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Your questions and concerns addressed

# Is it time for electronic medical records in your practice?

A wind of change is blowing through health care as paper systems are being converted to digital records

## CASE A medical practice in disarray

An ObGyn reported the following signs of a problem to a colleague: "Our practice was literally drowning in paperwork. An exam room was recently converted to hold more charts, and 2 warehouses held our overflow. Employees were constantly searching for records, and telephone messages were delayed for hours or days until the chart could be reviewed. Notoriously bad handwriting and incomplete documentation hampered good communication and good medical care. Transcription costs were out of control. Forms helped but added to the ongoing costs and storage problems."

What are the treatment options?

**E**lectronic medical records (EMR) have progressed from arcane, slow, cumbersome documentation systems to sophisticated, complex, comprehensive ones. These modern systems hold the potential to reduce administrative and management costs by 30% or more, improve clinical workflow, reduce medical errors, facilitate communication between patient and physician, and enable analysis of data for best practice methods, best outcomes and identifying risks and complications.

For practices like the one described in the preceding paragraph—not a fictional account but actual testimony provided by an ObGyn—EMR offer a powerful potential solution to the problems that result from an overwhelming amount of paper documentation, correspondence, charting, claims, and financial transactions. In this article, I offer a general introduction to EMR; in the next (August) issue of OBG MANAGEMENT, I'll speak with a group of ObGyns and medical practice managers about their experiences—and inexperience—with EMR.

## Progress and paradox

Physicians and scientists have made substantial progress over the past 25 years in pharmacotherapeutics, diagnostic technology, procedures, and treatment protocols. In obstetrics and gynecology alone, consider the array of technologies—3-dimensional ultrasonography, minimally invasive surgery, receptor-specific drugs, in vitro fertilization, long-acting reversible contraceptives—that have advanced the quality and effectiveness of care. Yet little progress has been made in the process of caring for patients.

The fact is that physicians, and other health-care providers, are rooted in

paper-based processes that sustain inefficiencies, increase costs, and defy the gains that other industries have made by adopting electronic technologies for handling information. Why are we so stuck?

## The state of EMR

EMR—of varying functionality—have been available for longer than 20 years. Early models were developed by physicians who had an interest in software coding and design, and were of limited functionality, arcane, and difficult to use in a clinical setting. Some of those early models, and even a few commercial systems in use today, rely on scanning paper documents into computer files. Such systems may eliminate some paper and facilitate document retrieval, but they do nothing to ease management of the complex transactions of health care, and they do not address handwriting illegibility.

Development of complex EMR systems was limited by primitive technology, inadequate distribution channels, and programming that was cumbersome and expensive to maintain. But these barriers have been overcome with fast processors, inexpensive and abundant memory, broadband Internet connectivity, and programming languages that facilitate automated software development.

Modern EMR systems are not simply data repositories: They also support workflow from the beginning to the end of a patient's consultation with a health-care provider—an event that generates multiple transactions with multiple recipients. A single consultation may, for example, generate orders for lab tests, imaging studies, a surgical procedure, consultation with other physicians, prescriptions, and counseling, and record the subsequent financial transaction. EMR systems by necessity interact with multiple organizations, institutions, instruments, and other software systems. To software developers, and to the clinicians who use their systems, the challenge is to deftly navigate the complexities of health care.

## Forces accelerating adoption

### Momentum from the Executive Office.

In 2004, President George W. Bush set a goal: nationwide adoption of EMR—to include all medical practices—within a decade. In a speech that year at Vanderbilt University Medical Center, the President said: “One of the amazing discrepancies in American society today is we’re literally changing how medicine is delivered in incredibly positive ways, and yet docs are still spending a lot of time writing things on paper.”<sup>1</sup>

### Certifying body arises from the private sector.

Subsequently, the US Department of Health and Human Services (HHS) established the Office of the National Coordinator for Health Information Technology and the American Health Information Community. The sweeping goal of these bodies? Better health care by application of information technology and creation of standards for certifying EMR systems that provide core functionality.

In response, 3 private sector health information management groups jointly formed the Certification Commission for Healthcare Information Technology (CCHIT; [www.cchit.org](http://www.cchit.org)). In 2005, this private-sector entity entered into a contract with HHS, to, in the commission's words, “develop and evaluate certification criteria and create an inspection process for healthcare information technology” in 3 areas:

- Ambulatory EMR for offices
- Inpatient EMR for hospitals and health systems
- The network components through which EMR share information.

The work of this body is ongoing.

### Pay-for-performance pushes the issue.

Today, insurers—federal and private—are mandating adherence to standards of care for maximal reimbursement of services. These reimbursement schemes, called pay-for-performance, or P4P, are based on providers delivering documentation that specific protocols are followed and outcomes are monitored. The point is that it will be nearly impossible for

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## FAST TRACK

**The pressure to adopt systems of electronic record-keeping comes from government, insurers, and the marketplace**

physicians to comply with insurers' P4P requirements unless that documentation is in an electronic format.

**The market speaks—loudly.** Other forces are bringing clinicians to a reckoning with EMR:

- Some malpractice carriers offer a discount on premiums to physicians who document work using EMR
- Patients are asking for electronic access to their providers by way of Web sites and e-mail
- More and more requests for documentation from multiple interested parties to a patient's care increase overhead costs and place greater demands on paper-based systems.

Physicians cannot meet these demands with paper-based record-keeping.

#### **Reticence has been the watchword**

Despite the external and internal forces that are driving adoption, physicians have, as a whole, been reticent to adopt EMR. The nonprofit Healthcare Information and Management Systems Society (HIMSS) reports that 26% of ambulatory practices have adopted EMR, but this penetration is predominantly in multi-specialty clinics and hospital-owned practices.<sup>2</sup> Few data exist on the penetration of EMR in single-specialty ObGyn practices; anecdotally, vendors estimate a penetration of 10% to 15%.

Why this slow pace toward something broadly acknowledged as key to the well-being of health care?

**It means a change.** Adopting EMR represents change; well-designed EMR systems streamline workflow in a practice by automating many functions, eliminating duplications of effort, and shifting roles from moving paper to managing digital information. Fear of change and resistance to change are the most common reasons that single-specialty ObGyn practices have not adopted EMR.

**It costs.** Expense is often cited as the reason why a practice has not adopted an EMR. True: Upfront hardware costs, software costs (license fees, subscription

fees), implementation fees, and training costs add up. But a well-designed EMR system should provide a substantial return on investment (ROI) based on savings and on an increase in revenue.

**It may be awkward.** Some physicians cannot type well. They do not adopt EMR, therefore, because they fear embarrassment using a computer to enter clinical documentation in the consultation room in front of a patient.

#### **On the plus side**

On the other side of the coin, the advantages of EMR to physicians are several:

**Documentation.** EMR facilitate complete documentation of a patient's visit, current needs and care plan, and record—thereby reducing the clinician's liability and the risk of medical error. Functions include order entry, prescribing, accurate coding based on work-effort, tracking of outstanding lab tests, and notification.

**No chart pulls.** With EMR, patient chart pulls are almost nonexistent. A chart is available anywhere a computer is located, any time it is needed.

**Decision-making.** Probably most importantly, EMR provide clinical decision support by means of alerts (drug interactions, allergies) and reminders (need for follow-up, test orders).

**Portal to the patient.** Internet-accessed portals that are part of EMR systems facilitate asynchronous communication with patients. A patient can make an appointment, refill a prescription, and request educational materials through such a Web portal. Once an appointment is scheduled, the patient can enter her medical history so that it is specific to the appointment—a feature that is particularly useful when a woman knows the reason that she is visiting the ObGyn (“I'm pregnant,” “My cycle has changed”).

Such a patient-entered history can populate the EMR and contribute elements for appropriate coding. Furthermore, a Web portal in an EMR system enables the physician to reply to a patient

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**Benefits of EMR include better and faster documentation, support of clinical decisions, and direct access to patients via the Web**

with secure messages **1**) about lab results, reminders, and appointments and **2**) that deliver educational materials.

### Keys to embarking on a successful transition

Because EMR are still used by only a small minority of practices, those that seek to move away from the paper record are almost always doing so for the first time. Uncertainty about the adoption adds to anxiety. There are, however, simple steps to take to maintain control over the adoption process and methodically manage it to a successful outcome.

**Begin with the end in mind.** The goal of adoption is not to purchase an EMR system; EMR are only a tool. The goal of the practice should be to transform its existing workflows to make significant improvements over the status quo. Before ever looking at an EMR system, you (and your colleagues, when applicable) must answer several key questions:

- What are we trying to accomplish?
- What is it about the status quo that we want to change?
- How will we measure success a year after completing the transition?

**Determine whether you have the resolve to make the transition.** As I said, adopting EMR represents change, and the proper motive for adoption is engineered change. Change, however, exposes the human element of transformation. The people who work in the practice are the true determining factor for a successful transforming project, so ask yourself:

- Do you know whether they are ready for change?
- Do they understand change?
- Are they threatened by it?
- Is there broad and vocal leadership backing the impending changes?
- Has the impact of the change been discussed with all people involved so they have a clear understanding of its impact on their personal future?
- And is the practice, as a team, prepared to go through the turmoil of

change as a necessary step on a path to transformation?

**Assess your sense of urgency—objectively.** Because this transition represents a transformation, you'll have to overcome significant inertia. Without a sense of urgency and aggressive, consistent management of this transition by the leaders of the practice, overcoming human barriers to change will be difficult.

A medical practice that addresses these 3 initial tasks sets itself up for a successful transition from paper to EMR. A good plan—in which goals are well defined and a sense of urgency is consistently communicated and supported by the practice's leadership—has an excellent chance of resulting in the best possible selection and implementation of an EMR system and accomplishing the goals set for the practice.

In contrast, a transition from paper that begins with such a vague notion as “I guess we need an EMR eventually, so we might as well start now” is much more likely to spark turmoil among staff. The staff then embarks on a selection and implementation process that is heavily influenced by emotion and interpractice politics. They face a diminished opportunity for completing the transition efficiently and successfully.

Throughout this process, the staff should always bear in mind that this is a transformation that they plan, control, and execute. EMR are simply a means to an end—not the end itself.

### Two types of systems, various material needs

There are 2 primary configurations of EMR systems: **client-server applications** and **remote-hosted systems**. The latter operate through an Application Service Provider (ASP). (See “What are the 2 types of EMR?” on page 62).

In addition to type of system, keep these material needs in mind as you plan: **Connectivity.** Most medical practices rely on the Internet for a variety of

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**It's imperative at the outset of planning to probe the effect that fundamental change will have on all staff members—including any threat EMR pose**

FOSAMAX® (alendronate sodium) for either two or three years. In these studies the overall safety profiles of FOSAMAX 5 mg/day (n=642) and placebo (n=648) were similar. Discontinuation of therapy due to any clinical adverse experience occurred in 7.5% of 642 patients treated with FOSAMAX 5 mg/day and 5.7% of 648 patients treated with placebo. In a one-year, double-blind, multicenter study, the overall safety and tolerability profiles of once weekly FOSAMAX 35 mg (n=362) and FOSAMAX 5 mg daily (n=361) were similar. The adverse experiences from these studies considered by the investigators as possibly, probably, or definitely drug related in ≥1% of patients treated with FOSAMAX 5 mg/day or placebo for the two- or three-year studies were *Gastrointestinal*: dyspepsia 1.9% and 1.4%, abdominal pain 1.7% and 3.4%, acid regurgitation 1.4% and 2.5%, nausea 1.4% and 1.4%, diarrhea 1.1% and 1.7%, constipation 0.9% and 0.5%, abdominal distention 0.2% and 0.3%; and *Musculoskeletal*: musculoskeletal (bone, muscle or joint) pain 0.8% and 0.9%, respectively. For the one-year study with FOSAMAX 5 mg/day and once weekly FOSAMAX 35 mg, corresponding values were *Gastrointestinal*: dyspepsia 2.2% and 1.7%, abdominal pain 4.2% and 2.2%, acid regurgitation 4.2% and 4.7%, nausea 2.5% and 1.4%, diarrhea 1.1% and 0.6%, constipation 1.7% and 0.3%, abdominal distention 1.4% and 1.1%; and *Musculoskeletal*: musculoskeletal (bone, muscle or joint) pain 1.9% and 2.2%, respectively. *Treatment of glucocorticoid-induced osteoporosis*: In two, one-year, placebo-controlled, double-blind, multicenter studies in patients receiving glucocorticoid treatment, the overall safety and tolerability profiles of FOSAMAX 5 and 10 mg/day were generally similar to that of placebo. The adverse experiences considered by the investigators as possibly, probably, or definitely drug related in ≥1% of patients treated with either FOSAMAX 5 mg/day (n=161) or FOSAMAX 10 mg/day (n=157) or placebo (n=159) were *Gastrointestinal*: abdominal pain 1.9%, 3.2%, and 0.0%; acid regurgitation 1.9%, 2.5%, and 1.3%; constipation 0.6%, 1.3%, and 0.0%; melena 0.0%, 1.3%, and 0.0%; nausea 1.2%, 0.6%, and 0.6%; diarrhea 0.0%, 0.0%, and 1.3%; and *Nervous System/Psychiatric*: headache 0.0%, 0.6%, and 1.3%, respectively. The overall safety and tolerability profile in the glucocorticoid-induced osteoporosis population that continued therapy for the second year of the studies (FOSAMAX: n=147) was consistent with that observed in the first year. *Paget's disease of bone*. In clinical studies (osteoporosis and Paget's disease), adverse experiences reported in 175 patients taking FOSAMAX 40 mg/day for 3-12 months were similar to those in postmenopausal women treated with FOSAMAX 10 mg/day. However, there was an apparent increased incidence of upper gastrointestinal adverse experiences in patients taking FOSAMAX 40 mg/day (17.7% FOSAMAX vs. 10.2% placebo). One case of esophagitis and two cases of gastritis resulted in discontinuation of treatment. Additionally, musculoskeletal (bone, muscle or joint) pain, which has been described in patients with Paget's disease treated with other bisphosphonates, was considered by the investigators as possibly, probably, or definitely drug related in approximately 6% of patients treated with FOSAMAX 40 mg/day versus approximately 1% of patients treated with placebo, but rarely resulted in discontinuation of therapy. Discontinuation of therapy due to any clinical adverse experience occurred in 6.4% of patients with Paget's disease treated with FOSAMAX 40 mg/day and 2.4% of patients treated with placebo. *Laboratory Test Findings*— In double-blind, multicenter, controlled studies, asymptomatic, mild, and transient decreases in serum calcium and phosphate were observed in approximately 18% and 10%, respectively, of patients taking FOSAMAX versus approximately 12% and 3% of those taking placebo. However, the incidences of decreases in serum calcium to <8.0 mg/dL (2.0 mM) and serum phosphate to ≤2.0 mg/dL (0.65 mM) were similar in both treatment groups. *FOSAMAX PLUS D™ (alendronate sodium/cholecalciferol)*: In a fifteen week double-blind, multinational study in osteoporotic postmenopausal women (n=682) and men (n=35), the safety profile of FOSAMAX PLUS D was similar to that of FOSAMAX once weekly 70 mg.

**Post-Marketing Experience.** The following adverse reactions have been reported in post-marketing use with alendronate: *Body as a Whole*: hypersensitivity reactions including urticaria and rarely angioedema. Transient symptoms of myalgia, malaise, asthenia and rarely, fever have been reported with alendronate, typically in association with initiation of treatment. Rarely, symptomatic hypocalcemia has occurred, generally in association with predisposing conditions. Rarely, peripheral edema. *Gastrointestinal*: esophagitis, esophageal erosions, esophageal ulcers, rarely esophageal stricture or perforation, and oropharyngeal ulceration. Gastric or duodenal ulcers, some severe and with complications have also been reported (see WARNINGS, PRECAUTIONS, *Information for Patients*, and DOSAGE AND ADMINISTRATION). Localized osteonecrosis of the jaw, generally associated with tooth extraction and/or local infection, often with delayed healing, has been reported rarely (see PRECAUTIONS, *Dental*). *Musculoskeletal*: bone, joint, and/or muscle pain, occasionally severe, and rarely incapacitating (see PRECAUTIONS, *Musculoskeletal Pain*); joint swelling. *Nervous system*: dizziness and vertigo. *Skin*: rash (occasionally with photosensitivity), pruritus, rarely severe skin reactions, including Stevens-Johnson syndrome and toxic epidermal necrolysis. *Special Senses*: rarely uveitis, scleritis or episcleritis.

For more detailed information, please read the Prescribing Information.

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functions; truly, the Internet has become a vital link in health-care information technology.

An ASP system depends on the Internet, whereas client-server applications require a dial-up modem connection or other Internet connectivity to obtain information from outside sources. I recommend purchase of broadband Internet connectivity because it facilitates transmission of large files, such as images and data-rich documents.

**Hardware.** All EMR require computers for data entry. One attractive option for a medical practice is the TabletPC, which is available from several manufacturers and which uses the Windows XP Tablet PC Edition operating system. Combined with a secure wireless network for moving from room to room, the TabletPC is a technological breakthrough for physicians to document information in a clinical setting. It permits cursive data entry using a special electronic pen, voice recognition entry, and keyboard entry. Whereas a desktop computer places a barrier—the monitor or screen—between physician and patient, a TabletPC emulates the flat, horizontal surface of a paper chart or clipboard.

Importantly, a TabletPC has all the functionality of a desktop computer. Although workflow varies from practice to practice, it can be said generally that most clinical personnel work best with a TabletPC because of its mobility and most clerical personnel work easily with a desktop computer.

The price of a TabletPC? Two to 4 times that of a desktop computer.

**Infrastructure.** Other devices—printers, scanners, wireless networks, digital cameras—are required to operate an EMR system. A practice that uses a client-server application must purchase a data server. One with a system that operates by remote access either requires a virtual private network (VPN) for secure Internet connection or must install an emulator (such as Citrix).

**People.** Physicians and staff in the

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**A TabletPC is a valuable hardware option for clinical staff because of its portability, versatility, and unobtrusiveness**

## What are the 2 types of EMR?

The 2 primary configurations of an electronic medical records system reflect the way that the system holds, handles, and delivers data.

**Client-server application.** This type of EMR resides on-site. The medical practice owns the software and hardware and is responsible for data backup, disaster recovery, database maintenance, security, Internet distribution for remote access, and information technology (IT) support. The practice is responsible for loading maintenance and upgrade updates into computers.

Client-server applications are usually sold as an upfront purchase with annual upgrade and maintenance fees that are 18% to 22% of initial cost.

Because the cost of EMR downtime is so high to a practice, you must budget for professional IT staff to establish and maintain high-availability (redundant) servers, Internet access, business continuity plans,

network and database administration, security and intrusion detection plans, and data backup.

**Remote-hosted system.** An Application Service Provider (ASP) system is hosted from a remote data center and distributed through the Internet. Upgrades are deployed regularly to subscribers by the vendor, also by way of the Internet, without need for the practice to install disks or make changes to the server. Data are stored at data centers and backed up in real time. Data backups are maintained at remote sites for disaster recovery. An ASP system enables physicians to have access to patient records at any location that has Internet availability.

ASP systems are usually sold by monthly subscription, which includes fees for upgrades, support, maintenance, security, data backup, and data storage. They are especially attractive to small or medium-sized practices (as many as 30 physicians).

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**Ask vendors for a demonstration of their EMR system that emphasizes high-frequency daily tasks of your staff**

practice are always the key to success when implementing an EMR system. Consider a vendor's ability to assist with the human variables of change management when you assess systems. Even the best EMR cannot save a practice from a poorly planned and executed transformation.

### Going shopping

Many physicians want an EMR system to support the conventional process in their practice. *This is a prescription for failure!* Instead, evaluate the design of an EMR system for its ability to facilitate change in the process and in roles, and to eliminate manual functions and analysis of data.

One EMR system may appear to be the same as the next, but differences are revealed in the way that they optimize workflow. Generic systems may support several primary care medical specialties well, but may impose inefficiencies in other specialties—particularly in niche specialties. Similarly, a specialty-specific system works well for the specialty for which it was designed but is inefficient in

another specialty. Approximately 80% of clinical workflow needs may be met by a generic EMR system, but the 20% that are specialty-specific can make the difference between success and failure.

Ensure that the sales presentations you attend address:

- the needs of your practice
- the criteria for success that you defined during planning.

Require vendors to provide a demonstration that emphasizes the high-frequency daily tasks of your staff, such as documentation of new and return OB patients, annual gynecologic exams combined with gyn problems, collection of histories, and review of lab results. A well-designed EMR, especially one specific to your specialty, should be intuitive and should not disrupt the workflow.

When you arrive at a choice of an EMR system, assess the learning curve that you'll have to climb for the system to become fully functional. Remember that salesperson? He, or she, gave a slick presentation but you didn't settle for a dry description; you were sure to try the system live to discover how easily you can learn to navigate its functions.

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## At last: Implementation and training

EMR vendors develop implementation and training programs to establish their system in a practice and bring it live. These programs are based on vendors' experience with their product.

As you prepare for your EMR system, keep this in mind: One that's been well-designed is more than a repository of data. By design, it also reengineers workflow for optimal practice efficiency, safety, and financial management.

### Pearls for welcoming a system

**Use EMR incrementally.** Do not change from paper to electronic abruptly while you, your colleagues, and the staff are learning the system. Vendors of EMR systems design pathways by which physicians ease-in, so to speak, to EMR in a way that minimizes any drop in productivity and loss of revenue. It's wise to ask vendors about their plan for implementation and training before you sign a contract to purchase.

**Expect that it will take 12 to 24 months to convert the practice completely.** The time from paper to electronic records depends on the size and age of a practice. In my experience, the half-life of converting an ObGyn practice is approximately 15 months; by 24 months, the records of approximately 95% of active patients will be entered into EMR.

**Don't scan all paper records into EMR.** Scanning indiscriminately is expensive, disruptive, and doesn't contribute to ongoing clinical excellence. As part of the conversion process, vendors have methods to enter critical clinical information into the electronic system for uninterrupted use. Instead of wholesale scanning, therefore, be selective and scan only clinically relevant materials—the past several Pap smear results, mammogram reports, operative reports, consultant letters, and similar predefined clinical documents. This usually suffices

for ongoing clinical care and avoids excessive expenditure of time, energy, and money.

## The promise we talk about needs to become actual

As I noted at the outset, fewer than 25% of physicians have EMR, and estimates are that no more than 10% to 15% of ObGyns have adopted a system. Yet experience has demonstrated: A well-designed EMR offers physicians streamlined workflow, the ability to provide better care, and more time for leisure.

To move the flow and utility of medical information properly into this century, the next step, I urge, is for physicians to recognize the value of EMR, set goals for implementing a system, and reengineer their practice for maximal clinical efficiency, patient safety, and financial gain.

### CASE REVISITED

#### Good outcome; no recurrence

One year later, the ObGyn whose practice was in disarray told a different story: "The 'Patient Portal' section of our EMR system is a great time saver. We were amazed at the acceptance and rapid adoption—even our octogenarians love it. The universal access to data is of incalculable value. One of our physicians loves to go home early, have dinner, and then review his charts from home. The EMR improves my recordkeeping, makes encounter documentation more complete, and helps me avoid medication errors. Our billing staff loves the thorough documentation." ■

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### Coming in August

Hear the voices of experience and the concerns of the uninitiated in Part 2 of this article in the next issue of OBG MANAGEMENT

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