Financial Savings From an Electronic Medical Record in a Small Group Practice

By Colleen Cook-Moine, MD, and Lynn Cramer, RNC

April 2005

Abstract

One of the sources of resistance to the implementation of electronic medical records (EMR) in small medical practices is the relative lack of EMR case studies measuring return-on-investment in this setting. This article examines the implementation of an EMR at Eden Park Pediatric Associates, a five-physician group practice in Lancaster, Penn. Eden Park saved an annualized $114,000 – more than 10 percent of its operating budget – by implementing an EMR that eliminated transcription fees and reduced administrative staff by 25 percent. The practice used the savings to fund a new position designed to boost patient adherence to treatment plans.

Introduction

No less an authority than President George W. Bush has repeatedly said he believes widespread adoption of the electronic medical record (EMR) is needed to reduce the cost of American healthcare and improve patient safety. A growing number of physician practices have indeed embraced the technology in recent years. One recent study estimates that between fourteen and twenty-eight percent of physician practices now use some form of EMR [1]. Yet, surveys reveal that by far the biggest barrier to the EMR's widespread adoption is the cost of purchasing and implementing the systems [2].

EMR vendors have long claimed that the technology actually pays for itself and can even generate new revenue by streamlining costly administrative and recordkeeping functions associated with the paper record. Recent published studies support this claim [3, 4] but the vast majority concern large, multi-specialty group practices with up to several hundred physicians. Much less is known about the financial benefit of implementing an EMR in the vastly different setting of a small, single-specialty medical practice, where cost plays a correspondingly larger role in purchasing decisions. Because an estimated 80 percent of all outpatient visits take place in practices with 10 or fewer doctors [5], understanding EMR usage in the small-group setting can help policymakers in government, employer coalitions, and public and private funding agencies to better craft policies to hasten EMR adoption. Accordingly, this article examines the financial impact of implementing an EMR at Eden Park Pediatric Associates, a five-physician practice in Lancaster, Penn.

A Solution to Paper-Based Inefficiencies

About two years ago, the physician owners and practice administrator of Eden Park began an evaluation process to select an EMR that could replace our paper-based medical records system. Our primary goal was to provide our

physicians and nurses faster, more streamlined access to patient records and ready access to patient information concurrently at our two clinical sites. Our desire for an EMR was ignited by our positive experience with a new practice management/scheduling system that we implemented in mid-2001. The system was so effective that we felt confident computerized record systems would provide us with the tools to practice pediatric medicine with a greater degree of safety and efficiency than the traditional paper-based chart allowed.

We also recognized that inefficiencies associated with paper-based recordkeeping were costing the practice thousands of dollars a year in administrative overhead. Prior to implementing the EMR, the bulk of our administrative expenses included payroll and transcription costs. For instance, we were spending between $2,000 and $2,500 each month on a transcription service that returned documents in two to four days. We knew we needed to cut expenditures on this part of our infrastructure and we also wanted a process that would produce an accurate document while reducing the time interval between dictation and document availability. We expected that the EMR would help the practice reduce the cost of creating, maintaining and working with paper medical charts.

After a thorough evaluation process, we chose the CHARTCARE EMR by CHARTCARE, Inc. of Lakewood, Wash. This EMR not only integrates seamlessly with our pediatric specific practice management system by Physicians Computer Company, it also is one of the few EMRs to offer pediatric-specific functionality including integrated growth charts, immunization reports and categories that can mirror the standard Denver Developmental Flow Sheet. (The relative scarcity of pediatric-specific tools among EMR vendors may be one reason why only an estimated 8 percent of pediatric practices in the US have adopted electronic medical records, compared to 42 percent of internal medicine practices [6]). We felt confident that the EMR would help us achieve world-class care because it had been used successfully in practices of a similar size for several years.

Today, nearly two years after implementing the EMR, we have attempted to gauge the economic impact of the EMR by evaluating a variety of factors. Some of these are more easily measured than others. Recent studies of large medical groups have found that revenues can be enhanced by more accurate reimbursement coding generated by an EMR's built-in documentation templates [3, 4]. Other studies have documented significant decreases in medication errors due to the automated physician alerts that are built into most EMRs [7]. While these findings were influential in convincing us to deploy the EMR, duplicating them would have been difficult if not impossible for a small practice like ours. For that reason, we focused our limited resources on measurements of the two costs already mentioned – transcription services and administrative payroll.

Moving from Transcription to Template-driven Electronic Recordkeeping

We began implementation of the EMR in November 2003 with training of the administrative and nursing staff. Two of our five physicians began to use the new system during the first week of implementation and training; the remaining three physicians gradually switched to the EMR over the next two months. As existing patients presented for well-visit appointments, physicians would review their medical charts and designate which past information should be scanned into the EMR for creation of a digital chart. As a rule, all sick visit appointment notes from the paper chart were scanned, along with the most recent problem list. New medical notes were added to the digital chart using a gradual approach to make it easier for our physicians to adjust to the new system. As in the past, our physicians continued to use digital recorders to dictate their notes from each encounter (including current problem lists and treatment plans). The dictated notes were then uploaded via email at the end of the day to an offsite transcription service, which entered the notes manually into the EMR. Thanks to this approach, our physicians now had access to updated patient records within 24 hours – a big improvement over the pre-EMR timeline of two to four days.

By January 2004, two months after implementation, we had uploaded into the EMR all of the old problem lists and treatment plans for nearly all patients. By then, too, all of our physicians were using the dictation/transcription method to document most new patient encounters in the EMR. In March, when we switched to a more cost-effective transcription service, the change unintentionally accelerated the transition from dictation to direct EMR data entry. It turned out that the new service offered a 5 percent discount to customers who employ EMR "key phrases." Using these shortcuts for entering data directly into the EMR, a clinician can type a single word or short phrase into the EMR, which then automatically populates the entire encounter record with standardized information appropriate to the diagnosis. The clinician then visually scans the new record and makes any necessary changes. The entire process is complete in a matter of seconds, dramatically reducing the time needed for recordkeeping. As an added benefit, we found that notes produced in this manner tended to be more complete and accurate than either handwritten or verbally dictated notes.

By the Spring, our two most enthusiastic physicians had developed and begun to use a long list of EMR key phrases. The other physicians were greatly impressed by the accuracy and completeness of their notes, and by the end of March all five physicians had begun to collaborate to develop a library of key phrases to speed note taking. Our practice manager, a Pediatric Certified RN, had already developed a library of key phrases for nurses to use during patient triage. The nurses found that these key phrases and templates enabled them to work more quickly and more accurately. For example, when a patient presented with a fever, rather than dictate their symptoms and any telephone advice given, a nurse could simply type the word "fever" into the EMR, hit a button, and instantly populate the templated chart with the appropriate information. The new process

proved to be so efficient that the practice's nurses adopted it quickly and without complaint.

By June 2004, all of Eden Park's providers were utilizing templates and phrases to document scheduled appointments, though they were still dictating consults, referral letters and after-hours patient calls. Thanks to the increased use of templates and key phrases, in June the practice's use of transcription began to sharply decline (see Figure One). This decline was due in part to the transcriptionists' increased use of the new library of key phrases. But the majority of the reduction came from replacing dictation with direct provider entry of EMR data. By November 2004, one year after the EMR's implementation, our physicians' gradual acclimation to phrase-generated keystroke entry allowed Eden Park to eliminate the need for transcription.

Benefits of Transcription Replacement

By replacing traditional transcription with electronic methods for documenting patient encounters, Eden Park saved $28,533.59 in 2004 (an estimated $30,000-plus in 2005) on transcription fees alone (see Table 1).

Month	Transcription expenses
January 2004	EMR goes live with all providers
February	$2,344.00
March	$2,220.00
April	$2,566.70 (switched to new service; learning curve resulted in temporarily higher costs)
May	$2,876.15
June	$1,387.65
July	$ 438.69
August	$ 93.94
September	$ 62.59
October	$ 0.00
November	$ 16.62
December	$ 0.00

Table 1 - Change in transcription costs following EMR implementation

In addition to its financial benefits, the EMR has streamlined many clinical and administrative processes, leading to enhanced productivity. For instance, the EMR allows our physicians to access patient records instantly at both of our practice sites, eliminating the need to fax or transport records between the sites. And physicians can now access their patient's records from home or their mobile offices, greatly improving the quality of care they provide patients while away from the office. This aspect of the EMR is especially important for a pediatric practice, since parents and caregivers – especially new parents -- tend to make frequent nighttime calls for medical assistance.

Another related advantage of the EMR is that we now have documentation that can be easily read in real time. For instance, patients often will call in with questions after their treating physician has gone home for the day. Today, rather than forcing a clinician to interview the patient to clarify their condition and treatment, we can refer to an instantly accessible, legible, clearly defined note with the treating physician's diagnosis and treatment plan.

The EMR has also enhanced the safety of our patients. That's because, while dictated notes are subject to misspelling, misinterpretation or misplacement within the electronic chart by staff or transcriptionists, EMR-based notes let providers immediately view their notes in written form and correct mistakes. This advantage, we feel, enhances patient safety by preventing communication errors from impacting the provision of care. Moreover, the EMR ensures that prescriptions and lab orders are automatically logged into the patient record so providers have complete and accurate patient data. And the EMR's built-in prompts cue physicians to follow AAP recommended treatment guidelines, which contribute to consistent treatment plans across the practice.

EMR-Related Reductions in Administrative Payroll Expenses

In addition to the clinical benefits noted above, implementing the EMR has greatly streamlined many daily administrative tasks associated with the medical record, enabling Eden Park to reduce its clerical staff by 3.75 FTE's – more than 25 percent -- at a time when our patient load remained constant.

One common example that illustrates the improved efficiency delivered by the EMR is the everyday process of responding to parent phone calls. With the old paper chart as our recordkeeping system, a phone call from a patient resulted in a laborious, three-step process: 1) the phone was answered by the front desk staff, who took a message; 2) one or more staff members searched for the patient's medical chart, which might be in our other office, on the chart shelf, on the desk of a physician or nurse, in the back office, or elsewhere; finally, 3) staff would return the patient's call armed with information to respond to their questions. Today, the EMR gives staff instant access to patients' records, enabling them to answer questions immediately without resorting to a call back and without engaging in a search that could involve the entire front office staff for up to half an hour.

The EMR has streamlined dozens of other ongoing, formerly time-consuming administrative tasks. Under the old system, Eden Park had to allocate one full-time employee for each shift to track and update paper charts. This employee responded to patient calls, routed charts to await physician dictation from the transcriptionist, updated the charts when the transcriptions arrived, documented prescriptions and lab orders/results in the chart, copied and filed in the chart any

consult letters or referral reports, created new charts, and performed many other duties that the EMR now performs automatically.

The labor-saving qualities of the EMR also apply to the transfer of clinical information into the practice management system (PMS). In the past, information such as immunizations, vaccine lot numbers and test orders were manually entered into the PMS after being transcribed or otherwise recorded in the paper medical chart. Today, the EMR automates the process of writing prescriptions and faxing them to the pharmacist (reducing the chance of medication errors due to illegible handwriting) and concurrently documents the prescription in the patient's active medications list. Similarly, the new system has streamlined the creation and routing of referral and consult letters, eliminating clerical support for these tasks. In the past, the physician would dictate the letter and route it to a transcriptionist who would return the letter for the physician's signature on average four days later. A chart clerk would then locate and photocopy any information from the patient's chart that the physician wanted to accompany the letter, such as a current medication or problem list, and finally mail or fax the letter to the appropriate party after copying it for permanent filing in the medical chart. Today, the entire process is handled automatically by the EMR. As a result, our turnaround time on referral letters and consult letters is virtually instantaneous. The letter can be directly faxed from the EMR or hand-delivered to patients on their way out the door.

Payroll-Reduction Benefit

Thanks to EMR-related streamlining of administrative tasks, Eden Park was able to reduce its clerical staff from 14.5 FTEs to 10.75 FTEs in the first seven months following implementation (see Table 1). The resulting payroll savings amounted to nearly $85,000 per year, or 21 percent of the practice's administrative costs. As a direct result of this savings, we converted one front office position to a clinical FTE – a position that provides services previously not offered, generating approximately $40,000 per year in collected payments.

Table 2 – Administrative Staff Savings From the EMR

	January 5-19, 2004	August 2-16, 2004
Non-Clinical Payroll *(per annum)*	$15,100.81 *($392,621)*	$11,855.30 *($308,237)*
Non-clinical FTEs	14.5	10.75
FTE's per provider	2.4	2.2

Conclusion

Eden Park's physicians, nurses and support staffs have by now grown accustomed to a highly efficient, centralized and automated business process.

Instead of waiting up to four days for clinical notes to be transcribed and entered into the paper chart, we now have instant access to updated patient information via the EMR. Instead of wasting time searching for paper charts when parents call with questions, we have the information at our fingertips. Consult and referral letters, which routinely took up to a week to deliver, can now be hand-delivered to patients on their way out the door. And physicians can access up-to-date patient records on their laptops or from home, enabling them to provide higher quality patient care during frequent after-hours' calls.

By many measures, the EMR has streamlined and improved the everyday processes that support and uphold Eden Park's delivery of quality care. And the EMR has contributed to our bottom line, as well. Taking into account only those savings documented in transcription and administrative payroll, the new system saved the practice a total of $114,000 in its first year of operation. This savings has allowed us to substantially improve the quality of care we provide our patients by funding a new, full-time nursing position. The new nurse-coordinator's role has, we feel, improved the quality of patient care at Eden Park by ensuring that patients follow their medication and treatment plans. The new position has also, coincidentally, contributed to the bottom line by generating $40,000 per year in billable services.

While the cost of implementing an EMR is often cited as a barrier to the technology's adoption by small practices, the experience of Eden Park proves that small medical groups can reap significant financial benefits to offset the cost of implementation. Considering the magnitude of the ROI, not to mention anecdotal improvements in physician and patient satisfaction, the Eden Park experience suggests that cost may no longer be a valid reason for delaying implementation of an EMR.

References

1. McCarthy, D. (2004). Catching the vision for health I.T., Quality Matters, September Update of The Commonwealth Fund. http://www.cmwf.org/publications/publications_show.htm?doc_id=240255.
2. Leawood, K. (2003). AAFP member survey of EHR use and interest. American Academy of Family Physicians, January 2003.
3. Barlow, S., Johnson, J., Steck, J. (2004). The economic effect of implementing an EMR in an outpatient clinical setting. J Healthcare Info Mgmt. Winter 2004.
4. Badger, S., Bosch, R., Toteja, P. (2005). Rapid Implementation of an Electronic Health Record in an Academic Setting. J Healthcare Info Mgmt. Spring 2005.
5. Broder, C. Small Practices Focus on EMR Efforts. iHealthBeat. December 2004.
6. Miller, R., Sim, I., Newman, J. (2003). Electronic Medical Records: Lessons from Small Physician Practices Prepared by University of California, San Francisco, October 2003 (Published by California Healthcare Foundation)

7. Kucher, N., Koo, S., Quiroz, R., Cooper, J., Paterno, M., Soukonnikov, B., Goldhaber, Z. (2005). Electronic Alerts to Prevent Venous Thromboembolism among Hospitalized Patients. N Engl J Med 2005 352: 969-977.

Biographies of Authors

Colleen Cook-Moine, MD, Partner, Eden Park Pediatric Associates.
Lynn Cramer, RNC, Practice Manager, Eden Park Pediatric Associates.

Contact Information

Colleen Cook-Moine: CCook120@aol.com.
Lynn Cramer: lynn@EDEN.PCC.COM.