

# Electronic Health Records chicken soup or rotten egg?

Daniel J. Vreeman, PT, DPT, MSc

*Assistant Research Professor, Indiana University School of Medicine  
Research Scientist, Regenstrief Institute*

## Objectives

1. Explain the current forces promoting adoption of information technology
2. Appreciate the kinds of problems that can be improved with more judicious use of health information technology
3. Discuss the key factors for success, as well as important barriers to implementing electronic health record systems in rehabilitation
4. Articulate at least one way that you could use health information technology to improve care

## Course Outline

### **Purpose of this document**

This document contains the main themes of the course in a concise narrative form. Obviously, it isn't my slide deck, because they wouldn't be very helpful without me to explain them - they are designed to *supplement* the presentation, not *substitute* for the presentation.

## Welcome to the future

Someday, somewhere we'll practice in a healthcare environment where complete, longitudinal information *follows the consumer* wherever they go throughout the healthcare system. We'll have care that is *value-based* and actually *coordinated* across settings. Healthcare decisions will be made together by patients and providers with information tools that *assist* and *guide* them in the process. As a result of this new reality, we'll have fewer errors, waste, and variations in care while at the same time actually have a system that is centered around the most important participant - the patient. Oh, and it will cost a whole lot less than the system we have now.

## What does this have to do with information technology?

Good question. Actually, a lot of people, including President Obama, President Bush (before him), and the APTA are now convinced that electronic health records (EHRs) and other uses of health information technology (HIT) are essential to achieving that kind of imagined health

system.<sup>1,2</sup> It was way back in the 1960's that we had the first scientific studies of computers in healthcare and twenty years ago the Institute of Medicine first said that EHRs are essential to a decent healthcare system, but it wasn't until 2003 that the US Department of Health and Human Services really started promoting the use of HIT. Since then, lots of folks have jumped on the HIT bandwagon, including having \$20 billion in the ARRA legislation to promote adoption of HIT.

So, you might ask yourself are these things a likely probability or complete fantasy:

Data available to you *anywhere*.

Electronic *orders, consults, referrals*.

Clinical care data that is easily used for *measuring quality, conducting research, benchmarking...*

## Are we just talking about electronic documentation systems here?

Actually, probably not. When we say "EHR" we are talking about a system that gathers information from instruments, clinicians, and patients, stores the data (in a reusable and retrievable format), and then delivers that information back to clinicians. It is probably best thought of as a suite of applications, and encompasses way more than just electronic documentation. EHRs have core functions that store health data, receive electronic results, send out electronic orders, have logic modules to provide decision support to clinicians, support administrative and patient-focused functions, and enhance population health.

How this can work is by having the individual provider/organizational EHRs connect to each other into a national exchange via *shared technologies and policies* that create a *network of networks*. Don't worry, we aren't talking about a gigantic central database, everyone using the same exact system, or a "rip and replace" strategy. This national network will work by evolving the systems we already have and expanding the adoption of technologies that have *interoperability* - meaning that they can communicate seamlessly with each other.

Although we are a ways off from having such a national health information network, there have been examples of success at a regional network. The Indiana Network for Patient Care, created by investigators at the Regenstrief Institute, is one such example that connects data from more than 100 source systems into a single virtual patient record used in the care of more than 11 million patients.<sup>3</sup>

## What are the big stumbling blocks?

---

<sup>1</sup> <http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf>

<sup>2</sup> [http://www.apta.org/uploadedFiles/APTAorg/About\\_Us/Policies/.../Support.pdf](http://www.apta.org/uploadedFiles/APTAorg/About_Us/Policies/.../Support.pdf)

<sup>3</sup> <http://www.ncbi.nlm.nih.gov/pubmed/16162565>

Achieving a comprehensive national health information infrastructure has been stymied by the relatively low adoption rate of EHRs. Currently, about 40% of office based physicians use any kind of EHR, but if you look a little closer at the functionality of those systems, only 20% meet a definition of a “basic” system and about 6% count as a “fully-functional” system (i.e. one with decision support capabilities, interoperable connections, etc).<sup>4</sup> Another large barrier is the uncertain financial return on investment. Typically, providers are the ones who bear the cost of implementing such systems, but the health benefits and cost savings are realized by other parties, i.e. insurance companies and patients. A large concern for several advocacy groups are worries of privacy, confidentiality, and security of health data. I agree with McDonald who argues that we should balance risk and reward when it comes to such polices: at the national level where the risks are high and data needs low, new barriers to access are likely a good idea, but at the local level where the risks are low and needs high, we should not.<sup>5</sup> Lastly, the lack of messaging (data exchange) and vocabulary standards in our clinical systems presents a real barrier to effective movement of data. Our current situation is very much like the Tower of Babel where each system is a data island that uses its own idiosyncratic names and codes to identify the same information.

## What are the big accelerators of HIT adoption?

The *consumeristic expectations* of speed, convenience, and portability that patients today are bringing towards healthcare environment are on big driver of change as these expectations clash with the current reality that patients move *faster* and *further* than their health information. Likewise the *myriad demands for using health data* in practice management, quality reporting, accreditation, public health, research, and countless other pressures have vividly exposed the complete inadequacy of our paper-based system for meeting these purposes. There is also extremely widespread recognition that *our healthcare system is a financial disaster* with soaring costs and far less than stellar quality. There is a large and growing literature to support the notion that effective use of health information technology can result in significant cost savings to the tune of \$78 billion at the national level<sup>6</sup>, \$3 billion for a system like the VA<sup>7</sup>, and \$4.5 billion for New York state<sup>8</sup>. Finally, the large number of *federal initiatives* promoting HIT adoption are a key accelerator. For example, the ARRA legislation enabled CMS’s EHR “Meaningful Use” program that provides direct reimbursement incentives up to \$63,000 for eligible providers who become meaningful users of certified technology.

---

<sup>4</sup> <http://bit.ly/mf6FDk>

<sup>5</sup> <http://www.ncbi.nlm.nih.gov/pubmed/19276002>

<sup>6</sup> Walker J, Pan E, Johnston D, Adler-Milstein J, Bates DW, Middleton B. The value of health care information exchange and interoperability. Health Aff (Millwood). 2005 Jan-Jun;Suppl Web Exclusives:W5-10-W5-18. PMID: 15659453

<sup>7</sup> Byrne CM, Mercincavage LM, Pan EC, Vincent AG, Johnston DS, Middleton B. The value from investments in health information technology at the U.S. Department of Veterans Affairs. Health Aff (Millwood). 2010 Apr;29(4): 629-38. PMID: 20368592

<sup>8</sup> Hook JM, Pan E, Adler-Milstein J, Bu D, Walker J. The value of healthcare information exchange and interoperability in New York state. AMIA Annu Symp Proc. 2006:953. PMID: 1723857

# The most significant benefit of an EHR

In my view, the most important benefit of an EHR is its potential to improve clinical care through assisting with clinical decision making by providing the right information at the right time and in the right format. Although nearly all clinicians say they want to use evidence-based practice, they all say they lack the time. The reality is that clinicians today face a surplus of information that is **ambiguous, incomplete, and poorly organized**. This is especially problematic because humans are both **imperfect** and **non-perfectable** data processors. EHRs can dramatically help the situation by eliminating the logistic problems, providing easy access to the literature, easy access to the record, but most importantly by providing **tools that help implement EBP at the point of care**. The secret sauce that makes this possible is a logic system that can generate a **computerized reminder** - a computer-based suggestion about care for an individual patient. There is an astonishingly large body of evidence supporting the assertion that computers can change clinician behavior to follow through on their good intentions of following recommended practice by providing them prompts along the way. There are several large systematic reviews of the controlled trials in this area that support this claim.<sup>9,10,11</sup>

## Benefits and barriers of EHRs within physical therapy

Although not studied nearly as comprehensively as in medicine, there is literature to suggest that EHRs have potential benefits for physical therapists.<sup>12</sup> Some of most frequently reported benefits include: **improved reporting, operational efficiency, communication, and data accuracy**. The most frequently reported barriers were the behavior and workflow modification, software or hardware inadequacy, and staff training. Institutions that have implemented EHRs frequently cited **end user participation, data standardization, adequate staff training, and incorporating workflow analysis into the implementation process** as factors for success.

## Getting from here to there

Any kind of social change starts with the simple belief that the status quo is unacceptable and that, just maybe, something could be different. If we're serious about wanting to improve the care we deliver to patients, we're going to have to get in the game and start using EHRs. But, we'd do well to be mindful of the complexity that's involved and pay attention to the lessons we can glean from the existing literature about challenges and unexpected consequences that can happen

---

<sup>9</sup> Garg AX, Adhikari NK, McDonald H, et al. Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. JAMA. 2005 Mar 9;293(10):1223-38.

<sup>10</sup> Chaudhry B, Wang J, Wu S, et al. Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. Ann Intern Med. 2006 May 16;144(10):742-52.

<sup>11</sup> Buntin MB, Burke MF, Hoaglin MC, Blumenthal D. The benefits of health information technology: a review of the recent literature shows predominantly positive results. Health Aff (Millwood). 2011 Mar;30(3):464-71. PubMed PMID: 21383365.

<sup>12</sup> Vreeman DJ, Taggard SL, Rhine MD, Worrell TW. Evidence for electronic health record systems in physical therapy. Phys Ther. 2006 Mar;86(3):434-46; discussion 446-9. Review. PubMed PMID: 16506879.

along the way. As a profession, we're also going to have to expand rapidly the pool of physical therapists with expertise in informatics. These people can help us navigate the waters, design systems that meet the needs of physical therapists, and rigorously evaluate the extent to which they actually improve care. I believe that our education programs should work to establish informatics as a foundational domain and incorporate core informatics competencies into our curricula.<sup>13</sup> But, we also shouldn't delay in partnering with health informatics professionals so that we can start evaluating the efficacy of informatics interventions in physical therapist practice, education, and research.

The APTA has a number of current initiatives<sup>14</sup> to help members adopt electronic health records. In the near future they'll publish an EHR toolkit with resources on choosing a system, implementation tips, and more. The Technology SIG of the Section on Health Policy and Administration Section is a hang out for people looking to "make it easy to do it right" through use of technology like EHRs.

To get from here to there, it certainly won't be just the lobbyists, APTA staff, or even the government. We'll need everyone's contribution. If I've convinced you that "computer + human" > human, you're in this too. What can you do?

## Conclusion

Interoperable EHRs can improve clinical decision making and support reuse of data for quality, administrative, and research purposes.

## Open Discussion

Audience questions, responses, and discussion.

---

<sup>13</sup> Wilkinson SG, Chevan J, Vreeman DJ. Establishing the centrality of health informatics in physical therapist education: If not now, when? *J Phys Ther Educ.* 2010;24(3):10-15.

<sup>14</sup> <http://www.apta.org/EHR/>