

REPORT OF THE BOARD OF TRUSTEES

B of T Report 24-A-13

Subject: Cost and Benefit Analysis for Electronic Health Record Implementation,  
Understanding the Pitfalls of EHRs and Providing Strategies for Success  
(Resolutions 722-A-12 and 725-A-12)

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Referred to: Reference Committee G  
(Martin D. Trichtinger, MD, Chair)

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1 INTRODUCTION

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3 At the 2012 Annual Meeting, the House of Delegates referred Resolutions 722-A-12 and 725-A-12,  
4 “Cost and Benefit Analysis for Electronic Health Record Implementation” and “Understanding the  
5 Pitfalls of EHRs and Providing Strategies for Success.” The resolutions were introduced by the Texas  
6 Delegation and the Organized Medical Staff Section (OMSS), respectively, and Resolution 722 asked  
7 that our American Medical Association:

8  
9 Conduct a comprehensive literature review and/or study to analyze the current cost and/or benefit  
10 of implementing an electronic health record (EHR) for physicians in the ambulatory setting to  
11 determine if practices are able to realize financial return on investment and an increase in quality  
12 of care from their EHR; and

13  
14 Advocate for the position that the parties benefiting most financially from the implementation of  
15 EHRs must share fairly in the cost.

16  
17 Resolution 725 asked that our American Medical Association:

18  
19 Survey a large number of physicians in private practice representing primary care physicians and a  
20 broad cross section of specialists; and

21  
22 Survey experienced EHR users with regard to strategies that have been effective in addressing the  
23 potential pitfalls of EHRs; and

24  
25 Survey physicians who have used EHR scribes as a way of improving the use of the EHR,  
26 improving office efficiency, and more accurately and completely documenting patient visits; and

27  
28 Make available the results of its surveys on physician experiences with EHRs, including a  
29 thorough report of various strategies including the use of scribes that have brought physicians  
30 closer to optimal use of an EHR with respect to quality, efficiency and reimbursement, and report  
31 back at the 2013 Annual Meeting.

32  
33 This report provides a brief overview of current cost and benefit information for EHRs in the  
34 ambulatory space and addresses how the AMA is currently involved in surveying EHR users to learn

1 about the costs of ownership, issues preventing greater office efficiency and more accurate  
2 documentation of patient visits and overall improvement to quality of care.

3  
4 BACKGROUND

5  
6 Over the last decade most industries have invested heavily in computerization.<sup>1</sup> And while health care  
7 has embraced many specific medical technologies (e.g., ultrasound imaging, mammography, etc.),  
8 EHRs, the technology that is thought to hold great promise in improving the quality of care and  
9 reducing costs in the health care system, have only recently established a foothold.

10  
11 Cost has long been the preeminent barrier cited for lagging EHR adoption. Large upfront costs,  
12 maintenance fees and uncertain return on investment have specifically inhibited small practices from  
13 undergoing the transition. Costs are so variable that the Office of the National Coordinator for Health  
14 Information Technology (ONC) lists a range of \$15,000 to \$70,000 per physician.<sup>2</sup> While some  
15 studies have attempted to evaluate the financial benefits to individual practices, many still focus on  
16 health system benefits. The following studies are among the most often cited.

- 17  
18 • *The American Journal of Medicine*, 2003.<sup>3</sup>  
19 The seminal paper, “A Cost-Benefit Analysis of Electronic Medical Records in Primary  
20 Care,” estimated the net benefit from using an EHR for a 5-year period to be \$86,400 per  
21 provider. The paper showed benefits accruing primarily from savings in drug expenditures,  
22 improved utilization of radiology tests (both system benefits that can also be a benefit to  
23 individual practices under certain value-based reimbursement schemes), better capture of  
24 charges and decreased billing errors. In one-way sensitivity analyses, the model was most  
25 sensitive to the proportion of patients whose care was capitated; the net benefit varied from a  
26 low of \$8,400 to a high of \$140,100.  
27
- 28 • Commonwealth Fund, 2005.<sup>4</sup>  
29 This study looked at case studies of fourteen solo or small-group primary care practices using  
30 EHR software from two vendors. Initial EHR costs averaged \$44,000 per full-time-equivalent  
31 (FTE) provider, and ongoing costs averaged \$8,500 per provider per year. The average  
32 practice paid for its EHR costs in 2.5 years and profited after that (about \$23,000 in net  
33 benefits per FTE/year); however, some practices did not cover costs as quickly. Most  
34 providers spent more time at work initially, and some practices experienced substantial  
35 financial risks. Financial benefits resulted primarily from increased coding levels and  
36 efficiency-related savings or revenue gains. Increased coding levels accounted for an average  
37 of \$16,929 per FTE/year. Efficiency-related gains, including transcription, transaction and  
38 paper supplies, plus revenue gains from increased visits, accounted for 48.3%, or an average  
39 of \$15,808 per FTE/year, of financial benefits. This did not include pay-for-performance  
40 rewards from health plans for quality improvement.  
41
- 42 • Medical Group Management Association, 2010.<sup>5</sup>  
43 According to a 2009 survey of 1,324 primary care and specialty practice members using  
44 EHRs, efficiency gains from eliminating paper chart pulls, transcription savings, better charge  
45 capture and reduced billing errors resulted in a median of \$49,916 more revenue after  
46 operating costs per FTE physician than paper-based practices. After five years of EHR use,  
47 practices reported a median operating margin of 10.1% higher than practices in their first year  
48 of using an EHR.

- 1       • Agency for Healthcare Research and Quality, 2011.<sup>6</sup>  
2       This study found the total cost of planning, buying, implementing and operating an EHR  
3       system for the first year in a five-physician primary-care practice averaged \$46,659 per  
4       physician. Hard costs from one-time infrastructure purchases totaled \$25,000 per practice.  
5       Practices also paid around \$7,000 per physician for personal computers, printers and scanners.  
6       Maintenance costs, including software licensing fees, hosting costs, technical support through  
7       a third-party vendor, networking and networking support costs, totaled about \$17,100 per  
8       physician for the first year. The study also reported that “end-users”—physicians, other  
9       clinical staff, and nonclinical staff—in this particular network needed 134 hours, on average,  
10      to prepare for use of the record system in clinical encounters.  
11
- 12      • *Journal of the Medical Informatics Association*, 2013<sup>7</sup>  
13      This study evaluated 42 papers that examined costs for health information systems. Of those  
14      studies, 33 met the researchers’ criteria and were deemed “high quality.” In their review, 23 of  
15      33 or 69.7% of the papers reported positive findings demonstrating value for certain HIS  
16      types. Specifically, five of seven papers, or 71.4%, on primary care EHR use had positive  
17      economic results over different time periods that ranged from 6 months to 8 years. Of the  
18      seven papers reviewed, six were pre/post or with/without EHR implementation comparisons.  
19      One study looked at the impact of an EHR on combination drug cost savings—a notable  
20      healthcare system benefit, not necessarily a benefit to the physician/practice. However, an  
21      ambulatory surgery clinic, reported an average cost-saving of \$3.09 per encounter that  
22      translated to \$184,627 per provider over 4 years given a startup EMR cost of \$10,329 per  
23      provider.  
24

25      In these studies, and in many others, it is generally accepted that benefits of EHR adoption accrue to  
26      others in addition to physicians, yet physicians are required to make the upfront investment.  
27      Historically, the misalignment of incentives and high upfront costs has been an obstacle to adoption.  
28      Given these considerations, the Health Information Technology for Economic and Clinical Health  
29      (HITECH) Act of 2009, which is part of the American Recovery and Reinvestment Act (ARRA), was  
30      signed into law with the explicit purpose of incenting physicians to adopt the technology.  
31

32      HITECH includes, among other things, \$30 billion to support new Medicare and Medicaid incentives  
33      to adopt EHRs (up to \$44,000 under Medicare and \$63,750 under Medicaid), \$500 million for states  
34      to develop health information exchange and the provision of a government-led process for  
35      certification of EHRs.  
36

## 37      DISCUSSION

38

39      Much has been written about return on investment (ROI) for EHR adoption. For the most part,  
40      however, the EHR space has been too immature to accurately calculate ROI at the system and  
41      individual physician practice level. One landmark study from Rand in 2005 tried to project system  
42      level savings but has been challenged by a more recent Rand study. The early report predicted that the  
43      potential efficiency and safety improvements made possible by health information technology—  
44      primarily EHRs in both the inpatient and outpatient settings—could save the U.S. healthcare system  
45      \$81 billion a year.<sup>8</sup> In the new Rand report, the organization puts forth a much more conservative  
46      outlook, stating “health IT’s failure to quickly deliver on its promise is not due to its lack of potential  
47      but to shortcomings in the design and implementation of health IT systems.”<sup>9</sup>  
48

49      The consensus is that ROI is difficult to capture and may vary significantly. There are, of course,  
50      tangible factors (hardware, software, training, implementation assistance and maintenance fees), but  
51      there are also intangible factors. For example, a California Healthcare Foundation study<sup>10</sup> observed

1 five different EHR user types—viewers, basic users, strivers, arrivers and system changers. The  
2 different user types had varying experiences and reported different levels of benefit—many while  
3 using the same EHR software. The study acknowledges differences in EHR software but argues that  
4 technology differences only explain some of the variation in benefits. The tie between user type and  
5 benefits appears to be the more important indicator of overall benefits to the physician and practice.  
6

- 7 • Viewers: Minimally interacted with the computer and EHR software, obtained few benefits  
8 and invested little time in making complimentary changes to increase benefits. Viewers used  
9 the EHR primarily to view data. Viewers dictated or hand-wrote the progress note and  
10 prescriptions and spent little extra time at work.
- 11 • Basic Users: Entered a limited amount of data into the EHR, obtained few benefits, invested  
12 limited time in customizing forms, entering past data and making other changes to  
13 complement EHR. Basic users viewed EHR data, maintained some electronic lists and ordered  
14 prescriptions but elected to dictate visit notes while viewing visit- or disease-specific  
15 templates. Transcription costs remained high. The practice also added costs of scanning tests  
16 and consultant reports into EHR. Spent the same or more time at work.
- 17 • Strivers: Invested substantial time in creating changes that complemented the EHR with hope  
18 of generating financial benefits and reducing their time costs. Reaped only modest financial  
19 benefits.
- 20 • Arrivers: Were “strivers” for some period of time. They invested substantial additional time in  
21 activities that complement the EHR implementation—entered past patient data, customized  
22 templates, created interfaces, developed stable technical support structures. The 10 arriver  
23 interviewees reaped sizeable benefits and spent the same or less time at work than before  
24 EHR. Most arrivers reorganized their exam rooms and office workflows.
- 25 • System Changers: Are similar to arrivers, but were characterized by even more benefits and  
26 time savings per patient, use of numerous customized electronic forms (templates) and  
27 changes in workflow. They delegated tasks to other clinical staff. They also attempted to  
28 change the external environment by encouraging health plans to reward practices for  
29 producing high quality of care due to the EHR.  
30

31 The research suggests that physicians will probably always have different experiences with EHR  
32 technology, and thus report variable ROI. There is no question that some EHRs will deliver better  
33 customer service, for example, and some are just easier to use.<sup>11</sup> But the general preparedness of the  
34 practice, how much outside support is needed and how smoothly physicians and staff take to using the  
35 technology probably matter more.  
36

37 Despite mixed data, EHR adoption continues to near critical mass. And the extent to which physicians  
38 are happy with their choice, again, varies. Recent evidence suggests as many as 17% of practices may  
39 be back on the EHR market by the end of the year.<sup>12</sup> Specialists such as pediatricians, urology,  
40 ophthalmology and gastroenterology reported high rates of discontent. Somewhat surprisingly, 54% of  
41 small practices say they are happy with their EHR.<sup>13</sup>  
42

43 While the EHR industry remains immature, there is no question that EHR products have continued to  
44 evolve, improving in functionality and design. There is also no disputing that EHRs are more cost  
45 effective and accessible due to the advent of cloud computing versions that have minimized the need  
46 for extensive on-site technical support.<sup>14</sup> Still, the healthcare industry is struggling toward best  
47 practices in EHR design and widespread integration.

1 *Survey Data*

2  
3 There is a growing body of data that can help the industry and physicians specifically, to make better  
4 decisions when it comes to EHRs. AmericanEHR Partners is a widely acknowledged and reputable  
5 source of such data. AmericanEHR Partners mission is to create an online community of clinicians  
6 who use information technology to deliver care to Americans. Through education, social media and  
7 the collection of peer contributed data, AmericanEHR Partners organizes information to facilitate  
8 optimal decision making.

9  
10 The AMA recently entered into a relationship with AmericanEHR and, together with 16 other  
11 participating physician associations and societies has already surveyed its member and non-member  
12 physicians with opt-in email addresses. This relationship is timely given the Organized Medical Staff  
13 Section's interest (Resolution 725-A-12) in understanding physicians' experience with EHRs. The  
14 AMA now has access to the information to answer nearly all of OMSS's inquiries. More important is  
15 the recognition that it is only from historical data—year-over-year—that the AMA will be able to  
16 observe physicians' experiences with EHR technology.

17  
18 The OMSS areas of inquiry and corresponding areas of the AmericanEHR Partners survey follows:

19  
20 1. The amount of time per patient it takes to complete the EHR.

21 Physicians reported that it is "Very easy" (32%) or "Easy" (32%) to document a progress note for  
22 each encounter after just three months of use. About one-quarter responded that it is either  
23 "Difficult" or "Very difficult." Three quarters (76%) of physicians who had used an EHR for  
24 several years or more found documentation of a progress note to be easy.

25  
26 As far as performing related activities such as maintaining an up-to-date problem list of current  
27 and active diagnoses, generating a patient referral letter and documenting care plans, a majority of  
28 physicians reported being "Very satisfied" or "Satisfied." Nearly three-quarters found it at least  
29 "Easy" to maintain an active medication allergy list, and half said it is at least "Easy" to manage  
30 drug interaction alerts.

31  
32 2. Reimbursement before and after the EHR.

33 When asked about satisfaction with the billing function of their EHRs, 40% of physicians said  
34 they were "Satisfied" or "Very satisfied" compared to 7% who signaled they were "Very  
35 dissatisfied."

36  
37 3. Quality of life before and after EHR adoption.

38 Nearly half (46%) of physicians indicated that their EHR improved their efficiency (e.g., easier to  
39 access lab results and historical information). Yet, when responding to a question about workload,  
40 46% indicated that they are "Disappointed" or "Very disappointed" that using an EHR has not  
41 decreased their workload. About one-quarter of physicians say they are not yet back to pre-EHR  
42 productivity levels. About 15% indicated that it took more than 6 months to return to pre-EHR  
43 productivity; one-third said it took three to six months. Interestingly, nearly half (46%) of  
44 physicians reported that they were pleased with their vendor's customer support. A majority  
45 (66%) were "Very satisfied" or "Satisfied" that they could access their EHR remotely.

46  
47 4. Confidence in coding within an EHR.

48 Nearly half of physicians (44%) indicated that it is either "Very easy" or "Easy" to use E/M  
49 coding support when charting a patient visit. Another 17 percent said it is "Neither easy nor  
50 difficult;" only 7% reported it to be "Very difficult."

1 5. Use of templates.

2 With respect to creating templates for specific clinical conditions, about one-third indicated that it  
3 is “Very easy” or “Easy.” 12% said it is “Very difficult.”

4  
5 More information about certain areas and topics such as specific reimbursement levels before and after  
6 EHR implementation and the use of scribes would make good additions to future iterations of the user  
7 satisfaction survey. Many physicians commented about the use of scribes, but the information was  
8 qualitative in nature. The AMA, in collaboration with AmericanEHR Partners, could modify the  
9 survey to ask about the use of scribes and also potentially survey those who have indicated high user  
10 satisfaction over the years to learn more about their experience. Those results could be used to help  
11 educate the broader physician community.

12  
13 CONCLUSION

14  
15 The AMA has long supported the advancement of health IT and the use of EHRs to improve quality of  
16 care and patient safety. However, it is well documented that cost—upfront and ongoing, in addition to  
17 usability and design issues—remains a barrier to EHR adoption and intended use. The immaturity of  
18 the EHR market and the challenge it presents to physicians in terms of workflow disruption and  
19 productivity remains an issue and a significant obstacle to achieving the promise of HIT and EHRs.

20  
21 It is important that the AMA continue to take a leadership role, in collaboration with other physician  
22 associations and industry leaders and deliver information about physicians’ EHR use and experiences.  
23 Through continued collaboration with AmericanEHR Partners, AMA can support efforts that will lead  
24 to the refinement of EHRs according to industry best practices and subsequently promote more  
25 transparency in the vendor marketplace. AMA should also continue to focus on its current advocacy  
26 around usability, workflow and patient safety through comment letters and relationships with the  
27 ONC.

28  
29 RECOMMENDATIONS

30  
31 The Board of Trustees recommends that the following recommendations be adopted in lieu of  
32 Resolutions 722-A-12 and 725-A-12 and the remainder of the report be filed:

- 33  
34 1. That American Medical Association (AMA) Policy D-478.995, “National Health Information  
35 Technology,” be reaffirmed. (Reaffirm HOD Policy)  
36  
37 2. That our AMA, through partnership with AmericanEHR Partners, continue to survey physician  
38 use and issues with various EHRs—open source and proprietary—to create more transparency  
39 and formulate more formal decision making in the selection of EHRs and that our AMA work  
40 with AmericanEHR Partners to modify the current survey to better address the economics of  
41 EHR use by physicians including the impact of scribes. (Directive to Take Action)  
42  
43 3. That our AMA make available the findings of the AmericanEHR Partners’ survey. (Directive to  
44 Take Action)

Fiscal note: \$35,000

#### APPENDIX – Current AMA Policy

##### H-405.971 Use of Physician Time on Computerized Information Systems

(1) The AMA supports the need for cooperation among all sectors of the health care industry to design, carry out, and analyze the results of scientifically rigorous studies to measure the benefits (in effectiveness and quality of care, and in efficiency and costs of its provision) and the costs (in time use, behavioral, and organizational change, as well as in monetary costs) of physician use of computers in all health care settings. (2) The AMA urges health care facilities designing, selecting, and/or implementing clinical information systems for physician use to: (a) establish an oversight committee of clinically respected physicians who can act as internal advocates, provide input into all phases of system design and selection, and can make and enforce necessary decisions; (b) select technologies for data entry and retrieval that are easily and rapidly mastered and are acceptable to the physician users; and (c) design and/or select systems that are flexible and provide users with multiple options for display formats and navigation paths that can be stored and rapidly retrieved by individual users. (3) The AMA will instruct representatives to interprofessional groups working on computerized medical records to work vigorously for design features that reduce the physician time requirements for information entry, data retrieval and display, and to make appropriate reports to the House on progress in that direction. (BOT Rep. R, A-93; Reaffirmed: CSA Rep. 8, A-03)

##### H-480.971 The Computer-Based Patient Record

The following steps will allow the AMA to act as a source of physician input to the revolutionary developments in computer-based medical information applications, as a coordinator, and as an educational resource for physicians. The AMA will: (1) Provide leadership on these absolutely critical and rapidly accelerating issues and activities. (2) Work, in cooperation with state and specialty associations, to bring computer education and information to physicians. (3) Work to define the characteristics of an optimal medical record system; the goal being to define the content, format and functionality of medical record systems, and aid physicians in evaluating systems for office practice computerization. (4) Focus on the CPR aspect of human-computer interaction (the physician data input step) and work with software vendors on the design of facile interfaces. (5) Provide guidance on the use of computer diagnosis and therapeutic support systems. (6) Continue to be involved in national forums on issues of electronic medical data control, access, security, and confidentiality. (7) Continue to work to ensure that issues of patient confidentiality and security of data are continually addressed with implementation resolved prior to the implementation and use of a computer-based patient record. (BOT Rep. 29, A-96; Reaffirmation A-04; Reaffirmed in lieu of Res. 818, I-07; Reaffirmed in lieu of Res. 726, A-08; Reaffirmation I-08)

##### D-478.995 National Health Information Technology

Our AMA will closely coordinate with the newly formed Office of the National Health Information Technology Coordinator all efforts necessary to expedite the implementation of an interoperable health information technology infrastructure, while minimizing the financial burden to the physician and maintaining the art of medicine without compromising patient care. (Reaffirmed A-08)

##### D-478.996 Information Technology Standards and Costs

Our AMA will: (1) encourage the setting of standards for health care information technology whereby the different products will be interoperable and able to retrieve and share data for the identified important functions while allowing the software companies to develop competitive systems; (2) work with Congress and insurance companies to appropriately align incentives as part of the development of a National Health Information Infrastructure (NHII), so that the financial burden on physicians is not disproportionate when they implement these technologies in their offices; (3) review the following issues when participating in or commenting on initiatives to create a NHII: (a) cost to physicians at the office-based level; (b) security of electronic records; and (c) the standardization of electronic systems;

(4) continue to advocate for and support initiatives that minimize the financial burden to physician practices of adopting and maintaining electronic medical records; and (5) continue its active involvement in efforts to define and promote standards that will facilitate the interoperability of health information technology systems. (Res. 717, A-04; Reaffirmation, A-05; Appended: Sub. Res. 707, A-06; Reaffirmation A-07; Reaffirmed in lieu of Res. 818, I-07; Reaffirmed in lieu of Res. 726, A-08; Reaffirmation I-08)

D-455.994 Standardizing Portable Medical Imaging Formats to Enhance Safe, Timely, Efficient Care  
1. Our American Medical Association will participate in efforts to ensure implementation of the recommendations for imaging standards developed by the AMA-convened imaging safety and standards Panel, that the Radiological Society of North American (RSNA) endorsed and Integrating the Healthcare Enterprise (IHE) adopted and wrote into the portable data initiative standards. 2. Our AMA will develop a strategy to inform the health care and imaging communities of the AMA's work to improve Imaging Safety and Standards that includes the following: a. Disseminate (widely) the AMA-convened Panel's statement, "All medical imaging data distributed should be a complete set of images of diagnostic quality in compliance with those found in the IHE PDI (Portable Data for Imaging) Integration Profile;" b. Publish the Panel's work; c. Increase hospital group, deeming organization, medical group, and survey certification group awareness of the AMA's work; determine their role in developing infrastructure support for medical imaging safety per AMA recommendations and IHE-PDI standards; d. Expose the AMA's work to the Office of the National Coordinator; e. Encourage industry to view physicians as developers rather than solely as adopters of technology and to include physicians, as end users, in the development and implementation of technology solutions; and, f. Encourage physicians, as end users of technology, to participate in development and implementation of technology to ensure its appropriate use and application at the point of care. (BOT Rep. 1, I-09)



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