

EMR White Paper: A Primer for the Practical-Minded Clinician

Introduction

The “primer” is an old-fashioned concept, a book that covers the basic elements of a subject. Here, then, is a brief primer on EMRs because, for all the literature and discussion of EMRs, surprisingly few start with the very basics, like what are they, what should they do, and which one should I buy (and when).

The subject of EMRs merits an old-fashioned approach simply because there is so much being said about them, many assertions, and many promises. Among what is being said, it may be difficult to sort out the practical first steps, practical to achieve amidst the day-to-day challenges of caring for patients and sustaining an office to continue caring for those patients. First and next steps; these are the objectives of this paper and, if useful, more will follow.

This White Paper is not intended to be a whole book, but it is intended for clinicians and their staff as busy professionals who don't have time to read a whole book, but do need to the basic facts about EMRs, their current importance and practical utility.

How This Primer Works

Objectives:

- **Establish Basic Information**
- **Offer practical recommendations**

The Primer establishes basic information and offer recommendations on where each reader might build from that base. Some information here will be too elementary for some readers, so it should be used accordingly, skimming the easy to prepare for the harder. Each section will have one or more key points highlighted as bullets, so it can also be read in sections or referred to by section. Don't print or copy it all. Only use those sections that capture your attention or apply to some issue or problem you are focused on today. Other parts you can return to tomorrow as needed, since it will be available at all times in its entirety on your SCAN website. As with any “advice from a distance” always make sure it makes sense for your needs and requirements.

The Very, Very Basics

For those who find themselves somewhat bewildered by all the EMR discussions these days, welcome to a very, very large club. Let's start with just the term itself. Despite all the well-informed and knowledgeable resources on the subject, there is even still a lot of inconsistent use of words, descriptions, and terms. Remember, for most, this is a whole new area and it will take time for even the vocabulary to settle in. Meanwhile, some of the most basic terms remain sources of vigorous debate among experts so one needn't worry about finding the territory a bit uncertain to navigate. Nobody has all the answers; nobody knows everything they need to know. If you're feeling uncertain, that is entirely appropriate. All of us are figuring this one at the same time.

If the reader is not among the “somewhat bewildered” or the “uncertain”, though, reviewing key areas of this paper will also work to serve very well nonetheless for two reasons: 1) the EMR landscape is changing rapidly and 2) many people have not looked at EMRs from the point of view of basic business

records and medical records fundamentals which, unfortunately, can be a source of substantial potential problems, implementation failures, and possibly even patient harm or legal risk; “Trust, but verify”.

Terms

Consider first the terms EMR (Electronic Medical Records) and EHR (Electronic Health Records). Even these get used in different and irregular ways. For the purposes of this primer, we’ll refer to all as EMRs, as electronic replacements of your practice’s clinical record. Even in settings where formal EMR standards are being developed, the use of key term can be inconsistent and confusing. There was one authoritative attempt to settle the “What is an EMR vs. an EHR” discussion, also not entirely accepted.¹ This all naturally results from the fact that we’re far from fully adapted to these new tools and capabilities. More specifically, here an EMR will be considered a compilation of hardware and software systems that, at the minimum, support computerized capabilities² to:

1. Create, maintain, and manage patient care records that include:
 - a. All patient care and pertinent records created by the practice itself (including prescriptions)
 - b. Pertinent records created elsewhere (including test reports, consults, discharge summaries, etc.) that are commonly and routinely used in the clinicians’ medical decision making.
2. Exchange important business operations information with a Practice Management (PM) system
 - a. Coding assistance and capture
 - b. Patient demographics consistency
3. Provide basic intra-office messaging, task and event management function, for secure, PHI-appropriate communications for information exchange that may or may not be individual patient-specific.
4. Provide commonly used and key required outputs that include:
 - a. Patient summaries configurable to the practice’s needs (ex: an easily accessible view that summarizes a patient’s active and past problems, past pertinent histories, medications, allergies. Especially handy are indicators of gaps in the patient’s care and the practice’s quality guidelines.)
 - b. Properly detailed and configured encounter notes on demand, electronic or print formats, including appropriate level of associated integrity authentication data.
 - c. Frequently used clinical communications outputs (ex: patient summaries, consult requests or consult reports, and, for those contemplating federal incentives programs, Care Quality data exports)
 - d. HIPAA Security Audit Reports, Release of Records outputs.

Any EMR project is very likely to have a longer list than this one but it is recommended that all lists include these. Indeed, while this may seem a comparatively short list, these are actually very complex functions and include the fundamentals that every system must do to provide a proper platform for thereafter adding more complex functions. If a system cannot properly create and maintain a valid, trustworthy, and user-friendly encounter note, then all the whistles and bells are like putting chrome on a

¹ Garets, Dave, and Davis, Mike, Electronic Medical Records vs. Electronic Health Records: Yes, There Is a Difference A HIMSS Analytics White Paper http://www.himssanalytics.org/docs/wp_emr_ehr.pdf

² Note: It is important to note that just because a computerized system has a particular capability doesn’t require that it is used for all tasks. For example, an EMR must have a way to capture images of paper documents. However, all paper documents need not be in the EMR. A 5 year old discharge summary doesn’t necessarily have to be in the EMR, but key points from it might be entered into a patient record, with a notation that the original is kept elsewhere, maybe even in its original paper form.

car with no wheels. Unfortunately, the current EMR marketplace has some that are heavily chrome-plated but with suspect and missing wheels. We'll return to this point shortly.

Figure 1: Function-Oriented EMR definition with outline of the minimum necessary functional requirements for an EMR system.

Support computerized capabilities³ to:

1. Create, maintain, and manage patient care records that include:

- a. All patient care and pertinent records created by the practice itself (including prescriptions)*
- b. Pertinent records created elsewhere (including test reports, consults, discharge summaries, etc.) that are commonly and routinely used in the clinicians' medical decision making.*

2. Exchange important business operations information with a Practice Management (PM) system

- a. Coding assistance and capture*
- b. Patient demographics consistency*

3. Provide basic intra-office, intra-system messaging, task and event management function, for secure, PHI-appropriate communications for information exchanges that may or may not be individual patient-specific.

4. Provide commonly used and key required outputs that include:

- a. Patient summaries configurable to the practice's needs (ex: an easily accessible view that summarizes a patient's active and past problems, past pertinent histories, medications, allergies. Especially handy are indicators of gaps in the patient's care and the practice's quality guidelines.)*
- b. Properly detailed and configured encounter notes on demand, electronic or print formats.*
- c. Frequently used clinical communications outputs (ex: patient summaries, consult requests or consult reports, , and, for those contemplating federal incentives programs, Care Quality data exports)*
- d. HIPAA Security Audit Reports, Release of Records outputs.*

Welcome to the World of Digital Clinical Records

Objectives:

- **Understanding that EMRs are not yet “Plug and Play”**
- **How (and when) to move forward**

The world of EMRs is truly a diverse one, with so many different EMRs using different technologies, approaches, and widely varying costs. The EMR marketplace is still young, with a lot of competing products out there. Furthermore, despite the availability of technical and functional standards, it will take a while yet before these standards are incorporated into actual EMR designs. For now, then, EMRs are not yet standardized and probably won't be for, in this author's opinion, another 3-10 years. EMR Certification helps narrow the pack some but, at least as of late 2009 and into mid-2010, Certification still

³ Note: It is important to note that just because a computerized system has a particular capability doesn't require that it is used for all tasks. For example, an EMR must have a way to capture images of paper documents. However, all paper documents need not be in the EMR. A 5 year old discharge summary doesn't necessarily have to be in the EMR, but key points from it might be entered into a patient record, with a notation that the original is kept elsewhere, maybe even in its original paper form.

doesn't cover key requirements that every doctor must have, like the ability to create, maintain, and manage records according to known requirements for records and electronic records in general, and for medical records in particular.⁴ Even those systems that have the capability of creating a proper record can be installed or inadvertently used in a way that is problematic and risky, which is a key reason why this primer will be of use; to help steer clear of such pitfalls as you navigate this diverse world.

Although their origins are quite recent, EMRs cannot be called “new” in information technology terms. EMRs have been around for over 30 years, most commonly in Western Europe and, in the US, in large academic and governmental institutions. These have tended to be very large system where everyone uses the same functions the same way, with minimal customization or flexibility. In the US, though, we've generally decided we aren't yet ready for one big national health care system, we like the idea of variety and choice. Since we want variety and choice, we need variety and choice in EMRs. Achieving this is much more difficult than building one big system and telling everyone they have to use it. To have lots of different smaller and more flexible systems, we had to wait until the cost of computing power and software development fell far enough to become affordable to the many different types and sizes of medical practices.

Think about the computer you were using ten years ago and the one you're using today. These changes have been nothing short of incredible. Similarly, An EMR that might cost \$10,000 today would have cost \$10,000,000 ten years ago, and their costs will continue to fall and their sophistication to rise.

Again, for now there is a huge amount of variation in EMRs. They range from old, reputable, and expensive, to newer, less expensive, shorter track record. Some are installed in computers in the purchaser's office, others are accessed over the internet, and some involve a mixture of both. For the purpose of the busy medical office though the most important attribute is not the technology but the usability; a fancy system that nobody understands can be worse than no EMR at all. Reportedly, up to one third of EMR implementations fall short of goals or fail completely, but well-planned and supported implementations fail much less.⁵ This is testimony to the importance of making sure the acquired system works and meets the actual daily and practical needs of the staff. Being able to create visually attractive color graphs of a patient's blood pressures over time may be impressive but taking 10 clicks to find the most recent lab test, which used to always be on top of the lab section of the paper chart, will quickly kill enthusiasm for the system.

Inevitably, , as EMRs are becoming more affordable, they will become more common which, in turn, will speed their improvement to becoming safe and reliable. Unfortunately, part of that process will be doctors, nurses, and other clinicians finding out that their records, when challenged, won't hold up. Such events will appear in the press and in the legal system, with the unwary innocent caught in the process as

⁴ Two examples: Current Certification, using 2009 CCHIT requirements, will, after long delay, include a basic requirement for all records management-retention of the original version of an amended or corrected record. Few would consider modifying a finalized version of a medical record, but that is permitted under CCHIT requirements through 2008 and until a product is Certified against 2009 requirements. Accurate assignment of authorship in display, electronic or printed versions of a multi-author record is not currently required but is “roadmapped” for the future. Both of these are long-standing requirements for all legal business records types, including medical records, for admissibility purposes.

⁵ Goroll, Allan H., MD, Simon, Steven R., MD, MPH, Tripathi, Micky, MPP, Ascenzo, Carl, BS, Bates, David, MD, MSc, “Community-wide Implementation of Health Information Technology: The Massachusetts eHealth Collaborative Experience,” in Journal of the American Medical Informatics Association (JAMIA), Vol. 16, No. 1, Jan/Feb 2009, pp. 132–139. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2605598/pdf/132.S1067502708001850.main.pdf>

well. Again, that is why this Primer focuses on the very basics functions required for a reliable EMR, to make sure that the reader can make an informed and educated decision among the many products available. The system chosen must meet basic functional requirements and it must be used correctly as a record system. Until EMRs comply with EMR standards, it will remain the purchasers' and users' choice and duty to make sure what they're buying will meet their clinical needs and their business and medical records requirements. For now, if you have seen one EMR, you have seen just one EMR. Every single one has significant differences from the next one. Furthermore any given EMR can be installed in so many different ways that the same system in one place can be set up very different in another.

Is it time to move into the world of digital clinical records?

Simply, yes, it is time to plan that move. There is one circumstance, though, where you should necessarily plan on selecting, implementing, and using one within the next 9-12 months and that is if you are starting a new practice "from scratch". For existing organizations the practice assessment and planning phases are absolutely necessary, to minimize the disruption and productivity losses for patient care. There are so many differences among EMRs, and since nobody is protecting you against a choice that doesn't work out, how (and when) to select EMR is critical. The most important "when" is when there is understanding of, in a given specific practice, what functions are needed to improve patient care, solve real problems, and improve your practice's operations sufficient to justify the monetary and "headache" costs.

Conversely, unless an office is planning to cease operations in 5 years or less, do begin today evaluating and planning because, while still small, the body of knowledge on care quality improvement with EMRs is growing. In that cause alone implementing an EMR in time is both operationally sound and a professional duty, but again only in due course with a plan, knowing what problems the EMR is intended to solve and what improvements it is intended to support. Again, unless the situation is a brand new practice, the planning and requirements assessment process will take at least a 6-12 months. During that time EMRs will only improve further, making it a win-win all around.

That is the other main purpose for this series of essays, to outline the simple steps to take to identify what you need from any EMR you might buy, and then make sure that's what you get. Currently there is no entity enforcing minimum Standards⁶ for all EMRs, so it is up to you to make sure that those standards that do apply to you, like business records and medical records requirements, are met by whatever system you have or choose.

Why All The Push for EMRs Now?

Objectives:

- **Understand why the US government is pressing you now**
- **Maintaining focus on improving patient care and improving practice operations**

For a practice already busy seeing patients, a new cost and complication like an EMR nonetheless makes good sense if it helps improve patient care, improves office operations, or both. Right now relatively few medical practices are using EMRs and there are many reasons for that. Before addressing those reasons, though, let's look at the "big picture" reasons why the Federal Government is now pushing them

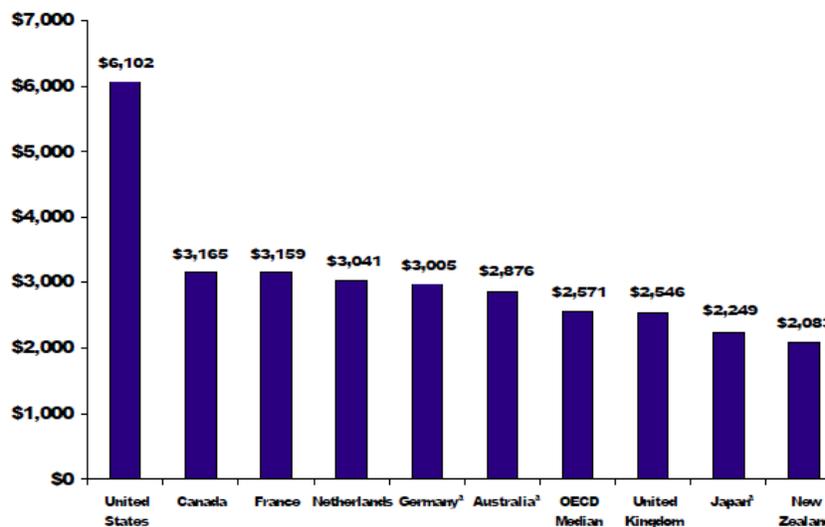
⁶ Comment: It is accurate to say that there are no minimum requirements for an EMR. There are minimum requirements to receive subsidy funding but if a given EMR doesn't meet them, it doesn't mean you cannot use it, it only means you don't get the subsidies or the other incentives.

forward so hard, first with a carrot (paying incentives to help cover the costs) then later with a stick (eventually cutting payments to those without EMRs) What's the hurry?

The Push From Washington DC and Sacramento: The Big Picture

Federal and State Governments are hurrying EMRs along in the hope that they'll help cut health care costs. Those costs are enormous and expected to grow even more unless something changes soon and of those enormous costs, half are paid by Federal and State governments. For States, Health Care is tied with Education for the number one spot on their costs. The problem isn't just that we're just paying a lot of money for health care, it's also two more factors: We pay two to three times more compared to other countries but we get either only slightly better or worse results.

Chart II-1
Health Care Spending per Capita in 2004
Adjusted for Differences in Cost of Living



Cylus, Jonathan, and Anderson, Gerald F., Multinational Comparisons of Health Systems Data 2006, Johns Hopkins University, May 2007, p. 14.⁷

This trend, rising costs and shrinking results, with widening performance gaps compared to other countries, means that we're becoming uncompetitive as a country. Furthermore, it isn't just the absolute dollar cost, it is also what economists refer to as "Opportunity Cost", the fact that a dollar spent on health care also loses the opportunity to spend it on, say, education or improved mass transit systems or to leave those dollars in the pockets of individuals to save or spend as they want.

The people of the United States, including all the people who work in the health care industry, need for that industry to improve because, while some parts are going great, others are doing very poorly. Some parts are very efficient, and some are not only inefficient, but dangerous, with thousands injured or dead yearly because of mistakes. Add up all the problems and the result is that we the people are not getting our money's worth from our collective dollars and so we spend more than necessary to get enough. Money we spend on health care isn't getting spent on building more modern factories, improving schools,

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or repairing roads, so then our factories become obsolete, our schools don't keep up, and our roads and bridges fall apart. So we need to do better, but how do we define "better"? We define "better" with information, where we measure what we are doing, and we compare that with what we've decided is "better", and try different ways of doing. Whichever way gets us results that are "better", that is the "better" way. To do that, though, requires better information.

There is some general evidence that information technology can improve care and improve clinical operations. However, it's not like a straightforward change, such as it takes an hour to get to work, but when "technology" is applied (like a bicycle), then it only takes 10 minutes. Even in such a simple case, there can be complexities and complications? What if you've never ridden a bicycle? What if your walking route is over rough, rocky ground and the bike route is twice or three times as long? What if the bike doesn't work right and the nearest repair shop is 10 miles distant?

Once you know what you need then just add technology?

Unfortunately, there is no just thing as "just add technology", because technology alone won't give the desired improvements, just as an EMR, to be a success, should and must be much more than a computerized substitute for your paper chart. Furthermore, what you end up calling your EMR is more likely to be several different systems that all operate together. This isn't significantly different from having several "systems" on your home computer; one for email, another for word processing, yet another for downloading pictures from your digital camera, with the ability to send information from any of these to another device, like a printer.

Some readers will be old enough to remember a time not long ago when getting your printer to work with your computer could be difficult, and some software didn't work well with others. In a way, this is not unlike the state of EMRs today; there are lots of components and lots of programs, and one isn't necessarily compatible with another. For example, you may have an electronic practice management (PM) system that you use already, and you want to add an EMR. Not every EMR will work well with your PM system and even a PM system that works with one particular EMR may not completely work with it; your PM system may be able to receive information (unidirectional interface or integration) from your EMR, but not also send information back to it (bidirectional). These matters are best sorted out in the planning stages or they can become a major cause of future headaches as we will later see. If you have other systems you rely on already, like laboratory test order entry and results retrieval, these also may or may not work with a given EMR and may cost substantially more to install and to maintain.

Planning the first small steps

Three attributes recur in evaluation of successful EMR implementations: Planning, Champions, and Support from Leadership. There are a number of good tools available⁸ for planning EMR implementations and assistance identifying goals and objectives that will help inventory how an EMR will support improvements in your practice. Remember, it's these improvements that must be understood and measured to judge whether you should move implement sooner or later, but in all cases now is the time to begin the planning.

This, then, brings us to the first tasks as you consider migrating to an EMR:

⁸ Each State's Quality Improvement Organization built a library of EMR Implementation Tools under the Doctor's Office Quality-Information Technology (DOQ-IT) Program ending early 2009. These have been developed and improved in the course of actual EMR implementations.

- Identify who is going to be in the EMR Readiness Group that will plan the first steps.
- Then, begin to collect information on two basic questions:

Question 1: What computerized or computer-installed functions do you and your office staff use now? (You may use a lot more than you first think.)

Examples:

- Practice Management software for patient appointments, electronic billing
- Dictation/transcription
- Voice recognition
- Laboratory services ordering and/or results retrieval
- Electronic communications (such as email, electronic reminder phone calls, etc.)
- Electronic charge capture for hospital rounds
- Electronic prescribing
- Registries

When you add an EMR to your practice, it works best when all electronic functions are connected and it works worst when none are connected, so you end up entering the same information (like a prescription) into more than one system.

Question 2: Two parts: What practice or clinical care issues is the EMR intended to address and how will you identify (measure) improvements to know you've been successful?

These first steps will be built upon in the months ahead. For the purposes of this first paper, though, we'll conclude with reading assignments, in preparation for our next one, on practical steps for making sure you EMR meets all your medical records system needs.

Reading List (all available free)

1. AHIMA e-HIM Work Group on Maintaining the Legal EHR. "Update: Maintaining a Legally Sound Health Record—Paper and Electronic." *Journal of AHIMA* 76, no.10 (November-December 2005): 64A-L. Available on the AHIMA website by search or the direct link below:
http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_028509.hcsp?dDocName=bok1_028509
2. For general rules on required documentation content, see CMS's 1995 or 1997 Documentation Guidelines for Evaluation and Management Services
http://www.cms.hhs.gov/MLNEdwebGuide/25_EMDOC.asp
3. See the October 2009 Presentations from the SCAN Education Seminar, available to you on the SCAN website:
 - a. Achieving Meaningful Use of EHRs by Dr. Paul Tang
 - b. EHR Documentation Pitfalls by Dr. Reed Gelzer

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