



The case for electronic medical records—why the time to act is now

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Research consistently suggests that electronic medical records (EMRs) provide many clinical and economic benefits associated with their adoption. Improved coordination of patient care, reduced medication errors, and improved preventive screening rates are just a few of the clinical benefits. The federal government has placed considerable emphasis on interoperability in the hopes that providers at different facilities will be able to exchange health data to maximize the quality and speed of care. The administrative benefits of EMRs include reduced transcription costs, more accurate coding, and increased efficiency of claims submission. Because of their potential, the federal government has progressively increased its efforts to facilitate the widespread adoption of interoperable EMR systems. This article discusses the government's health information technology incentive programs for Medicare and Medicaid providers, and reviews the overall "meaningful use" edibility criteria. Electronic prescribing bonuses are also discussed. This article hopes to demonstrate that because EMRs are likely to become mandatory in the near future, it is important for physicians to consider EMR implementation now while they can receive the maximum amount of reimbursement for their investments under the current incentives.

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Electronic medical records (EMRs) are likely to become mandatory in the near future so now is the time for osteopathic family physicians to start thinking about how EMR implementation could affect their practice. Cumulative research studying the benefits (both in patient care and in cost savings) has spurred the federal government to progressively increase its efforts to facilitate the widespread adoption of interoperable EMR systems.¹ If federal initiatives are successful and there is eventually a 90% health information technology (HIT) adoption rate for both inpatient and ambulatory care, studies estimate that more than \$77 billion per year could be saved.² A sophisticated electronic health record system is also necessary to satisfy the structural

elements needed to qualify as a medical home and receive additional payments from Medicare.³

Improved patient care

All EMRs are designed to maintain patients' progress notes, medication lists, past history, and problem lists—essentially an electronic version of the paper chart. However, many EMR features are impossible to have in a paper-based system such as:

- Automated drug interaction warnings
- Automated E/M coding calculators
- Automatic reminders when patients are overdue for follow-up visits or routine testing

EMR systems can generate automated reminders for preventive or screening services such as influenza and pneu-

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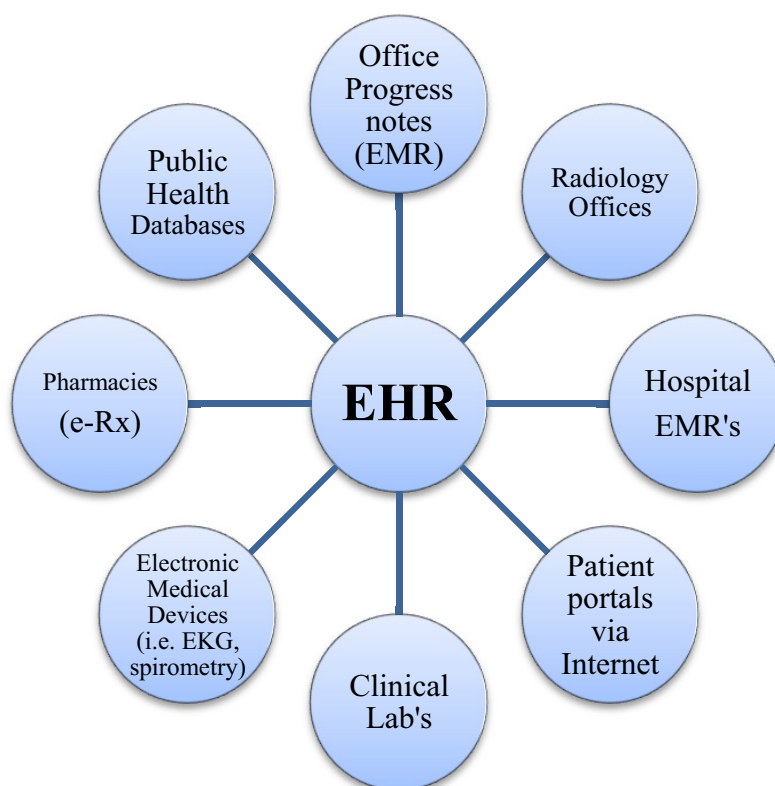


Figure 1 Sources of Data and Communications in an Electronic Health Record (EHR). An EHR serves as a portal and gatekeeper for the collection and exchange of personal health data.

mococcal vaccinations, Pap smears, mammograms, and colonoscopies based on a particular patient's recorded age, gender, and past medical history. These reminders can be directed toward the physician at the point of care (while writing the progress note) or even as a direct email to the patient at home (i.e., "Mrs. Jones, you're due for your colonoscopy next month"). By ensuring all patients over the age of 65 years receive a pneumococcal vaccination, 15,000 to nearly 30,000 lives could be saved each year.⁴ Many EMRs now provide electronic prescribing, where the physician can electronically transmit prescriptions to a patient's pharmacy immediately after it is recorded as prescribed. Studies confirm that such use of computerized physician order entry (CPOE) within an EMR significantly improves patient safety.⁵

Another term in wide use today is the *electronic health record* (EHR). A true EHR system has very robust and sophisticated capabilities. An EHR can:

- Incorporate national clinical protocols and guidelines while also providing clinical decision support
- Suggest possible differential diagnoses and management options given the clinical presentation entered in the patient's record
- Establish a patient portal enabling patients to receive lab results (as approved by the physician), make appointments, and establish a secure two-way communication between patient and physician

- Alert a physician when they have prescribed a medication that is not covered by the patient's health plan.

As illustrated in Fig. 1, an EHR actually allows patient information to move from one health care stakeholder to another for efficient communications at the point of care.

For the sake of clarity, this article will use the term EMR when generally referring to an electronic record system or an EHR, without regard to any specific capabilities.

Another way EMRs can help improve patient care is by making health care more efficient. It is well known that many lab tests and imaging studies are reordered simply because the previously ordered test results are unavailable at the time of a patient visit.⁶ As shown in Fig. 2, nearly two to four times as many tests were reordered in the United States compared with countries like New Zealand or The Netherlands, where EMR adoption rates are 95% to 98%.⁷

Federal initiatives

There are a variety of federal initiatives that have paved the way toward mandatory adoption of EMRs. In November 2001, President George W. Bush signed an executive order called the National Health Information Infrastructure Initiative (NHIII) that planned for universal EMRs for all inpatients and outpatients by 2011; this target date has since changed to 2014.

Duplicate Medical Tests, 2007

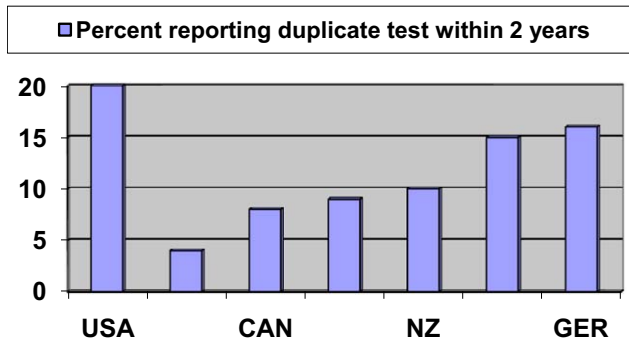


Figure 2 Percentage of Duplicate Tests Ordered within 2 Years among different countries. AUS = Australia; CAN = Canada; GER = Germany; NETH = Netherlands; NZ = New Zealand; UK = United Kingdom. Source: Commonwealth Fund National Scorecard on U.S. Health System Performance, 2008.

The NHIII outlined a three-stage process over 10 years to achieve its stated goals of improving:

- Patient safety
- Health care quality
- Detection of bioterrorism
- Better inform and empower health care consumers regarding their own personal health information
- Better understand health care costs

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) requires that by 2012, electronic prescriptions are to be used for covered part D drugs. In addition to the drug name, dosage, and administration directions, other pertinent patient information such as the primary diagnosis, PMH, allergies, and other medications must accompany the e-script in a HIPAA-compliant format. It is believed that e-scripts can reduce prescribing errors by 86%, increase formulary adherence by 14% to 88%, and provide valuable research data on a patient’s response to treatment. Standards for these e-scripts were established in April 2008,⁸ and as of January 2009, physicians who use e-prescribing for more than 50% of their patients may be eligible for a 2% Medicare bonus payment. However, the current legislation states that this bonus will

gradually decrease over the next several years, and in 2012 the program emphasis changes to a disincentive as physicians who are not e-prescribing will actually be charged Medicare penalties (up to 2% by 2014).⁹

The Health Information Technology for Economic and Clinical Health (HITECH) Act provisions of the American Recovery and Reinvestment Act of 2009 (ARRA) provides the most ambitious incentives ever for physicians and hospitals to adopt EMRs. This initiative is an important part of health reform as health professionals and health care institutions, both public and private, will be encouraged and enabled to harness the full potential of digital technology to prevent and treat illnesses and to improve health.¹⁰

Approximately \$34 billion have been allocated for this purpose, with \$20 billion dedicated to physician bonuses. Physicians can receive up to \$44,000 in Medicare bonus payments (or more than \$60,000 for Medicaid providers) between 2011 and 2015 if they meet certain “meaningful use” criteria on certified EMRs. Physicians practicing in a geographic Health Professional Shortage area qualify for an additional 10% bonus to a maximum of \$48,400. These bonuses are scheduled for yearly distribution beginning in January 2011 (Table 1). The maximum bonus is 75% of a physician’s Medicare collections for that year. For example, a solo physician must have had \$24,000 or more in annual Medicare collections to collect the maximum first-year bonus of \$18,000 for 2011 or 2012. It is also important to note that these bonuses are *per physician*; this means a four-physician practice can qualify for a Medicare bonus of \$176,000.

The later a physician first qualifies, the less the maximum bonus will be. For example, if a physician first qualifies in 2014, the maximum bonus would be \$24,000. (Medicare penalties start to occur in 2016 and beyond.)

Because these incentives start to diminish if the first qualifying year of use is after 2012, it is essential for osteopathic family physicians to start their EMR search and implementation process as soon as possible because it takes 1 to 2 years on average to properly select and implement an EMR system, as well as satisfy the “meaningful use” criteria. The Centers for Medicare and Medicaid Services (CMS) have been charged with establishing these criteria so that

Table 1 Schedule of Medicare bonuses as provided by the HITECH Act¹⁹

Calendar year	First Calendar Year in which the eligible physician receives an incentive payment				
	2011	2012	2013	2014	2015 and subsequent years
2011	\$18,000				
2012	\$12,000	\$18,000			
2013	\$8,000	\$12,000	\$15,000		
2014	\$4,000	\$8,000	\$12,000	\$12,000	
2015	\$2,000	\$4,000	\$8,000	\$8,000	\$0
2016		\$2,000	\$4,000	\$4,000	\$0
Total	\$44,000	\$44,000	\$39,000	\$24,000	\$0

they promote the improvement of health care quality, efficiency, and patient safety. A key goal is also to establish the foundation for a truly interoperable network for health information exchange between providers at different locations to access vital patient data. To promote early adoption of EMRs by physicians and hospitals, a three-stage process has been established in which the initial requirements are more basic, and more robust/complicated requirements will be phased in over time. The proposed Stage 1 requirements were submitted by CMS on December 30, 2009. There was a 60-day public comment period, which ended March 15, 2010, so physicians and EMR vendors can expect to have a final set of requirements by Summer 2010. Currently, there are twenty-five first-stage criteria which include the following requirements¹¹:

- The EHR must capture demographic, past medical and surgical history, allergy, medication lists, problem lists, vital signs, progress notes, lab/imaging results, and body mass index information as coded, structured data.
- At least 75% of all permissible prescriptions written must be transmitted electronically.
- The EHR must be able to electronically exchange health information with other systems.
- The eligible professional must submit information for the period on the clinical quality measures and other measures selected by the Department of Health and Human Services.

Then second stage of meaningful criteria will be required starting in 2013 (or the third year of certified EHR use, whichever comes first). CMS has proposed that its goals for the Stage 2 expand upon the Stage 1 criteria to promote the use of HIT for continuous quality improvement at the point of care and the exchange of information in the most structured format possible (to allow easier computerized storage and retrieval of clinical data). Stage 2 will require increased capabilities for electronic transmission of diagnostic test results needed to diagnose and treat disease. Stage 3 criteria (beginning in 2015 or the fourth year of implementation) will focus on promoting further improvements in quality, safety, and efficiency. Emphasis will be placed on decision support for national high-priority conditions and patient access to their personal health record, as well as self-management tools.

It is important to note that the EMR chosen must be *certified* but the HIT Policy Committee under HIT National Coordinator David Blumenthal has yet to specify which entity or entities will be certifying EMRs for the incentive program. In 2005, the Certification Commission for Healthcare Information Technology (CCHIT) was contracted by the Department of Health and Human Services to certify EMR systems as satisfying certain criteria—providing a benchmark (340 standards) for usability, security, and compatibility with future systems. It is currently unclear whether CCHIT will be chosen to be the primary certifying organization (or one of several others) for the HITECH incentive program. However, physicians considering an EMR pur-

chase should look primarily at CCHIT-certified systems because these will be among the most likely to be interoperable, functional, and secure in the future and not become as obsolete as, for example, the 8-track tape player, Betamax videocassette, or Laser videodisc. The Office of the National Coordinator issued an Interim Final Rule on EMR certification standards in December 2009. In addition to requiring the functions and capabilities cited in the “meaningful use criteria,” it also specifies standards that have been established by bodies such as Health Level 7, Inc. (HL7) and the National Institute of Standards and Technology (NIST). Another key aspect of the standards relates to existing classification and nomenclature systems including SNOMED computed tomography and ICD-9/10 coding to help codify clinical data so that it may be more easily interchanged between different systems and platforms.

It is important to note that practices already using EMRs that meet the certification standards for the HITECH program are also eligible for these incentives; they should closely examine their EMR use to ensure that they are satisfying the meaningful use criteria. It would be particularly useful for such practices to contact their EMR customer support or a vendor-neutral consultant for assistance in satisfying and applying for these bonuses.

Although the HITECH bonuses can substantially defray the cost of EMR implementation after 5 years of use, physicians still have to find the capital to pay for these systems and their associated costs up front. Over the past few years, it has been increasingly difficult for physicians (as well as everyone else) to get approved for small business loans. With the downturn of the housing market, physicians cannot even turn to their own homes for equity because it has disappeared in many cases. To address this, the Small Business Health Information Technology Financing Act, or H.R. 3014, promises to address this lack of available credit. It revises current legislation to allow private banks to issue Small Business Administration–backed loans to physicians for the specific purpose of implementing EMRs. Solo physicians can borrow up to \$350,000, and group practices can qualify for up to \$2 million to pay for EMR systems, hardware, and training expenses. Interest is deferred for the first three years, to help ease the financial impact of the decrease in productivity associated with the initial stages of implementation. With the support of the American Osteopathic Association,¹² the bill was approved by the House of Representatives in November 2009 and referred to the Senate for consideration. Because it does not provide actual funding (the loans are still administered by private banks), it is widely expected to pass the Senate as well.

EMR economics

According to a 2005 study,¹³ nearly 50% of all small practices (≤ 5 physicians) had no plans to implement an EMR

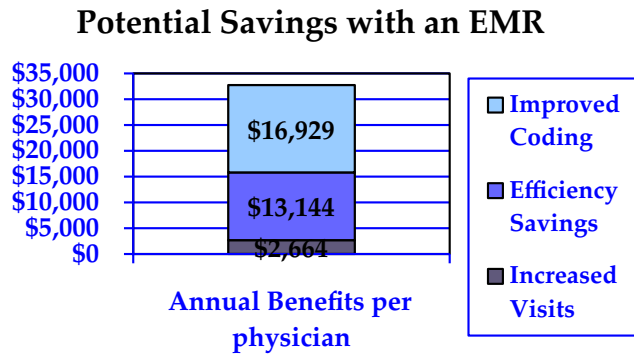


Figure 3 Potential Savings of \$33,000 per provider per year. Source: The Value Of Electronic Health Records In Solo Or Small Group Practices Miller et al. Health Affairs, 2005.

within the next couple of years. In most cases, the reason for nonadoption is simply cost. Small group or solo practices simply cannot afford the costs involved with switching to EMRs. Not only are the per-physician initial startup costs a substantial deal-breaker for most practices, one has to also consider the decrease in productivity associated with the learning period. For most practices, it can take between six and 12 months to return to baseline productivity. A recent study reports that a typical EMR initially costs \$32,000 per physician.¹⁴ This figure includes one-time licensing fees, training, and all hardware costs. Thereafter, annual maintenance and support fees average \$1200 per physician. Therefore, the median costs for a five-physician group practice would be \$160,000 the first year, and \$6000 each year thereafter. This totals \$220,000 over 10 years. At this level of expense, the current federal incentive of \$44,000 over five years seems paltry, and one wonders why anyone would consider going forward with an EMR system (Fig. 3).

However, there are two caveats to this trend of thought. First, it is important to keep in mind that these are mean costs—there are systems out there that are much more affordable, and there are ones that are much more expensive. Usually, the software packages that have more “bells and whistles” are the ones that cost more, but this is not the rule. Some of the highest-ranked EMR systems are not too expensive. Many great systems cost \$5000 or less per physician to implement. Examples include eClinicalWorks and eMDs. Second, the return on investment is also increased by the amount of net income a properly run EMR-enabled office can realize. This income is comprised of increased reimbursement from improved coding, increased visits, and increased workplace efficiencies. One study¹⁵ (Fig. 3) suggests that EMRs can save \$33,000 per physician each year.

Using the aforementioned numbers, a five-physician practice spending \$220,000 on a complete EMR system and hardware would take about four years to recoup its investment, assuming a more modest \$20,000 savings per year per physician; this estimate is not withstanding any Medicare incentive payments, which would result in an even quicker return on investment time.

Another study estimates the net benefit from using an EMR system for a five-year period to be \$86,400 per primary care provider. Benefits accrue primarily from savings in drug expenditures, improved use of radiology tests, better capture of charges, and decreased billing errors, which can result in claim denials.¹⁶ The same study states that it costs an average practice about \$5 each time a patient’s chart needs to be pulled for any reason. Because the majority of chart pulls can be for prescription refills, patient questions, and other activities that do not contribute to the practice’s revenue stream, the instant access to patient records afforded by EMRs can result in substantial savings in staff use. This means physicians can redirect their staff’s efforts to collections and billing, activities that will add to the practice’s bottom line.

In 2007, a study by Grieger et al.¹⁷ analyzed the return on investment of EHR systems at five ambulatory offices representing 28 health care providers. The study compared the costs of various office activities such as pulling patient charts, creating new charts, support staff salary, and transcription costs. In addition, the effects of an EMR on patient cycle time, evaluation, and management codes billed, and days in accounts receivable were studied. The study found that there was an annual net savings of nearly \$10,000 per provider two years after implementation of the EMR system, and that it took 16 months to recapture the initial startup costs. With the new prospect of receiving \$44,000 in Medicare incentive payments, the time it takes for physician practices to recoup EMR costs will most likely be considerably less.

Another way in which EMR systems may produce savings is by reducing exposure to malpractice suits and reducing claims. According to an article in the *Archives of Internal Medicine*,¹⁸ physicians with EMRs had fewer paid malpractice claims. For physicians with EMRs, 6.1% of physicians had a history of a paid malpractice claims compared with 10.8% of physicians without EMRs. Although the results of this study were inconclusive, confirmatory studies in the future may result in professional liability premium discounts for EMR users.

Conclusions

A clear and logical case for the widespread adoption of EMRs has been presented based on scientific and economic data suggesting the many benefits associated with HIT and adoption of an EMR system. With the current initiatives of the federal government, it behooves all osteopathic family physicians to quickly take stock of their current situations and decide whether they will ever make the move to EMRs. If the answer is yes, then it is important to move with all deliberate speed to initiate the implementation process, because the bulk of financial support will be offered only in the next few years.

A proper review of any practice and selection of the EMR product that best meets your needs will take several

months; for this reason alone it's important for physicians to start the process now. EMR products that are currently certified by CCHIT (Certification Commission for Health Information Technology) are the ones most likely to eventually satisfy the meaningful use criteria; this is where the vendor search should begin. It is extremely important to require the EMR vendor to commit in writing that their product will satisfy all meaningful use criteria, be certified, and enable the practice to qualify for the ARRA incentives without additional costs or fees. Without this written guarantee, any practice should delay signing any purchase contracts.

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