

Current Clinical Practice
Series Editor: Neil S. Skolnik

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Electronic Medical Records

A Practical Guide for Primary Care

 Humana Press

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Series Editor

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Preface

It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.

– Charles Darwin

A virtually awe inspiring idea which becomes the dream of one generation often becomes the reality of the generation to come. At the turn of the twentieth century the United States had 20 million horses and 4000 cars. Gasoline, which was a waste product of the kerosene needed for lamps, was carried in buckets by automobile enthusiasts from whatever source they could find. Over the next decade, a series of watershed events rapidly transformed the car from a novelty to a useful device. In 1903, Horatio Nelson Jackson successfully drove an automobile across the United States, demonstrating the value of the car as transportation. In 1905, Sylvanus F. Bowser perfected the gasoline pump, and the world's first filling station opened later that year. Then in 1908, Ford Motor Company began mass production of the Model T. Coupled with a time of prosperity, the automobile became a lifestyle, available to people of even modest means.

By 1910, there were half a million cars in use in the United States. Unfortunately, breakdowns were still frequent, fuel was still difficult to obtain, and rapid innovation meant that even a 1-year-old car was nearly worthless. The high-wheeled buggy style, directly descendent from the horse-drawn buggy of the previous century, could be driven virtually anywhere. This was necessary, since there were less than 200,000 miles of gravel road and only 1000 miles of paved concrete. It was not for yet another decade, in 1921, that the Federal Highway Act was passed by Congress. This was legislation that coordinated state highways and standardized US road construction practices. Now a century later, we are the proud owners of about 5.7 million miles of paved highway, along with about 125,000 gas stations.

How is this progression of technology, culture, and infrastructure relevant? At any responsible organization new things are regularly introduced. Despite decades of tinkering, electronic medical record (EMR) systems remain a relatively novel technology. The DesRoches data (see [Chapter 1](#)) showed that as of 2008, only 4% of ambulatory physicians were using a full EMR, with only an additional 13% using a partial system. There are a dizzying number of models, and they can be taken in

almost any direction (even off-road). Features can become quickly obsolete, and the government has just begun settle on national standards for their use. Perhaps most importantly, the entire cultural transformation that attends new technologies is only just emerging for EMRs.

Physicians have many concerns. Will this technology interfere with the humanism and patient interactions that form the heart and soul, if not the science, of medical care? Will the placement of a screen in the room divert the physician's attention from the patient to filling out unnecessary forms and pieces of required data? Will the "narrative" of the illness, the description of the patient's experience, be lost as the representation of disease is narrowed to discrete data fields?

In addition to these humanistic concerns are the more practical concerns surrounding the efficiencies of patient care and the enormous cost of integrating an EMR into a practice. A colleague of ours, Keith Sweigart, focused this issue when, responding to a question about the efficiency of EMRs, he commented, "Remember, the most efficient care is sloppy care." This observation clarified that efficiency, while often discussed and certainly important, cannot be the *sine qua non* of the electronic medical record. The old practitioner who kept sparse notes about his patients on 3 by 5 inch cards gave humanistic, efficient care; however, the way that practitioner documented his care would never suffice for the complexity of modern medical care, or for the collaborative care that is now necessary in any group practice. As medical knowledge becomes more complex, it will become ever more important to have primary care physicians providing the majority of care for patients, and it will become increasingly necessary to have systems that coordinate a patient's care among all providers. In order to do this, EMRs will need to easily record and transmit medical information in a clear, predictable, and secure fashion between different practitioners.

One of the great potential benefits of EMR systems is population management. Our current system of paper-based individual medical records requires that a physician wait until a patient comes to the office before the opportunity arises to intercede on chronic disease processes. Moreover, the effort to manage risk is often compromised if that patient comes in with another agenda, if they were scheduled for insufficient time, or if the day has become particularly busy. EMRs provide a method whereby we can thoughtfully find those patients who have sub-optimal management and reach out to them proactively.

Through the use of patient portals, EMRs may additionally be able to encourage a more collaborative health system with our patients, who ultimately have the greatest stake in their health care. Patients can access their records and results, dwell over them, and discuss with others how they might address their concerns, in a way not all that different from what we as physicians do during patient care conferences.

Increasingly our method of recording information, in an electronic medical record, will force us to pay more and more attention to the *content* of the information we gather. With this attention to content it is important for us to also keep our focus on the simple fact that the *process* of gathering information and forming relationships with our patients has inherent value. Done correctly, with empathy and attention to detail, this process makes both patient and physician feel more satisfied

with the interaction and also affects health outcomes. The relationship that develops between a physician and a patient has a direct therapeutic effect, influences the information obtained, the decisions about what treatments a patient will consider, compliance with medications and lifestyle modification, and keeps the door open so that patients are comfortable returning for follow-up.

The issues surrounding EMRs will not be resolved quickly, or easily. Technology must co-evolve with technique, along with the cultural expectations of patients and physicians. With humanism sustained as the basis of medical care, and with technology enabling the best use of evidence-based medical science, we will improve patient care for individuals as well as the population.

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Books do not grow quickly. They have a gestation period that is rivaled only by elephants and blue whales. Nor do books develop in a vacuum; they are influenced by their environment and are often facilitated by the discussions, support, and input of others. I feel fortunate to work in an environment filled with colleagues who over the years have also become close friends – Mat Clark, Amy Clouse, Trip Hansen, Pam Fenstermacher, and John Russell – where we help, criticize, compliment, joke, challenge, and ultimately support one other in a way that characterizes and role models for our residents the best aspects of a healthy work environment. This is why, for over 20 years, we continue to have one of the best family medicine residency programs in the region, perhaps in the country, combining core clinical medicine with strong academics and training individuals who go on to become some of the best family doctors in our tri-state area. A program like this, that sees patients from all backgrounds regardless of their ability to pay in an environment of support and respect, can only occur when supported strongly by a parent hospital and the people in charge of that hospital – Jack Kelly, Meg McGoldrick, and now Larry Merlis – individuals committed to doing the right thing for the patients in our community, and Keith Sweigart who led the Abington Memorial Hospital search and launch of an electronic health record.

No plant, no person, and no book grows to its best and fullest without the love and support of family. I save the most important acknowledgements for last, because my last thoughts each day and my first thoughts each morning are about my family – always living I’ve slowly only noticed the most important things in life – my wife Alison, who I love and with whom I travel together down this wonderful, confusing, cascading river of life; my daughter Ava – who is a delight and whose singing I hear even in my sleep; and my son, Aaron – with whom I have shared the greatest fishing adventures of a lifetime.

Neil S. Skolnik

Contents

1 Meaningful Use of Health Information Technology: What Does it Mean for Practicing Physicians?	1
Catherine M. DesRoches and Paola D. Miralles	
2 A View from the Trenches: Primary Care Physicians on Electronic Health Records	15
Neil S. Skolnik, Mercy Timko, and Charissa Myers	
3 Selecting an EMR	37
Kenneth G. Adler	
4 Pre-implementation Planning and Workflow Analysis	57
Christopher Notte	
5 Implementation	71
Anupam Kashyap	
6 Maintenance and Optimization	85
Thomas M. Wilkinson	
7 A View from the Top: Reflections of Leaders in the Electronic Health Record Industry	123
Neil S. Skolnik	
Subject Index	147

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Chapter 1

Meaningful Use of Health Information Technology: What Does it Mean for Practicing Physicians?

Catherine M. DesRoches and Paola D. Miralles

The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.

–Bill Gates

Abstract This chapter addresses the components of American Recovery and Reinvestment Act of 2009 (ARRA), specifically the provisions (collectively labeled HITECH) relevant to physicians practicing in ambulatory settings. Specifically, [Chapter 1](#) highlights the incentives available to physicians through Medicare and Medicaid, as well as proposed requirements for “meaningful use” of EHR systems.

Keywords Meaningful use · Ambulatory physicians · ARRA, HITECH, EHRs · Medicare reimbursements · Medicaid reimbursements · EHR physician incentives

Health information technology (HIT), such as sophisticated electronic health records (EHRs), has the potential to decrease costs, improve health outcomes, coordinate care, and improve public health [1–4]. In recognition of these potential, federal policy makers during the past 5 years have sought to spur the adoption of these systems through executive orders, regulatory reforms, and legislation [5–7]. Since President Bush called for the near-universal adoption of EHRs by 2014, there have been hundreds of pieces of legislation addressing one or more aspects of health information technology, culminating in the February 2009 passage of the American Recovery and Reinvestment Act of 2009 (ARRA) [8]. ARRA contains

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provisions (collectively labeled HITECH) which support the development, adoption, and upgrade of HIT by authorizing new federal investments in HIT capability and use in accordance with the development of federal standards. The act both incentivizes EHR adoption among physicians and hospitals, and establishes a formal policy-making framework to support the development of a nationwide infrastructure that will enable the electronic use and accurate exchange of health information [8].

In this chapter, we review the components of ARRA that are relevant to physicians practicing in ambulatory settings. Specifically, the chapter will highlight the incentives available to physicians through Medicare and Medicaid, as well as proposed requirements for “meaningful use” of EHR systems.

Medicare and Medicaid Payment Incentives

With the goal of markedly increasing the use of HIT broadly and EHRs more generally, ARRA allows for the deployment of both financial incentives and penalties to encourage adoption. In the legislation, the Centers for Medicare and Medicaid Services (CMS) is given the authority to provide monetary incentives to physicians under Medicare and Medicaid to encourage the purchase and use of EHRs. Physicians who do not adopt within the time frame specified by the legislation will be subject to financial penalties (see Table 1.1) in the form of reduced Medicare payments.

Table 1.1 Medicare incentive payments for adoption and meaningful use of certified EHR

Adoption year	First payment year amount and subsequent payment amounts in following years (in thousands of dollars)	Reduction in fee schedule for non-adoption/use
2011	\$18, \$12, \$8, \$4, \$2	0
2012	\$18, \$12, \$8, \$4, \$2	0
2013	\$15, \$12, \$8, \$4,	0
2014	\$12, \$8, \$4	0
2015	0	-1% of Medicare fee schedule
2016	0	-2% of Medicare fee schedule
2017	0	-3% of Medicare fee schedule

Source: American Medical Association at <http://www.ama-assn.org/ama1/pub/upload/mm/399/arra-hit-provisions.pdf>; CMS; ARRA Title IV Subtitle B § 4102 (a) (adding new section 1886 (n)(2) to the Social Security Act)

In order to qualify for the incentive payments, physicians must demonstrate “meaningful use” of EHRs, defined by the statute as the following: (1) using a certified EHR technology in a demonstrably meaningful way (e.g., e-prescribing); (2)

using certified EHR technology that allows for the electronic exchange of health information to improve the quality of health care, such as promoting care coordination; and (3) reporting on clinical quality and other measures selected by the secretary of Health and Human Services (HHS) using certified EHR technology [9]. State Medicaid agencies may develop their own definitions of meaningful use; however, these definitions must be approved by the Secretary of HHS. Further, any state definition that differs from the Medicare criteria must address populations in the state with unique needs, such as children, and must be compatible with state or federal administration management systems [10]. Finally, while the secretary of HHS is obligated to implement the Medicare HIT incentives set by ARRA, Medicaid implementation is an optional state undertaking.

Incentives for Physicians under Medicare

The financial incentives available under ARRA are targeted toward physicians practicing in fee-for-service settings, hospitals, and in limited cases, Medicare Advantage (MA) organizations. Any physician may be eligible for the incentives, regardless of their Medicare patient panel. As shown in Table 1.1, beginning in 2011, physicians who can demonstrate “meaningful use” (described below) can receive Medicare payments for up to 5 years, equal to an additional 75% of the physician’s allowable Medicare charges for a given year [1, 11]. Practically, this means that physicians who demonstrate meaningful use by 2012 can receive up to \$44,000 in incentive payments between the years 2011 and 2015. Physicians adopting by 2013 will receive \$39,000, and those who adopt in 2014 will receive \$24,000. ARRA also creates additional incentives for physicians practicing in rural health professional shortage areas. They are eligible to receive a 10% increase on the incentive payments described in Table 1.1.

Beginning in 2015, physicians who are not meaningful users of EHRs will be penalized in the form of reduced Medicare fees at the rate of 1% per year. ARRA allows the Secretary of HHS to further reduce Medicare payments by a total of 5% if fewer than 75% of providers are meaningful EHR users by 2018 [12].

Incentives for Physicians under Medicaid

ARRA provides significant financial support through Medicaid for state efforts to bolster EHR adoption. States will be eligible for a 100% federal contribution to enable EHR adoption among several groups of clinicians serving a high volume of Medicaid patients, and in the case of federally qualified health centers (FQHC) and rural clinics, “needy” patients. The following groups of physicians can qualify for incentive payments through Medicaid [13]:

- Clinicians [this includes physicians, dentists, certified nurse midwives, nurse practitioners, and physician assistants in federally qualified health centers (FQHC) or rural health centers (RHC) led by a PA] with a patient panel comprised of at least 30% Medicaid beneficiaries over a continuous 90-day period within a calendar year;
- Clinicians practicing “predominantly” in a rural health clinic or federally qualified health center (FQHC) settings with at least 50% of their total patient volume comprised of “needy” patients. Needy patients include the following: Medicaid enrollees, State Children’s Health Insurance Program (SCHIP) beneficiaries, and those receiving uncompensated care or paying on a sliding fee basis; and
- Pediatricians with a patient panel comprised of at least 20% Medicaid beneficiaries over a continuous 90-day period within a calendar year.

Physicians who choose to receive incentives through their state Medicaid program must agree to waive any right to Medicare HIT payments [14].

In recognition that physicians who predominantly serve Medicaid patients may not have the financial wherewithal to invest in new technologies, the Medicaid incentive program makes financing available to these providers for technology implementation and upgrades [15]. Physicians who meet the criteria for serving a high volume of Medicaid patients are eligible for up to 85% of the net average allowable costs for purchasing a certified EHR system, including support and training. There is a maximum of \$25,000 for the first year and \$10,000 for each subsequent year, over a 6-year period. After the initial start-up payment, all further payments are conditioned on meaningful use of the EHR technology as defined by each individual state.

As shown in Table 1.2, Medicaid incentives begin in 2011 and are provided on a phased down basis. As discussed above, physicians will be eligible for payments to purchase and implement EHRs, as well as incentive payments for meaningful use of these systems. An initial payment to cover the cost of purchasing or upgrading a system, including technology and training, could equal \$21,500 (85% of \$25,000). Eligible providers may then receive up to \$8,500 (85% of \$10,000) per year for

Table 1.2 Medicaid incentives for meaningful use (in thousands of dollars)

Adoption year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
2011	\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$0	\$0	\$0	\$0	\$0	\$63,750
2012		\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$0	\$0	\$0	\$0	\$63,750
2013			\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$0	\$0	\$0	\$63,750
2014				\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$0	\$0	\$63,750
2015					\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$0	\$63,750
2016						\$21.5	\$8.5	\$8.5	\$8.5	\$8.5	\$8.5	\$63,750

Source: CMS; ARRA Title IV Subtitle B § 4201(a) (amending Section 1903 of the Social Security Act, 42 U.S.C.A. § 1396b)

5 years of operation and maintenance, as long as they continue to demonstrate meaningful use. Physicians who adopt EHRs after 2016 will not be eligible for incentive payments.

These payments could total up to \$63,750 per physician for those with at least 30% Medicaid patient volume. The choice for physicians between the Medicare and the Medicaid incentive program is significant: for early adopters, potential Medicaid incentive payments could be significantly higher than those under the Medicare program [15].

What is Meaningful Use?

As specified in ARRA, “meaningful use of certified EHR technology should result in health care that is patient-centered, evidence-based, prevention-oriented, efficient, and equitable” [16]. But how will this actually be implemented? And how will physicians be required to show that they are using an EHR in a “meaningful” way? In this section, we focus on CMS’s approach to meaningful use, with specific objectives that physicians must meet in order to qualify for incentive payments.

Forecasting future plans for updating meaningful use criteria, CMS has taken a phased approach to structuring implementation. Currently in Stage 1, scheduled for 2011 and 2012, physicians must show that they are using an EHR to do each of the following, consistent with other provisions of Medicare and Medicaid law [16]:

1. Electronically capture health information in a coded format,
2. Track key clinical conditions and communicate that information for care coordination purposes,
3. Facilitate disease and medication management, and
4. Report clinical quality measures and public health information.

Meaningful use requirements for Stage 2 have not been finalized.

In order to track progress toward these goals, the HIT Policy Committee (HITPC) established through ARRA has specified five health outcome policy objectives [16]. Within each of these objectives is a set of IT functionalities that must be implemented and measurement goals that must be attained. In response to comments submitted to the interim rule on meaningful use, ONC has divided these elements into two groups. There is a set of 15 core activities that all physicians must achieve in order to qualify for meaningful use incentives. These core objectives are viewed by ONC as the “essential starting point” for the meaningful use of EHRs [16]. There are 10 additional criteria, from which physicians must select 5 to implement during the first 2 years of implementation. The complete list of activities is shown in Table 1.3.

In the following section, we return to ONC’s health policy outcome objectives, reviewing each of these activities in turn, examining both the necessary EHR-related activities and the measurement goals.