This four-physician practice has good reason to be enthusiastic about new technology.

How We Improved Our Practice and Our Bottom Line With a New EMR System

Bradley M. Block, MD

I would like to explain why I am an electronic medical record (EMR) enthusiast.

Our practice is an independent office owned by the physicians who work there. We do not perform hospital rounds except to see occasional newborns in the nursery, so we work in the office almost 100 percent of the time. We mostly care for young and middle-aged families; Medicare and uninsured patients each make up less than 5 percent of our visits, and we have essentially no Medicaid patients in our practice. Most of our visits are for routine medical care, with a small number of procedures mixed in.

We believe that using a high-quality EMR integrated with a high-quality practice management system is the future of medicine. In an era of stagnant reimbursement rates, skyrocketing overhead costs and higher levels of accountability, medical offices need to use technology to streamline work, increase efficiencies, improve documentation, decrease malpractice risk and improve profitability.

That's why we converted to an EMR system with integrated practice management software in December 2004. I don't plan to mention the name of the EMR system our practice uses, because the specific system isn't the point. Our system may not be the best fit for everyone, and our outcome might have been even better (or perhaps worse) with a different EMR. What I have to say is likely to be generally applicable to a range of systems. Here's what we've gained from ours.

Efficiency

One of the major benefits of EMRs is the increased efficiency they offer. We had heard about the efficiencies that an EMR can bring, but now we're living them:

- A doctor, a nurse, a referral specialist and a billing coordinator can all be working with the same patient's file at one time to address any needs in a timely manner.
- Referrals are no longer missed because someone took the paper chart away from the referral desk before the referral was completed.
- Staff members don't have to search for the person who knows the right information when a patient returns a call; any staff member can pull up the telephone message pertinent to this patient's care.
- We don't need to leave messages on people's desks or send our manager for a sweep around to give our staff members a last-minute update regarding something like our influenza vaccine supply status; the EMR's internal e-mail system efficiently communicates messages to staff and

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providers with an immediate notification on the recipients' screens.

• All lab and diagnostic test reports for each doctor remain in his or her folder of reports to review until the doctor addresses the tests or signs off on them; no longer can someone take an abnormal test away from a doctor's desk and file it away, not realizing that the doctor hasn't reviewed it.

• Without leaving the exam room, a doctor can send a nurse an "urgent" message that he or she needs a radiology report on the current patient; a few minutes later, the nurse can send a message back that the report is ready for the doctor to pull up from the patient's radiology file.

• We don't have to hunt for patient forms such as consents for procedures, disabled parking forms and blank stationary. Forms are filled out and signed right on our tablet PC screens.

• We don't have to dig through a drawer full of out-of-date formulary booklets to identify a covered brand when prescribing medications. We verify formulary drugs in seconds either by clicking on the *Formulary* button in the treatment screen of our EMR (which links to the patient's managed care drug formulary Web page) or by clicking on the Web link to http://www.epocrates.com on our tablet PCs.

• We can fax prescriptions to pharmacies or transmit them via e-prescribing over the Internet to most big chain pharmacies. Ill patients can pick up their medications at the pharmacy without delay; we get no more call-backs because of lost scripts.

• All the patient's prior medications can be viewed within seconds; no more searching through multiple pages in a chart for the name of a past "rash cream" or "allergy pill" that the patient wants refilled.

• And best of all, *no more lost charts!* Any patient file can be viewed from any computer in the office network, and endless chart searches are a thing of the past. We estimate that we are

The author's four-physician group adopted a combined EMR and practice management system in December 2004.

The new system has improved the efficiency of the practice in several ways.

The system makes chart information easier to find and more accessible while improving intrapractice communications.

ANNUAL PER-PHYSICIAN COSTS OF PAPER CHARTING FOR THREE PHYSICIANS

Expense category	Annual cost
Materials costs	
New chart folders	$465
Superbills	$710
Fax ink and paper	$600
Printed paper and forms for charts	$2,250
Employee costs for nonproductive time	
Chart searching (2.25 hours/day as tracked by our manager at $10.50 per hour, average)	$6,136
Inputting superbill charges (20 hours/week at $11 per hour)	$11,440
Lost income	
Charges not posted (average of $100 per physician per month)	$3,600
Costs for storing paper records	
Storage facility used for our old records	$1,524
In-office space rental costs (165 square feet at $19 per square foot per year)	$3,135
Total cost per year	**$29,860**
Cost per physician per year including costs for space	**$9,953**
Cost per physician per year excluding costs for space	**$8,400**

Materials costs: These were taken directly from our prior year's purchase costs.

Employee costs for nonproductive time: We excluded time our lower-paid, part-time filing clerk spent filing charts and pulling low-priority test reports, figuring this would be replaced in the future by scanning reports into our EMR.

Lost income: We thought we did a good job getting paid for our work, but a search through our superbills quickly found some vaccines, skin biopsies, nursing work and other charges not billed.

Costs for storing paper records: We counted savings in space for storage because we were building a new office and knew we could save money on it by not allowing for chart storage.

On average, our office gets paid by insurance plans in half the time it took in our paper chart days.

saving more than $2,000 per physician per year in staff time spent searching for charts. (More on the financial implications later.)

Risk reduction

Our EMR's alert system helps ensure that we do not forget important tests, such as a repeat chest CT every four months to follow up on someone's pulmonary nodule or a repeat colonoscopy in three years to recheck a patient's colon polyps, thereby providing both medical-legal benefits and improvements in quality of care. Additionally, the alerts remind us of preventive care needs for patients, which helps improve quality of care and office income by reminding us to do appropriate testing and provide vaccinations that are recommended for patients with diagnoses such as asthma, emphysema and diabetes.

Faster, safer payment

Since our EMR is integrated with its practice management software, we are also getting paid by insurance companies much faster than ever before. There is no waiting for staff to enter charges from paper superbills into the practice management system. There is no need to batch claims in order to send out the bills. On average, our office gets paid by insurance plans in half the time it took in our paper chart days.

In the second year of using our EMR, we implemented electronic funds transfers and electronic remittance advice with all our major insurance plans. Most of our insurance payments are deposited into our bank account by the time we get the explanations of benefits (EOBs). No checks are lost in the mail, and there's no risk of embezzlement. All our major insurance carriers post their EOB information directly into our system. This sounds scary, but these posts are not final or approved until our biller reviews and "locks" the data.

Now we save even more time and money because we do not have to pay a high-priced biller to spend large amounts of time typing in insurance payments, adjustments, patient balances, etc. Our biller can concentrate on ensuring that we get paid our contracted fees and following up on unpaid claims in a timely manner; she can even work from home with full access to EOB information through our virtual private network (VPN) connection when family priorities necessitate her absence. In fact, we usually have no more than $1,000 in accounts receivable (A/R) older than 120 days and $1,000 in A/R aged 90 to 120 days – for all insurances and for all four doctors combined. We achieved this without adding billing staff; the difference is our EMR and practice management system.

Fewer no-shows

At the end of our first year of using our EMR, we purchased an automated appointment reminder system, which calls patients to remind them of their appointment date and time. While this isn't actually part of our EMR, it has turned out to be an important add-on. Reminder systems like ours are produced and sold by independent vendors. They provide a small hardware device that plugs into an office computer and software that interfaces with the practice management system. We set up our system to give each patient reminder calls two days and one day before an appointment.

When our four-physician practice purchased the reminder system, our no-shows totaled more than 100 visits per month. They are now down by more than 50 visits per month on average. For comparison purposes, the no-show rate dropped from 7.3 percent in April 2005 to 3.4 percent in April 2006. The income gained through reducing no-shows by more than 50

System alerts help improve preventive care and follow-up for patients with chronic conditions.

With the addition of electronic funds transfers and EOB posting, the practice has been able to improve billing efficiency and collections.

An add-on appointment reminder system has helped decrease no-shows while improving patient and staff satisfaction.

About the Author

Dr. Block is a family physician who practices in an independently owned, four-physician family medicine group in Oviedo, Fla. He has been in private practice in central Florida since finishing residency in 1992. He is also a clinical assistant professor at the Florida State University College of Medicine. Author disclosure: nothing to disclose.

We are much more prepared now for hurricanes and other natural disasters. All of our patient files are backed up daily.

appointments per month is major. For a rough estimate, assume that half of those visits pay $52 and half pay $80 (about the 2006 Medicare payment rates for a 99213 and a 99214). That would be more than $3,000 a month, or $36,000 a year. And since we remind patients of their appointments, we feel more justified in charging no-show fees of $15 to $25 depending on appointment type; if we average $20 for just 25 missed appointments per month, then we gain an additional $6,000 a year in income.

Thanks to our appointment reminder system, we also have the nonmonetary gains of improved patient satisfaction and better patient flow. Fewer missed appointments means less trouble for everyone. Since patients are more likely to show up at their preplanned time, they encounter fewer delays, fewer rescheduling hassles and a less chaotic experience. In addition, we get more openings for same-day visits because patients who have scheduling conflicts are more likely to realize this and cancel the day before their appointment.

The appointment reminder add-on may save the practice more than $36,000 per year.

Other benefits of the EMR system include remote access, easier safeguarding of records and savings on the copying of records.

Before implementation of the system, paper charting cost the practice an estimated $10,000 per physician per year.

More reasons to smile

In addition to these major workflow improvements, our system has brought several other advantages:

We spend more time at home. We can use our secure VPN software to connect from home to finish any incomplete work, review labs through our interface, review written reports, address phone messages, look up patients while on call, fax scripts to pharmacies or schedule follow-up appointments for patients who are in the emergency department. Now, even when I'm not done with all my work, I can join my family for dinner and then log in from home to tie up any loose ends; occasional trips into the office on weekends to catch up on work are a thing of the past. Home connectivity is invaluable. I've always managed to have my visit notes done and important phone messages taken care of before the end of the work day, but I've always had reports to review that I couldn't get to during the day; the EMR hasn't changed that. What it offers is freedom from having to be in the office to review and address all those reports.

We sleep better at night. We are much more prepared now for hurricanes and other natural disasters. I have met doctors with offices just one hour away who experienced a complete loss of their office in the hurricanes that hit our area four years ago. All of our approximately 14,000 patient files are backed-up daily onto a small tape. Now, if a hurricane or tornado comes through here, we can rest comfortably with the knowledge that all of our records could easily be recreated on a new computer if our office got flooded or flattened.

Record requests are easy and cheap to process. With our EMR, we can now copy a chart 400 pages long or longer onto a CD, including all scanned-in consults and old paper records, in just a few minutes. We're saving more than $100 a month because we're printing so many fewer pages on the copier that we lease. And we are saving a bundle on postage too, because we send all records on a CD in a small envelope with regular postage instead of in those big bulk envelopes with $3 or more in postage; and by state law, we get paid the same per page for medical records regardless of the format.

But is all this affordable?

I've explained a couple of small ways in which our EMR and practice management system helped us financially – by speeding up collections and, with the appointment-reminder system, reducing no-shows. That's clearly not enough to make such a major investment pay off financially – but there's more. Here's the bigger financial picture:

Savings over paper records. Let's start with the savings we realized by getting beyond paper charting. Before we even looked at EMRs, we did an in-office analysis to estimate the savings we could expect if we eliminated

paper charts. We only had three physicians at that time, but a fourth doctor was set to join us. As you'll see from "Annual per-physician costs of paper charting for three physicians" (page 26), our paper charting costs amounted to nearly $10,000 per physician per year.

Start-up costs. We looked at several EMRs closely to identify cost differences as well as software differences, such as the work flow assumptions built into each system, its overall appearance, capabilities and ease of customization. In the end, we purchased all necessary software and hardware up front; the few computers we previously owned were all PC dinosaurs that were not capable of handling our EMR needs. Our total first-year costs came to $88,800, or $22,200 per physician (see "EMR start-up costs per physician" below).

The table of start-up costs doesn't reflect the cost of inputting initial data into the EMR, because we handled that as part of the normal day. During the first six months after switching to the EMR, we had staff scan in complete charts of all patients with upcoming appointments; then, at each patient's appointment time, we had our medical assistants input most of the medical history, family history, allergies, current meds and problems for us to double-check when we saw the patient. Naturally this slowed us down, so the cost of this work is reflected in revenue reductions I'll discuss shortly. Because we wanted to be able to shred all our charts, we eventually hired students to scan in all inactive charts; the cost, which came to about $800 per physician, is reflected in the table of start-up costs even though it's not an expense that every practice would choose to undertake.

Real-life savings

The total investment sounds staggering, but we were soon saving money in office supply and staff costs, and we increased our productivity; altogether this led to improved income even by the end of the first year. In the first eight months of using our EMR, we had a significant staff reduction thanks to increased efficiencies:

- From five full-time medical assistants to four,
- From four full-time front-office staff to three,
- From two full-time billing staff to approximately 1.25 full-time equivalents.

As a result, we saved more than $5,500 per month in payroll and benefits.

In the second year of using our EMR, our efficiency continued to improve, and the front-office staffing dropped further, from three full-time employees to two; this increased our payroll and benefit savings to $6,800 per month. Additionally, we're saving all the money previously spent on paper charting and faxing supplies; this saved us $7,000 total in office supplies in the first 15 months of our EMR as compared with the 15 months prior to converting to a paperless system; this was more than originally estimated because of the addition of our fourth doctor while we were still on paper charts.

Using the EMR has also resulted in better charting and less prophylactic downcoding. In a typical month in mid-2005 on our EMR, we billed 13 percent more level-IV and level-V

At $22,200 per physician, start-up costs for the new EMR system made the transition an expensive undertaking.

On the other hand, savings in office supplies and staff costs started accruing soon after implementation.

By the second year of using the system, the practice was saving $6,800 per month in salary and benefits.

EMR START-UP COSTS PER PHYSICIAN

EMR, including software license fees, installation, training and migration of patient demographic data	$8,500
Server with back-up tape system and three-year, all-inclusive, same-day, on-site service contract and warranty	$2,400
Physician wireless tablet PCs with docking stations, spare batteries, chargers and premium Microsoft Office software	$3,000
Office hardware and network hardware and software, including 13 new staff computers, two high-speed sheet-fed scanners, a scanner for insurance cards and driver's licenses, five black-and-white laser printers, battery back-up devices, VPN and Wi-Fi routers, network switches and IT work	$5,900
Annual EMR software support	$1,600
Scanning of inactive charts into EMR system	$800
Lab interface with Quest and LabCorp	Free
Total first-year EMR start-up costs per physician:	**$22,200**

Our paper charting costs amounted to nearly $10,000 per physician per year.

office visits than in the same month a year earlier. Using the EMR also helps to ensure that we charge for all services provided. For example, whenever we order a vaccine or an in-house test such as an ECG or fingerstick hemoglobin, the EMR automatically charges the appropriate CPT codes. In fact, in our first year using our EMR, the three doctors who had been in the office for more than two years saw their incomes increase an average of more than $20,000 per physician (prior to expenses), despite having a reduced schedule the first two to three months while making the transition into using the EMR and despite having brought in a fourth doctor who was helping us meet excess demand.

The practice has not only broken even on its investment but, as noted, is saving money month after month in addition to generating more income every month. Despite the start-up cost, our EMR has provided an excellent return on investment – the gift that keeps on giving. For a summary of the financial effects of the new system in the first three years, see below. Our significant rise in gross income during those years occurred despite minimal increases in our insurance reimbursement rates. Our ongoing IT and computer hardware costs after the first year are not listed in the cost analysis chart because they have been nominal – less than $500 per physician per year.

This new-found money helped us to complete a long-term goal. We bought property and built our own permanent office. After renting at our last location for more than 10 years, we moved into our very own building this past winter. Since we don't need any space for paper charts, paper superbills or paper referrals and we have relatively few paper EOBs to store, our new office is 800 square feet smaller than our past rented space – even better space efficiency than originally estimated because we were able to eliminate more paper and file storage areas than expected. This has given us yet another long-term cost benefit – a smaller mortgage.

We know that converting to an EMR was the right decision. We are far better off now than we would be with paper charts. This conversion has helped our medical office evolve into an efficient, modern practice that is increasingly quality-oriented, independent and financially successful. FPM

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The EMR system has also reduced prophylactic downcoding and improved charge capture.

Even by the end of the first year, the practice saw a positive return on its investment in the system.

Savings and additional income associated with the system have helped the practice buy a new building.

NET RETURN ON INVESTMENT

	First year (2005)	Second year (2006)	Third year (2007)
Costs			
Investment costs per physician			
EMR system	$22,200	$1,600	$1,600
Appointment reminder system*		$1,050	$50
Savings and additional income			
Overhead savings per physician			
Office supplies	$1,400	$1,400	$1,400
Staff payroll and benefits reduction	$6,900	$16,500	$20,400
Additional income generated per physician (average per physician compared with average for 2004, the last year of paper charting)	$20,000	$44,000**	$76,000
Net annual return on investment per physician	**$6,100**	**$59,250**	**$96,150**

*We added an appointment reminder system in 2006; the system cost $1,000, with a $50 annual support cost.

**One of the three original physicians had extra time off for personal leave in 2006; for the two others, the average additional income generated was $60,000.