers to:
any information about an individual maintained by an agency, including, but not limited to, education, financial transactions, medical history, and criminal or employment history and information which can be used to distinguish or trace an individual’s identity, such as their name, social security number, date and place of birth, mother’s maiden name, biometric records, etc., including any other personal information which is linked or linkable to an individual.


\textsuperscript{83} Cost of a Data Breach, supra note 82, at 3, 4, 14.

\textsuperscript{84} Cost of a Data Breach, supra note 82, at 4, 20 (noting health care industry is more susceptible to data breaches).

\textsuperscript{85} Cost of a Data Breach, supra note 82, at 4 (delineating breakdown of increased costs of each compromised record).

\textsuperscript{86} See Cost of a Data Breach, supra note 82, at 4.

\textsuperscript{87} See McMahon, supra note 68, at 650-51 (maintaining a large complaint from health care industry is a high cost for implementing privacy protections). The HIPAA privacy regulation compliance costs were estimated at over $3 billion in the first year. \textit{Id.}; see also Sullivan, supra note 66, at 653 (discussing financial impacts to American public resulting from breaches of privacy). Fraudulent medical claims cost the public and private insurers millions of dollars and pass costs on to providers and consumers. See Sullivan, supra note 66, at 653. A victim alleging fraudulent medical charges results in additional administrative costs for the provider or a third-party payer, and if the fraud is proven, the service costs must be absorbed by the health care provider, insurer, and ultimately, the consumer. \textit{Id.}

\textsuperscript{88} See Hoffman & Podgurski, Finding a Cure, supra note 26, at 119 (indicating EHR system failures and implementation costs can financially burden medical practices); Hall, supra note 79, at 643 (quoting Amalia R. Miller & Catherine Tucker, Privacy Protection and Technology Diffusion: The Case of
Moreover, HIPAA only acts as a federal floor for privacy standards. The ARRA provisions are also overreaching privacy provisions that do not adequately address the various state privacy laws, which are more stringent than the federal laws and also serve as a legal impediment to implementing EMRs. The resulting piecemeal privacy regulations will make privacy standards more complicated and less uniform, therapy potentially hindering the benefits of EMR adoption.

B. Interoperability, System Failure

Presently, most health care providers have not adopted EMRs, and those that have adopted the systems face difficulties in communicating with one another due to a lack of interoperability. Interoperability allows for the exchange of electronic data from two or more sources and for the information to “operate in a coordinated, seamless manner.” The ability to pass information among various systems instantaneously is part of the benefit of using health information technology, allowing patients to exchange data at all of the facilities at which they receive care, regardless of

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89 Anne B. Claiborne et al., Legal Impediments to Implementing Value-Based Purchasing in Healthcare, 35 AM. J.L & MED. 442, 463 (2009) (discussing problems arising with EMR implementation if there is no uniform privacy law).


91 See ROBERT WOOD JOHNSON FOUND., supra note 26, at 7-8 (indicating challenges facing EMR adoption, including challenges of interoperability between systems).

the physical location of the facilities.\textsuperscript{93} When that exchange stops short because information from one system is inaccessible from another, the benefit of the speedy exchange is lost because not all of the patients’ physicians can view the information or document new patient encounters.\textsuperscript{94}

The enactment of the PPACA extends health care coverage to approximately thirty-two million uninsured and underinsured individuals.\textsuperscript{95} Section 1561 of PPACA is especially pertinent to the discussion of interoperability because it requires collaboration between HHS, the HIT Policy Committee, and the HIT Standards Committee to develop interoperable standards to facilitate the smooth electronic enrollment of individuals into state and federal health programs.\textsuperscript{96} The recommendations include incorporating standardized web services, developing a federal software reference model, and sharing critical data between Federal and State agencies.\textsuperscript{97} The goal of creating these standards is to ensure that the transition to EMRs offers seamless integration between

\textsuperscript{93} See James C. Dechene, \textit{The Challenge of Implementing Interoperable Electronic Medical Records}, 19 \textit{ANNALS HEALTH L.} 195, 197-98 (2010) (signaling interoperability and seamless access as key features essential to EMR benefits); \textit{see also} Hoffman & Podgurski, \textit{Finding a Cure, supra note 26}, at 112-13 (discussing how interoperability allows doctors to access invaluable information for treating patients, particularly those who arrive unconscious or who are disadvantaged); Jones, \textit{supra note 10}, at 77 (explaining EMRs provide patients greater access to medical information and increased ease of transferring information); Ross, \textit{supra note 28}, at 385-86 (claiming HIT utilization functions best when shared by health care providers and are interoperable).

\textsuperscript{94} See Hoffman & Podgurski, \textit{Finding a Cure, supra note 26}, at 107, 112 (noting poor interoperability can lead to missed vital information critical to an individual’s welfare, and benefits will only be realized if EMR systems can easily share information); \textit{see also} Hall, \textit{supra note 79}, at 635 (suggesting without full interconnection EMR utility will never be achieved); Higher Costs Cited by Study, \textit{supra note 1} (highlighting one reason hospitals do not see full benefits is because of partially implemented systems, resulting in gaps and inefficiencies).

\textsuperscript{95} See \textit{Understanding the Affordable Care Act: About the Law, HEALTHCARE.GOV}, http://www.healthcare.gov/law/about/index.html (last visited May 12, 2011) (explaining basic purpose of PPACA is to provide greater health insurance options and reduce costs for over thirty-two million people); PPACA RECOMMENDATIONS, \textit{supra note 72}, at 1 (indicating PPACA is intended to provide affordable coverage to thirty-two million Americans).

\textsuperscript{96} Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148, § 1561, 124 Stat. 119, \textit{amended by} Health Care and Education Reconciliation Act of 2010, Pub. L. 111-152, 124 Stat. 1029 (to be codified at 42 U.S.C. §§ 300jj et seq.). The statute states, "the Secretary in consultation with the HIT Policy Committee and the HIT Standards Committee, shall develop interoperable and secure standards and protocols that facilitate enrollment of individuals in Federal and State health and human services programs, as determined by the Secretary.” \textit{Id.}; \textit{see} PPACA RECOMMENDATIONS, \textit{supra note 72}, at 1 (instructing various committees to collaborate for purpose of creating standards).

\textsuperscript{97} \textit{See} PPACA RECOMMENDATIONS, \textit{supra note 72}, at 3 (recommending implementation of a reference software model).
public and private insurance options, effectively connects consumers with other health services, and accommodates the wide array of user capabilities.\textsuperscript{98} It appears that section 1561 provides a catch-22, however, because standards for interoperability have minimal application unless health care providers actually adopt the EMR systems, which as mentioned above, is anything but a given.\textsuperscript{99}

Federal funding has recently spurred greater adoption of EMRs, but additional barriers to interoperability have emerged as providers adopt conflicting technology that does not properly interrelate.\textsuperscript{100} Secretary Sebelius stated that, “electronic health record systems aren’t always compatible with one another,” thereby posing a significant obstacle to the progress in implementing EMR systems.\textsuperscript{101} The incompatibility of various IT systems is partially attributable to the lack of clarity as to who owns the medical record information: patients or providers.\textsuperscript{102} Lack of clarity regarding ownership of medical records and information further leads to a fractured EMR system and makes it difficult for complete interoperability and coordination to occur.\textsuperscript{103} Fragmentation of a system is compacted when paired with the multitude of competing

\begin{footnotesize}


\textsuperscript{100} See Jonathan Loiterton, Free as in Freedom: Open Source Software’s Role in Remaking Healthcare in the Twenty-First Century, 19 ANNALS HEALTH L. 259, 261 (2010) (discussing large numbers of technology providers create incompatible systems). An astounding array of incompatible information technology solutions exist due to the large number of health care providers distributed among various specialties and clinical environments. Id. at 261.


\textsuperscript{102} See Hall, supra note 79, at 648 (signaling that ownership of medical records is a barrier to implementing EMRs).

\textsuperscript{103} See Hall, supra note 79, at 646-48 (stating fragmented systems and ownership discourages interoperability). Multiple ownership over pieces of patient medical information leads to fragmented systems and high competition among IT vendors, causing each to “create their own system and every American now has the opportunity to have 17 personally controlled records rather than one.” Id. at 648.
\end{footnotesize}
Technology vendors that are seeking to install and manage the EMR systems. Technology vendors disfavor the concept of interoperability because a system that allows for a simple and basic set of criteria to increase universality will lead to reduced profits and increased costs for those vendors.104

Moreover, choosing the wrong IT system to implement the records or not adequately redesigning the existing process could be detrimental to the practice and make health care more costly.105 The hospital or office seeking optimal interoperability must ensure there is a strong administrator to manage the process of selecting a provider, assessing if that provider will offer technology suitable for interacting with other offices and scrutinizing if the existing infrastructure is capable of upholding the new system.106 If a hospital or doctor purchases a program that is not customized to the specific needs of that office, or if the doctor is not willing to fully implement the program he or she invests in, it is more likely that the system will not be interoperable with other systems and that costs will increase for that practice.107 Complex software programs cause office systems to become inextricable to the extent that the failure of one component can lead to multiple errors and failures of interconnected components in the same system.108 The implementation of new and unfamiliar systems can disrupt regular office workflow, increase waiting times, result in lost profits, and add stress to

104 See Hoffman & Podgurski, Finding a Cure, supra note 26, at 131 (suggesting vendors disfavor interoperability because it could reduce profits and increase costs); see also Loiterman, supra note 100, at 261 (noting vendor hesitation in creating uniform and easy to integrate software for fear of competition).


106 See Ken Terry, IT Implementation: Why EHRS Fail, MEDICAL ECONOMICS (Apr. 7, 2006), http://medical.economics.modernmedicine.com/memag/content/printContentPopup.jsp?id=31 6528 (last visited May 12, 2011). Many physicians experience lack of interoperability and even abandon EMR systems if they do not see a return on investment or do not see improvements in quality of care. Id. Abandonment of an EMR system occurs for reasons such as entering technology agreements impulsively, not conducting proper due diligence, or physicians not committing to appropriate training or being unwilling to change their habits. Id.

107 See Loiterman, supra note 100, at 260 (stating many records remain inaccessible and isolated from other users of health information).

108 See Hoffman & Podgurski, Finding a Cure, supra note 26, at 119 (suggesting unpredictable system failures occur due to the interconnection of complex systems).
the administrative and clinical operations of the office.109

Adherence to high quality software engineering and health information technology practices will lead to significant EMR system benefits only if the standards are upheld and the systems are widely interoperable.110 After full EMR implementation, the systems become an essential part of providing quality patient care, and system failure may imperil patient welfare.111 Finding a customized system that meets the needs of the specific practice is important because “Selecting a vendor is like selecting your spouse. You expect the decision will be life-changing (you hope for the better) and that it will have a long-term effect. Also, you can be certain that if things don’t work out, the separation will be painful.”112 Adopting an EMR system that does not suit the needs of a particular practice, or that is prone to technical complications, may lead to increased costs over and above initial capital costs, and these reasons may further inhibit the adoption of EMRs, as well as the realization of the benefits that accompany EMR implementation.

IV. Costs of Implementing and Maintaining Electronic Medical Records

As the primary barrier to implementing EMRs, cost continues to concern smaller practices and hospitals, particularly under-resourced providers who are more likely to serve poor, minority, or rural patients.113 One of the most commonly cited barriers to EMR implementation is fear of a lack of adequate capital necessary to purchase the system.114 Over 400,000 eligible professionals still need to implement

109 See Vetter, supra note 14, at 212 (indicating initial cost and short-term disruption of EMR systems can be exasperating and difficult). Employee attitudes towards, and proficiency with, computing are large contributing factors to the disruption of office workflow and added stress. Id.
111 See Hoffman & Podgurski, Finding a Care, supra note 26, at 107 (describing complications may arise from HIT system failure); see also Frank Richards, Infrastructure, in IMPLEMENTING AN ELECTRONIC HEALTH RECORD SYSTEM 21 (James M. Walker et al. eds., 2005) [hereinafter Richards, Infrastructure] (noting “falling back on manual processes when the automated system is down is problematic at best, and in the worst case, may compromise patient care”).
112 Frank Richards, Vendor Selection and Contract Negotiation, in IMPLEMENTING AN ELECTRONIC HEALTH RECORD SYSTEM 15 (James Walker et al., 2005) [hereinafter Richards, Vendor Selection].
113 See ROBERT WOOD JOHNSON FOUND., supra note 26, at 29 (explaining practices and providers serving minorities and uninsured patients have lower third-party revenues, and are significantly less likely to have an EMR system); Hill, Law, IT, and Medical Errors, supra note 39, at 162 (signifying concerns over possible costs and fears of increased legal liability have made physicians hesitant to use EMRs and related diagnostic/prompting aids).
114 Ashish K. Jha, et al., Use of Electronic Health Records in U.S. Hospitals, 360 NEW ENG. J. MED.
EMRs, and the largest portion of that effort falls upon smaller physician offices.\textsuperscript{115} Average costs of EMR adoption are estimated around 6.5 billion dollars annually for inpatient systems and approximately 1.1 billion dollars per year for outpatient systems, ranging from three million dollars for smaller hospital implementation to 7.9 million dollars for larger hospital implementation.\textsuperscript{116} The Centers for Medicare and Medicaid Services (“CMS”) estimate that to acquire an electronic health record system, the cost to an eligible professional is approximately $94,000 over a five-year period.\textsuperscript{117} Incentive plans through Medicare and Medicaid will cover roughly forty-seven to sixty-seven percent of the estimated implementation costs for EMR systems.\textsuperscript{118} Despite the government’s attempt to encourage EMR implementation by injecting billions of dollars into incentive programs, these financial efforts have not mitigated the overarching cost.
concerns that many small health services have: many small health facilities will continue to struggle to finance the necessary infrastructure to support electronic health records. The average physician earns between $100,000 and $200,000 annually, and the expense of an EMR system often exceeds $30,000 per physician, making the costs imposed on small practices high. Small and rural practices spend roughly forty to sixty percent of net revenue on overhead costs, and it is difficult for them to fund additional technological hardware and software. One study found small, critical-access, and rural hospitals to be the least likely to adopt even a very basic EMR system. Critical-access hospitals had eighty percent lower odds of adopting a basic EMR in 2009 than large hospitals, small hospitals had seventy percent lower odds, and medium hospitals had fifty percent lower odds. Small, rural, and critical-access hospitals have lower adoption rates due in part to difficulties meeting the stage one “meaningful use” criteria, which, under the HITECH Act, provides incentives for adoption and meaningful use of EHR technology as the HHS regulations define, but the cost hurdle is equally at play. Despite governmental incentive programs, “there still may not be a sufficient financial

119 Standards for Health IT Hearing, supra note 99.
121 Standards for Health IT Hearing, supra note 99, at 4.
122 Jha et al., A Progress Report, supra note 31, at 1953 (recounting findings that small and rural hospitals are less likely to adopt even basic EMRs than large hospitals).
123 Jha et al., A Progress Report, supra note 31, at 1953; see also CTRS. FOR MEDICARE & MEDICAID SERVS., CRITICAL ACCESS HOSPITALS, https://www.cms.gov/CertificationandCompliance/04_CAHs.asp (last visited May 12, 2011). Critical access hospitals are defined as rural, limited service hospitals that have been converted to a special designation and are generally in professional shortage areas or in medically underserved areas; they are typically more than a thirty-five mile drive from any other hospital, have no more than twenty-five inpatient beds, and maintain an average stay of ninety-six hours per patient. Id.
124 Jha et al., A Progress Report, supra note 31, at 1952 (noting only small proportion of hospitals meet stage one meaningful use criteria); see CHIME REPORT, supra note 5, at 3-4 (finding decreased number of hospitals believing they could meet meaningful use criteria by October, 2010); Patterson, supra note 26, at 194 (stating that hospitals often lag behind in adopting information technology due to the high cost of technology); Samuel J. Wang et al., A Cost-Benefit Analysis of Electronic Medical Records in Primary Care, 114 AM. J. OF MED. 397 (2003), available at http://download.journals.elsevierhealth.com/pdfs/journals/00029343/PIIS0002934303000573.pdf (indicating two primary costs associated with electronic medical record implementation: system costs and induced costs); Robert S. McWhorter, Hospital Insolvency: An Impending Crisis, 2008 WL 5689292 (2008) (indicating costs are causing hospitals to file for bankruptcy, including costs associated with keeping technologically current).
rationale for individual providers or small practices to invest in electronic health records."  

In 2009, a study analyzing the thirty-six billion dollar impact from HIT stimulus funding found that it was only "a small carrot compared to the amount of resources it will take to deploy this technology over the next five years."  

Organizations with constrained capital will struggle to purchase and implement EMR systems, and will have greater difficulty meeting eligibility requirements to receive federal funding by not having sufficient funds to start them on the path to eligibility.

Due to the frontloaded costs associated with EMR implementation, combined with the lag time that exists between the investment and the realization of benefits from the system, small practices will continue to face greater financial strain.  

When a physician decides to adopt EMR technology, not only must the physician meet all of the "meaningful use" requirements to first be eligible to receive incentive payments, which simply put, has been defined as providers demonstrating that they are using EHR technology in ways that can be measured in quality and quantity to improve health care, but the physician must also put up his own funds to initiate implementation.


127 PWC HIT IMPACT, supra note 126, at 1 (discussing the difficulties capital-constrained organizations will face when adopting EMRs compared to those with larger capital or pre-existing systems); Jonathan Hill et al., Law and the Healthcare Crisis: The Impact of Medical Malpractice and Payment Systems on Physician Compensation and Workload as Antecedents of Physician Shortages—Analysis, Implications, and Reform Solutions, 2010 U. ILL. J.L. TECH. & POLY 91, 120 (2010) [hereinafter Hill, Law and the Healthcare Crisis] (pointing out that Medicaid and Medicare cutbacks and managed care fee reductions create uncertainty for investing in HIT systems even though EMRs are beneficial); McWhorter, supra note 124, at 2 (indicating hospitals and physicians have low or nonexistent operating margins, making it difficult for them to invest in EMR systems).  

128 PWC HIT IMPACT, supra note 126, at 4 (noting the frontloaded costs associated with EMRs); see Douglas I. Thompson et al., A Review of Methods to Estimate the Benefits of Electronic Medical Records in Hospitals and the Need for a National Benefits Database, 21 J. OF HEALTHCARE INFORMATION MANAGEMENT 62, 62, available at http://www.himss.org/content/files/REVIEW_estmate EMR_benefits.pdf (stating those who most want to understand how and when EMR investment will prove beneficial find it difficult to quantify the promised benefits).  

129 See Medicare & Medicaid Programs: Electronic Health Record Incentive Program, 42 C.F.R. pts. 412, 413, 422, and 495 (2010), available at http://edocket.access.gpo.gov/2010/pdf/2010-17207.pdf (explaining eligible professionals and hospitals must meet meaningful use criteria to qualify for funding); PWC HIT IMPACT, supra note 126, at 4-5 (describing incentive payments based on meaningful use eligibility and the requirement that physicians pay out full costs before
Registration for eligible professionals and hospitals to receive incentive payments began in January, 2011, and payments are doled out in increments over five years on a reimbursement basis.\textsuperscript{130} Physicians and hospitals are therefore required to provide the upfront capital costs without receiving any federal assistance. Should the hospital or physician implement the early stages of an EMR system and fail to meet the meaningful use criteria, the hospital or physician will not receive reimbursement.

A small practice may not only face financial challenges in developing the basic EMR infrastructure but also in maintaining and supporting the system over time.\textsuperscript{131} The CMS proposed rule for “meaningful use” included an estimate of $54,000 of capital cost required for installation of EMR infrastructure and a figure of $10,000 for annual maintenance and training costs.\textsuperscript{132} Recognizing that the figures listed do not include estimates for lost productivity, cost of reporting, equipment leases, privacy protections, technology support, or additional staff needed to maintain or input information, the numbers are already high for small practices.\textsuperscript{133} A recent study found that the receiving incentives). Meaningful use means health care providers must show they are utilizing certified EMR technology in ways that can be measured in both quantity and quality. CTRS. FOR MEDICARE & MEDICAID SERVS., MEANINGFUL USE, https://www.cms.gov/EHRIncentivePrograms/30_Meaningful_Use.asp (last visited May 12, 2011).


\textsuperscript{131} See PWC HIT IMPACT, supra note 126, at 4 (arguing software maintenance for a three-physician office over two years is equivalent to 25% of upfront capital cost, and costs roughly $8,250 - $15,000 per unit or $24,750 - $45,000 per three-physician office); Hillestad, supra note 116, at 1105 (estimating maintenance costs as “a productivity loss of [15%] for three months, $3,000 per physician for additional hardware costs, and yearly maintenance costs equal to [20%] of the one-time cost); CONG. BUDGET OFFICE, supra note 8, at 18 (approximating on-going, annual maintenance costs for large 500-bed hospitals at $1.35 million; smaller 250-bed hospital at $700,000).


\textsuperscript{133} See id. (approximating capital cost for EMR implementation); Robert Ybarra, The Benefits and Limitations of Electronic Medical Files, 18 ANNALS HEALTH L. ADVANCE DIRECTIVE 50, 54 (2008), available at http://www.luc.edu/healthlaw/research_and_pubs/annals/pdfs/Advance%20
deployment of EMR systems, inclusive of software, hardware, and disruptions in productivity, could cost around $120,000 per physician. With a high percentage of failed EMR implementations, the primary concern going forward will be how to effectively finance a fully functional and interoperable EMR system, as well as who will ultimately bear the brunt of the cost.

Many physicians, hospitals, and economists suggest that grants and tax breaks will help reduce the initial cost of EMR adoption and will make the 2014 deadline attainable. Government subsidies and incentives are valiant efforts to push the implementation of EMR systems, but incentive money is not unlimited, and in some instances not provided to eligible professionals or hospitals upfront. Additionally, the


135 See PATTI RENNER, WHY MOST EMR IMPLEMENTATIONS FAIL: HOW TO PROTECT YOUR PRACTICE AND ENJOY SUCCESSFUL IMPLEMENTATION 3 (2009), available at http://www.streamlinemd.com/Data/Sites/58/assets/StreamlineMD_WhitePaper_1B.pdf (representing that roughly 73% of all EMR implementations fail). Several reasons EMR implementations frequently fail are: (1) style of implementation is too quick and does not allow for gradual acclamation; (2) lack of useful clinical content or not implementing the proper system for the particular practice leads to physicians abandoning it altogether; and (3) cost due to vendors collecting payment in full before the system is fully functioning. Id.

136 See Ross, supra note 28, at 386 (claiming the ARRA government funding will effectively pay for and reward the use of EMRs and further HIT development); Ferneding, supra note 27, at 190-95 (positing that grants, subsidies, and other incentives must be used to encourage EMR adoption and facilitate development of Regional Health Information Organizations); Spivey, supra note 16, at 1327 (noting grants, tax credits, and revolving loans will assist a transition to electronic records).

137 See PWC HIT IMPACT, supra note 126, at 4-5 (explaining incentive payments and EMR overall costs). The available funding is limited, and once incentives are gone, physicians and hospitals themselves must fund on-going operational and maintenance costs. Id. at 4. While some of the federal incentives are prospectve payments, others are cost-based reimbursement systems that require the physician or critical access hospital to put forward their own money and may then possibly receive reimbursements. Id. Incentive payments are given to individual physicians, not to practices; therefore some eligible professionals who furnish substantially all of their services in a hospital may not be eligible for incentives. See id. at 5; Daniel F. Gottlieb, Medicare and Medicaid
incentives are taxable and therefore eligible professionals and hospitals are not receiving the complete amount that is outlined in various legislative acts.138

V. Financing Electronic Medical Record Systems

Government subsidies are not the only method of easing the financial burden of EMR implementation for physicians and hospitals.139 Over the years, health care organizations have attempted to adopt HIT systems through payment differentials, cost differentials, direct reimbursement, and shared withholds.140 New and various options for financing are cropping up to assist practices in meeting the 2014 deadline to adopt “meaningful use” EMR systems. Many tout government subsidy as the primary driving force necessary to achieve nationwide adoption, while others advocate for public-private partnerships, individual commercialization of patient information, market-based approaches, and pay-for-performance programs.

A. Government Subsidy

The Obama Administration and various studies assert that the mandate for implementing EMR systems in doctors’ offices and hospitals will achieve significant savings.141 A national health information network would likely magnify the various


138 See CTRS, FOR MEDICARE & MEDICAID SERVS., https://questions.cms.hhs.gov/app/answers/detail/a_id/10138/~/%5Behr-incentive-program%5D-are-payments-from-the-medicare-and-medicaid-ehr (last visited May 12, 2011) (indicating ARRA and HITECH Act do not expressly exclude EMR incentive payments from being treated like any other income, and therefore, they are likely to be subject to federal income tax). But see SECTION 179 TAX DEDUCTION, http://www.section179.org/ (last visited May 12, 2011) (allowing businesses to write-off up to $500,000 of qualified capital expenditures in 2010).

139 See Francis, supra note 48, at 36 (indicating that the economic stimulus package is intended to fund health information technology development)


141 See Obama GMU Address, supra note 15 (stating computerized medical records will save Americans billions of dollars); Hillestad, supra note 116, at 1103 (estimating HIT efficiency savings with could eventually average more than $81 billion per year); Rand Corporation Savings and Costs, supra note 116, at xii (indicating an average savings of $80 billion from EMR
benefits and advantages that result from electronic medical records. A mandate to adopt electronic health records, however, is unreasonable without financial support for those who must bear the cost of implementation. For this reason, the government has added considerable funding into the 2009 stimulus package and through other legislation to develop more advanced national health information technology system. The HITECH Act intends on subsidizing physician and hospital investments in HIT to make up for the underinvestment that frequently occurs due to providers’ inability to fully realize the benefits of health technology. The majority of incentives work to advance early adoption of HIT and discourage noncompliance.

In 2009, the government committed approximately nineteen billion dollars to promote the use of health information technology to all health care providers through the HITECH Act of the ARRA. The Administration provided approximately 23.1 billion dollars in Medicare and 21.6 billion dollars in Medicaid incentive payments for the adoption of certified EMRs by meaningful users. In addition to the 27.4 billion dollars to be expended over ten years in grants and incentive payments, the White House announced supplementary grant funding in August 2009 of approximately 1.2 billion dollars toward providing health care providers and hospitals with implementation assistance and to help providers qualify for new incentives. In September 2010, the

implementation); Ferneding, supra note 27, at 170-71 (signaling some research has claimed EMRs may save between $81 billion and $162 billion annually); ROBERT WOOD JOHNSON FOUND., supra note 26, at 73 (representing annual proposed savings of $80 billion from EMR adoption).

142 See Francis, supra note 48, at 36 (asserting a national network for HIT would magnify benefits of EMRs).


145 See Gilman & Cooper, supra note 27, at 300 (signaling ARRA was intended to encourage early adoption of EMRs); Ferneding, supra note 27, at 169 (noting majority on incentives aim to encourage quick adoption of EMRs).

146 See Jones & Kessler, supra note 15, at 39-40 (highlighting ARRA provides $19.2 million to HIT implementation).

147 See HHS 2010 Budget, supra note 143 (outlining budgets allocated to Medicare and Medicaid EMR incentive programs).

government announced an extra twenty million dollars in funding for technical support assistance for critical access and rural hospitals.149

Eligible professionals who demonstrate meaningful use of certified EMR technology may receive a maximum payment of 44,000 dollars in Medicare incentives over a five year period, and eligible professionals who adopt, implement, or meaningfully use electronic health records and meet the various requirements can receive a maximum incentive payment of 63,750 dollars over a six year period from Medicaid.150 Physicians must choose to participate in either the Medicare or the Medicaid incentive program, but they may not enroll in both.151 Medicare incentive payments to hospitals that are meaningful are calculated on the product of (a) an initial amount of a two million dollar base year plus a dollar amount based on the number of discharges from the eligible hospital, (b) the Medicare share, and (c) a transition factor that phases down over a four-year period.152 For medical professionals that do not implement EMRs by 2014, their Medicare fee schedules will be penalized by a reduction

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151 See RENNER, supra note 135, at 9 (discussing hospitals and physicians must choose what program they participate in); CMS Proposed Meaningful Use Rule, supra note 132, at 24 (explaining an eligible professional may choose from either Medicare or Medicaid for EMR incentives but cannot participate in both); Crystal Conde, RECts to the Rescue; Regional Centers Help Physicians Use HIT, 106 TEX. Med. 2010 61, 61-67, available at http://www.texmed.org/Template.aspx?id=16095 (describing that physicians cannot receive incentive payments for both Medicare and Medicaid).

of one percent in 2015, two percent in 2016, and three percent in 2017 and after.\textsuperscript{153}

A government subsidy is arguably necessary to increase the adoption rate of EMR technology because returns of HIT to providers who invest in the systems are generally less than the returns and benefits to society as a whole.\textsuperscript{154} Government intervention in EMR adoption may also be viewed as necessary because HIT may resemble a quasi-public good, and once generated, it would be unreasonable to restrict its use.\textsuperscript{155} Health information technology stemming from EMRs can be viewed as a public good due to the massive amounts of health data and information that is generated.\textsuperscript{156} Physicians, hospitals, and the government can combine and use health data to track and detect potential diseases, better understand prevention methods and treatments, and conduct comparative studies on the effectiveness of medical treatments and practices.\textsuperscript{157} The national public health benefits of data collection and aggregation of medical information from EMR systems naturally piques the government’s interest in subsidizing the systems to increase adoption.\textsuperscript{158}

In fact, billions of government dollars in incentive payments have been useful in spurring moderate EMR system adoption up to this point.\textsuperscript{159} A health care market research company recently issued a report, noting that the EMR adoption rate grew around 10\% in 2009 and 13.6\% in 2010.\textsuperscript{160} The United States, however, is currently in roughly 14 trillion dollars of debt and mounting.\textsuperscript{161} Thus, an increase in EMR adoption

\textsuperscript{153} See PWC HIT IMPACT, \textit{supra} note 126, at 3 (explaining penalties associated with non-compliance to meaningful use standards). After full implementation of penalties in 2017, the average large 500-bed hospital may face losing up to $3.2 million in Medicare funding. \textit{Id. See} Matrix Health Systems, \textit{supra} note 150 (describing the penalties that will be incurred by professionals who do not meet implementation of EMRs by 2014); CMS, \textit{TITLE IV OF ARRA, supra} note 152 (clarifying initiation of Medicare payment reductions will begin in 2015 and thereafter for hospitals and eligible professionals failing to meet meaningful use criteria).

\textsuperscript{154} CONG. BUDGET OFFICE, \textit{supra} note 8, at 26 (noting necessity of government intervention to increase EMR adoption).

\textsuperscript{155} CONG. BUDGET OFFICE, \textit{supra} note 8, at 26 (discussing quasi-public nature of HIT).

\textsuperscript{156} CONG. BUDGET OFFICE, \textit{supra} note 8, at 26.

\textsuperscript{157} CONG. BUDGET OFFICE, \textit{supra} note 8, at 4, 26 (describing benefits of aggregated medical data).

\textsuperscript{158} CONG. BUDGET OFFICE, \textit{supra} note 8, at 24 (stating government as purchaser and regulator of health technology has interest in improving quality of care provided by Medicare and Medicaid).


\textsuperscript{160} \textit{Id.} (noting growth rate of EMR adoption in 2009 and 2010).

is positive, but government funding is waning, and the window for receiving government subsidization is also closing.\textsuperscript{162} While a government subsidy is a necessary component in the EMR funding equation, in the face of rising national debt, alternative means of EMR adoption should be explored.

\textbf{B. Regional Extension Centers}

The ARRA created the Health Information Technology Extension Program under Section 3012 to assist health care providers in adopting, implementing, and complying with the meaningful use standards for electronic medical record technology.\textsuperscript{163} The extension program establishes regional extension centers ("RECs") throughout the nation to provide technology assistance and support to various providers to "accelerate efforts to adopt, implement, and effectively utilize health information technology that allows for the electronic exchange and use of information in compliance with standards, implementation specifications, and certification criteria adopted [in the Act]."\textsuperscript{164} The RECs work in collaboration with nonprofit institutions and receive financial assistance on the basis of merit.\textsuperscript{165} Under the HITECH Act, 643 million dollars were allocated to support a national system of RECs that cover all regions.\textsuperscript{166}

\begin{footnotesize}
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\item \textsuperscript{162} See infra Part V(F) (discussing the short timeframe for government subsidization of EMR systems).
\item \textsuperscript{163} HITECH Act § 3012(c)(1). The RECs are to "provide technical assistance and disseminate best practices and other information learned from the Center to support and accelerate efforts to adopt, implement, and effectively utilize health information technology that allows for the electronic exchange and use of information in compliance with standards, implementation specifications, and certification criteria." \textit{Id.} See Claiborne, supra note 89, at 451 (explaining ARRA created regional extension centers to provide technical assistance and training to facilitate a nationwide health information network).
\item \textsuperscript{165} HITECH Act § 3012(c)(2) (stating affiliation and collaboration of Regional Extension Centers).
\item \textsuperscript{166} See HITECH Act § 3012; HHS HITECH Priority Grants Program, \url{http://www.hhs.gov/recovery/programs/hitech/factsheet.html} (last visited May 12, 2011) (describing grants allocated under HITECH Act to assist establishment and operation of regional
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Roughly sixty-two RECs exist throughout the nation, and each is directed to enroll 100,000 physicians into EMR systems by 2015. The RECs work with both primary care providers who have not adopted EMR systems and with providers who have existing EMR systems. Aiming to assist and educate all regional providers, the centers are also directed to prioritize assistance first to public or not-for-profit hospitals or critical access hospitals, federally qualified health centers, facilities in rural and other areas serving uninsured or underserved individuals, and individual small group practices. By gathering information on effective and best practices regarding EMR
technology and adoption, RECs assist hospitals and physicians with meeting EMR criteria, choosing the best customized system, providing technical assistance, and training staff on how to use the selected system.\textsuperscript{170}

While RECs may prove useful for assisting physicians in overcoming barriers related to selecting an EMR system and technology vendor, the RECs do not actually provide funds to the physicians, nor do they act as sources of funding.\textsuperscript{171} Rather, the RECs are educational and supportive facilities that can explain to a physician how to meet eligibility requirements and what software is available.\textsuperscript{172} Further, many RECs, in fact, charge physicians an up-front fee to participate and access the Center’s resources.\textsuperscript{173}

health centers (as defined in section 1861(aa)(4) of the Social Security Act). (C) Entities that are located in rural and other areas that serve uninsured, underinsured, and medically underserved individuals (regardless of whether such area is urban or rural). (D) Individual or small group practice (or a consortium thereof) that are primarily focused on primary care.

\textit{Id.} \textsuperscript{170} HITECH Act § 3012; ONC HIT Extension, supra note 166 (discussing role RECs play in providing technical assistance and assisting with meeting meaningful use criteria); \textit{eHealth Initiative, National Progress Report on eHealth 2010}, 1-115, 5 (2010) [hereinafter \textit{eHealth Progress Report}] (explaining RECs were established to provide assistance with technology selection, implementation, and use—tasks that have posed barrier to adoption); Mark Hamelburg, \textit{EHR and HIT Incentives in the American Recovery and Reinvestment Act}, \textit{21 Intell. Prop. & Tech. L.J.} 7, 12 (2009) (explaining RECs are affiliated with nonprofit organizations and will provide assistance implementing EMR systems).

\textsuperscript{171} \textit{eHealth Progress Report, supra} note 170, at 6 (demonstrating RECs are intended to facilitate adoption, not to fund adoption); see also ARRA § 13301 (lacking indication that RECs provide funding for EMR implementation); \textsc{DeP}t \textsc{of} \textsc{Health} \& \textsc{Human} \textsc{Ser}vs., \textsc{Office} \textsc{for} \textsc{the} \textsc{Nat}’l \textsc{Coordinator} \textsc{for} \textsc{Health} \textsc{Info.} \textsc{Tech.}, \textsc{Extension} \textsc{Program}: \textsc{Frequently} \textsc{Asked} \textsc{Questions}, B9, http://healthit.hhs.gov/portal/server.pt/community/extension_program_faq/1329/funding/16410 (last visited May 12, 2011) (stating REC funding cannot be used to provide funds for health care organizations to implement HIT).

\textsuperscript{172} ARRA § 13301 (amending the Public Health Service Act) (adding § 3012(c)(1)-(3)). The RECs are intended to promote the adoption of HIT by providing assistance with implementation, effective use, ongoing HIT maintenance, dissemination of best practices, participation in health information exchanges, integration techniques, and training. \textit{Id.}\textsuperscript{173} See, e.g., \textsc{Small Practice REC Participation Fees}, \textsc{New York eHealth Collaborative}, http://www.nyecrec.org/index.php/how-to-join/participation-fees (last visited May 12, 2011). The New York eHealth Collaborative offers a “full service” model for practices utilizing paper medical records and need assistance achieving meaningful use, priced at $5,750 to $6,500. \textit{Id.} The “meaningful use service” has a full cost of $4,250 for practices that have already purchased EMRs but need assistance meeting “meaningful use” criteria. \textit{Id.; see also Joseph Goedert, Regional Extension Centers Start to Roll, Health Data Management Magazine}, Dec. 1, 2010, http://www.healthdatamanagement.com/issues/18_12/regional-extension-centers-start-to-roll-
The eHealth Initiative survey found that seventeen RECs use a subscription model with tiered-service costs, thirteen require a flat fee, and four offer a per hour service model. The fees RECs charge range from $100 per year up to $2,200 per year. The first payment of government funds the centers receive is based on enrolling an eligible professional in an EMR system, the second payment occurs after an EMR is deployed, and the third payment is issued after the eligible professional demonstrates meaningful use for ninety days. Physicians and hospitals are likely to see REC fees increase over time as the federal funds granted to the entities diminish and revenue is needed for the RECs to remain in business.

Moreover, regional extension centers may in fact cause physicians to incur additional costs due to the limited selection of technology vendors the RECs may recommended. Several hundred technology vendors exist on the market, yet many RECs only have a limited selection of vendors to offer physicians. A few of the RECs do offer to work with non-preferred vendors, but they indicate that the preferred vendors are prequalified to meet all the REC’s interoperability standards. Because it is...

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174 EHEALTH REC SURVEY, supra note 166, at 12.
175 EHEALTH REC SURVEY, supra note 166, at 13 (analyzing fees physicians expect to pay). See also Goedert, supra note 173 (describing various state REC fees).
177 See Goedert, supra note 173 (proclaiming many RECs will need to substantially increase fees to stay in business once federal funds are exhausted).
178 See Gasch, supra note 176; EHEALTH REC SURVEY, supra note 166, at 10.
practically impossible for a REC to offer a physician the full spectrum of EMR technology available, many physicians consequently, implement improper systems only to uninstall them a few years later due to incompatibility. Accordingly, it is crucial that a physician or practice attempt to select the right EMR system the first time because it is unlikely that the opportunity to qualify for governmental incentive funding will occur more than once for each health care provider. Broader availability and greater customization of technology will help ensure a practice has chosen the proper system.

Once a proper EMR system is identified, vendor contracting takes place to marry the health care provider with the technology provider. RECs should teach health care providers what provisions to be weary of, as well as what provisions an agreement should ideally contain. Many technology vendor agreements contain standard form agreements, including indemnification and privacy provisions that typically lack protection and adequate safeguards for health care providers and patients. Entering into a contract with insufficient provider safeguards can cripple a small office or hospital. Proper training regarding vendor contract negotiation tactics will assure physicians that they are not trapped in impossible to escape, detrimental contracts. As such, regional extension centers conceptually offer a great service, but in practice, RECs may create additional costs for physicians in the EMR adoption process.

181 See Steven J. Fox & Vadim Schick, Caveat Doctor: Let the Healthcare IT Buyer Beware, GOV. HEALTH IT, Oct. 29, 2010, http://govhealthit.com/blog/caveat-doctor-let-healthcare-it-buyer-beware (last visited May 12, 2011) (indicating importance of selecting proper vendor first time to avoid later costs or inability to qualify for federal funding); Jones & Kessler, supra note 15, at 39 (claiming there are over 2,000 EMR vendors in the U.S. alone).

182 See Fox & Schick, supra note 181 (indicating health care providers likely only have one chance to qualify for full incentive payments due to short time frame).

183 See Richards, Vendor Selection, supra note 112, at 18-20 (discussing vendor contract negotiations and signing, and providing advice on provisions health care providers should be aware of in technology vendor agreements).

184 See Fox & Schick, supra note 181 (noting many vendor agreements are contracts of adhesion and difficult to negotiate). Provisions regarding data ownership and privacy of data are often void of safeguards to protect the health care providers or patients. Id. Vendors also seek to minimize any claims brought against them by implementing stringent indemnification provisions that protect the vendor even when the vendor is at fault. Id.

185 See Fox & Schick, supra note 181 (noting many vendors only have standard form agreements that are unsuitable for many providers); AM. MED. ASS’N, 15 QUESTIONS TO ASK BEFORE SIGNING AN EMR/EHR AGREEMENT, available at http://www.ama-assn.org/resources/doc/hit/emragreement.pdf (identifying various questions health care providers should ask technology vendors before signing a contract).
C. Pay-for-Performance

Pay-for-performance ("P4P") programs are common financial incentive paradigms that emerged more definitively in 2000, in recognition of increasing health care costs and consumer demands for higher quality care.\textsuperscript{186} The concept of P4P is based on the idea that giving providers monetary rewards for providing quality care will improve the overall quality of medical care.\textsuperscript{187} By more closely aligning compensation with quality improvements, P4P programs reward doctors that keep their patients healthy, instead of providing rewards based on the number of patients seen and treated.\textsuperscript{188} P4P incentives are alternatives to fee-for-service programs that generally encourage ineffective and poor quality service because no mechanism exists to reward future health benefits.\textsuperscript{189} Insurance companies, government purchasers such as Medicare and Medicaid, private employers, and health plans all sponsor P4P incentives.\textsuperscript{190}

In a similar vein as P4P, some policy makers have explored additional methods to incentivize physicians to adopt EMRs including looking to hospitals to financially support physicians.\textsuperscript{191} HHS issued exceptions to the federal physician self-referral and anti-kickback laws, opening the door for hospitals to assist in subsidizing physicians for

\textsuperscript{186} See GEOFFREY BAKER, PAY FOR PERFORMANCE INCENTIVE PROGRAMS IN HEALTHCARE: MARKET DYNAMICS AND BUSINESS PROCESS 3 (2003), available at http://www.leapfroggroup.org/media/file/Leapfrog-Pay_for_Performance_Briefing.pdf (explaining pay for performance programs arose from the quality improvement in health care initiatives).

\textsuperscript{187} See id. (noting P4P programs work to align financial rewards with improved physician care outcomes); Devin S. Schindler, Pay for Performance, Quality of Care and the Revitalization of the False Claims Act, 19 HEALTH MATRIX CLEVEL. 387, 408 (2009) (promoting pay for performance programs as a way to improve overall quality of medical care by giving providers financial incentives to improve their services).

\textsuperscript{188} See Ferneding, supra note 27, at 194 (noting P4P programs seek to reward physicians with healthier patients); Claiborne, supra note 89, at 483-84 (explaining P4P programs are often utilized to incentivize quality care by rewarding top performing providers).

\textsuperscript{189} See BAKER, supra note 186, at 3 (explaining fee-for-service methods encourage overuse and does not reward quality).


the upfront and ongoing costs associated with EMR technology and support services; however, few hospitals have actually provided such subsidization for physicians.\textsuperscript{192} Not only would hospital subsidies provide incentives for physicians, but the subsidies would additionally lead to greater interoperability of systems because hospitals would be promoting the EMR systems they utilize and ensuring that physicians could integrate seamlessly with that system.\textsuperscript{193} The underlying goal of reducing the financial burden for physicians through hospital subsidization, however, could actually increase the burden for many physicians.\textsuperscript{194} A physician closely aligned with the EMR system of one hospital may face increased costs by adapting records of patients treated at other unaffiliated hospitals with differing systems, or if the physician changes hospitals, the physician may also confront additional costs.\textsuperscript{195}

While initially a beacon of possibility, the P4P program is rapidly becoming the dodo bird of the health care industry. With the federal government allocating millions of dollars to assist with EMR implementation, as well as providing incentives through ARRA and other legislation, the majority of insurance companies no longer see the value in offering the P4P incentives. Accordingly, only a few contracts with payors will still have these P4P provisions written into them.

Due to the difficult task of securing funds from federal government subsidy programs, physicians need greater financial incentives to adopt EMRs, such as higher reimbursement rates, or other subsidies to offset initial capital investments.\textsuperscript{196} Perhaps providing cash incentives to physicians who employ e-prescribing or invest in EMR systems would present physicians with additional motivation to implement expensive,

\begin{itemize}
\item \textsuperscript{192} See \textit{id.} at 177 (noting hospitals allowed to subsidize up to eighty-five percent of the upfront and ongoing costs of EMR software, and IT support services for physicians until December 31, 2013); Cynthia M. Conner et al., \textit{American Health Lawyers Association 2008-2009 Year in Review}, 12 J. HEALTH & LIFE SCI. L. 1, 6 (2009) (observing hospitals have been slow to assist physicians in adopting EMR systems despite regulatory exceptions allowing them to do so).
\item \textsuperscript{193} See Grossman & Cohen, \textit{supra} note 191, at 2 (highlighting EMR support to physicians could be an alignment strategy for hospitals).
\item \textsuperscript{194} See Grossman & Cohen, \textit{supra} note 191, at 3.
\item \textsuperscript{195} See Grossman & Cohen, \textit{supra} note 191, at 3.
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yet beneficial, HIT systems.\textsuperscript{197}

\textbf{D. Creation of Private Health Information Market}

Creating a health information bureau ("HIB"), based on a credit bureau model, is another concept suggested to assist in lowering financial burdens of EMR adoption and improving efficiency.\textsuperscript{198} Credit bureaus emerged from an environment where small shops held individual customer histories on file and provided short-term credit.\textsuperscript{199} Lacking incentives to share information, the businesses amassed consumer information, but new customers had challenges in obtaining credit without a current relationship with the business.\textsuperscript{200} As a result, credit bureaus appeared and built more complete credit histories with privacy protections that other businesses could not view unless they shared information with the credit bureaus.\textsuperscript{201} The bureaus improved efficiency of financial institutions and lowered the costs associated with loan processing.\textsuperscript{202}

In a similar fashion, the construction of HIBs could effectively manage and create a market for patient medical information.\textsuperscript{203} The HIBs would be entities solely responsible for managing high volumes of patient medical information, and patients would have the option to license their medical records to the bureaus.\textsuperscript{204} With the implementation of sufficient privacy protections, a patient, in exchange for sharing medical information, would have access to his or her EMR and other available monetary benefits.\textsuperscript{205} The creation of several HIBs would provide a competitive private market for medical information where secondary users and health plans would bear the brunt of the costs, as opposed to taxpayers.\textsuperscript{206} Patients would have greater control over their medical information, thus curbing privacy concerns; the government could implement compatibility and interoperability standards; and privacy rules, such as HIPAA, could


\textsuperscript{198} See Richardson et al., supra note 47, at 548 (explaining lessons from and similarities to the credit information market).

\textsuperscript{199} See Richardson et al., supra note 47, at 548.

\textsuperscript{200} See Richardson et al., supra note 47, at 548.

\textsuperscript{201} See Richardson et al., supra note 47, at 548.

\textsuperscript{202} See Richardson et al., supra note 47, at 548.

\textsuperscript{203} See Richardson et al., supra note 47, at 549.

\textsuperscript{204} See Richardson et al., supra note 47, at 549.

\textsuperscript{205} See Richardson et al., supra note 47, at 549.

\textsuperscript{206} See Richardson et al., supra note 47, at 550.
ensure security and confidentiality of information. Competition among HIBs would also provide incentives to maintain high standards for complete and correct data, as well as spur additional innovative models.

E. Commercialization and Market-Based Approaches

Aggressive federal action to implement electronic medical records appears to focus primarily on providing incentives to larger hospitals, providers, and physicians. Legislation and programs thus far pay little attention to the end consumer, who will likely face increased premiums and additional costs stemming from EMR adoption. Some have theorized that conferring full ownership and property rights over medical records to patients may result in commercialization of medical information that would ultimately assist patients in realizing a wide spectrum of benefits by allowing others to use that information. Commercialized medical information rewards those who control access to that information, thereby placing them into the market where the information will be best employed.

EMR adoption is posited as a slow process because no one constituency or group is able to capture the full spectrum of benefits associated with an interoperable system. Legally, it is unclear who owns medical information, and economically, privacy protections increase the cost of adopting EMRs. Historically, medical records are deemed to be the property of the physician or the hospital, not the patient.

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207 See Richardson et al., supra note 47, at 554.
208 See Richardson et al., supra note 47, at 550.
209 See Hall, supra note 79, at 652-56 (theorizing granting of property rights over medical information to patients can unlock the value of data and circulate medical information more efficiently and productively).
210 See Hall, supra note 79, at 652-53.
211 See Hall, supra note 79, at 638-39; see also PAUL G. SHEKELLE, SALLY C. MORTON & EMMETT B. KEELER, AGENCY FOR HEALTHCARE RESEARCH & QUALITY, COSTS AND BENEFITS OF HEALTH INFORMATION TECHNOLOGY: EVIDENCE REPORTS/TECHNOLOGY ASSESSMENTS NO. 132 (2006), available at http://www.ncbi.nlm.nih.gov/books/NBK37992/ (noting that “private return-on-investment (ROI) calculations can provide results that are quite different from those of societal cost-benefit analysis”).
212 See Hall, supra note 79, at 642-43 (discussing the economic and proprietary complications in law associated with medical information).
Though most laws follow that patient medical records are physician or hospital owned property, no law has granted physicians or hospitals exclusive rights to patient information. The sharing of patient information between providers does, however, transform the medical record into a “quasi-public good.” Nevertheless, today patients may request access to their medical records, and under HITECH Act, they may even receive electronic copies of such information. Yet, property rights in such information remain undefined, which tends to decrease returns on the use and transfer of medical information, and juxtaposed against the high costs to ensure privacy, offers conflicting barriers to EMR adoption. Despite a current lack of full interoperability, medical information has commercial value for research and marketing purposes. By declaring patients have “ultimate ownership” of their medical records, third-party information managers, such as medical providers, would become merely custodians of the information. Providing patients with the authority to allow information compilers to sell or license access to the medical information would then create a market mechanism that rewards those who control access. Patient ownership would allow for a larger medical record market with determinative beneficiaries.

The commercialization of patient medical information would also lead to greater patient reliance on PHRs, whereby patients capture social benefits, warranting necessary private investments. The PHR is an electronic record containing individually identifiable health information drawn from multiple sources that is

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214 See Hill, Law, IT, and Medical Errors, supra note 39, at 188 (noting general rule that health care providers are considered the legal owners of a patient’s medical record, although many states allow patients the right to access the information contained in the record).

215 See Richardson et al., supra note 47, at 547 (discussing how medical records transform from private to quasi-public goods when transmitted between various providers).

216 See Hill, Law, IT, and Medical Errors, supra note 39, at 188 (claiming patients have a right to access medical information in their records); see also Health Information Technology for Economic and Clinical Health Act, Pub. L. No. 111-5, § 13405, 123 Stat. 115 (2009) (allowing patients access to health information).


218 Id. at 643.

219 Id. at 649.

220 Id. at 650-51.

221 See id. at 640-41 (discussing effects of fragmentation and suggesting emergence of patient-centric models).
managed, shared, and controlled by the individual.222 Alternatively, health care providers like hospitals and doctors maintain EMRs.223 Considering the high stake privacy issues involved with allowing a patient to control his or her own medical record, costs are likely to be high to own the record. Initial encouragement for patients to purchase and control their own PHRs may be provided through tax incentives and rebates for individuals.

Advocates for market-based approaches for EMR implementation argue that the technology should remain unregulated so the lower quality products will fail and the quality products will prevail.224 We have seen, however, private markets for EMRs have failed to effectively adopt EMRs on a national basis.225

F. Timeframe

When President Bush first proposed implementing a universal EMR system in 2005, full implementation was to be achieved within ten years—by 2015.226 President Obama’s push to expedite EMR implementation began in 2010 with a 2014 deadline.227

223 McCarthy, supra note 60, at 2250 (defining personal health records).
224 See Hoffman & Podgurski, Finding a Cure, supra note 26, at 130 (describing how an unregulated EMR market will allow quality systems and HIT to emerge while low quality products will fail).
225 See Renee M. Landers, Lecture, “Tomorrow” May Finally Have Arrived—The Patient Protection and Affordable Care Act: A Necessary First Step Toward Health Care Equity in the United States, 6 J. Health & Biomed. L. 65, 74 (2010) (pointing out the failure of private markets to improve the state of health services, care, and insurance in the United States). Professor Landers argues that: Private markets have failed to provide universal access to quality health care, but have made the insurance, pharmaceutical, and segments of the health care services industries wealthy and powerful. An increased government role to address the real problems of the uninsured and underinsured will not necessarily change private market insurance with which people are now basically satisfied.

Id.; see also Hoffman & Podgurski, Finding a Cure, supra note 26, at 131 (arguing that market forces alone cannot be trusted to ensure the interoperability of EHR systems, which is essential to the systems’ efficacy).
227 Health Information Technology for Economic and Clinical Health Act, Pub. L. No. 111-5, §
The same goal to wholly implement EMR systems within a ten-year time frame has been condensed, and EMR implementation must now be completed within a few short years. At the time this note is published, U.S. hospitals and physicians are a mere three years away from impending noncompliance penalties.\(^\text{228}\)

The aggressive timeline imposes additional barriers and challenges to implementation, such as rushing into contracts unsuitable for a physician’s practice, needing to entirely revamp existing systems, and having to expeditiously reestablish office workflow. Ensuring that these processes and decisions are intelligent and well informed is critical to the success of an EMR system.\(^\text{229}\) Nonetheless, a three-year time frame will not allow for proper EMR implementation into such a complex and interwoven health care system.

VI. Conclusion

Little question remains, some degree of government involvement and funding is necessary to achieve widespread adoption of EMRs. The government has an interest in promoting rapid adoption of EMR systems to promote public health and quality of care.\(^\text{230}\) The government cannot, however, provide endless funds to cultivate the required growth necessary to create a fully-functional EMR system.\(^\text{231}\) More attention, however, must be paid to providing a sustainable model for the future. Small physicians are bumping into exceedingly high costs, multiple state and federal financial models are occurring simultaneously in a downturned economy, many RECs are hardly able to sustain operation, and the tight time frame is suffocating. A new approach to funding EMRs must be implemented to truly adopt the systems nationwide and reap its benefits.

Though a completely market-based approach to EMR implementation may not

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\(^\text{229}\) See Richards, \textit{Vendor Selection}, supra note 112, at 15 (noting importance of proper vendor and software selection for stability).

\(^\text{230}\) See discussion supra Part V (A).

\(^\text{231}\) See U.S. DEP’T OF THE TREASURY, BUREAU OF PUBLIC DEBT, supra note 161 (noting U.S. debt is reaching new heights).
suffice, the creation of public-private partnerships may ease some of the costs associated with EMR adoption. Infusing the public programs, such as the regional extension centers, with private company funding would create more sustainable opportunities for physicians and hospitals to obtain incentive payments. Additionally, extending the timeline for EMR implementation will likely benefit the smaller hospitals and physicians who will bear the greatest impact from non-compliance penalties. Providing a longer time frame for smaller, critical-access hospitals and physicians will allow them to secure additional capital for implementing EMR systems, will grant them greater time to carefully consider vendor options, and will avoid the possibility that they will select an improper vendor that could potentially devastate the practice. Small and rural physicians and hospitals will suffer the greatest detriment if forced to quickly implement EMR systems that do not appropriately integrate with their current operations.\textsuperscript{232} The eligible professionals and hospital with less capital and time require additional support in comprehending the impact of switching to EMR systems, and demand greater resources devoted to their change of system. Although government subsidies and regional extension centers have facilitated wider spread adoption of EMR technology, the high costs remain daunting and many hospitals and physicians continue to ask “where is the EMR technology?”

\textsuperscript{232} \textit{See} McWhorter, \textit{supra} note 124.