PATIENT HEALTH INFORMATION MANAGEMENT: SEARCHING FOR THE RIGHT MODEL

Posted on July 17, 2009 by Administrator

Category: Electronic Records
Tags: ASTM Continuity of Care Record, Computer-based Patient Record, Electronic Medical Record, Electronic Patient Record, HL7 Clinical Document Architecture, HL7 Electronic Health Record Functional Model, Patient Health Information, personal health record
Abstract

Accurate and timely health information is a crucial element in the medical decision making process during a medical encounter. Inadequate or misleading patient health information can lead to medical errors, inaccurate decision making, and increased cost. Providing physicians with access to every detail of a patient’s medical history is difficult.

Striking the balance between adequate and effective amounts of information is difficult. The Personal Health Record and Continuity of Care Record have emerged as concepts to support that balance.

This paper reviews recently published literature on (1) approaches to personal health information management, (2) distinctions between terms and definitions describing patient health information, its format, its availability, and its accessibility, (3) guidelines, studies, or standards to support the rationale of patient information data elements that should be available to the provider for any medical encounter, and (4) identification of the most important needs for patient health information that should be addressed. The purpose of the review is to clarify the benefits and detriments of the different approaches as well as to provide some recommendations for the right model of patient health information management, focusing on the idea of the appropriate health information being available when needed.

Keywords: ASTM Continuity of Care Record, Personal Health Record, Patient Health Information, HL7 Clinical Document Architecture, HL7 Electronic Health Record Functional Model, Electronic Medical Record, Electronic Patient Record, Computer-based Patient Record

Introduction

Recently, much attention has been paid to interoperability of medical record systems to allow patient information to be available, accessible, and shared across organizations and with the patient. When President Bush, in his State of the Union Address on January 20, 2004, announced his plan to ensure that most Americans have electronic health records within the next ten years, he laid out a framework for this effort and underscored the importance of making patient health information electronically available “at the time and place of care, no matter where it originates.”

Over a year later, the National Committee on Vital and Health Statistics (NCVHS) responded to President Bush’s vision with a report on Personal Health Record (PHR) systems that “describes initial findings from national hearings covering the many types of systems referred to as ‘Personal Health Records,’ suggests areas for further exploration, and offers twenty recommendations for… consideration.” In this letter, the NCVHS pointed out that “there is no uniform definition of ‘personal health record’ in
industry or government, and the concept continues to evolve. Experts often use the concept of the PHR to include the patient’s interface to a healthcare provider’s electronic health record. Others consider PHRs to be any consumer/patient-managed health record. This lack of consensus makes collaboration, coordination and policymaking difficult. The ever-increasing number of different products available on the market, emerging new standards, and the disparities among healthcare institutions only add to the complexity of the matter. Therefore, the purpose of this paper is to clarify and categorize different approaches to the idea of having the appropriate patient health information available when needed and to recommend the best model.

**Background**

The Institute of Medicine (IOM) estimates that of the 98,000 Americans dying each year from preventable medical errors, one-fifth of these errors are linked to the lack of prompt access to patient health information. Recent experiences with disasters like Hurricane Katrina caused the disappearance of thousands of medical records. Patients also commonly leave clinics with no tangible information about their medications, goals, or plan of treatment. Therefore, it is important to review the literature to determine the best approach to patient health information management and to recommend a model that would address the problems mentioned above.

**Process for Selecting Material**

The aim of the search was to find the most recently published articles on the subject of patient health information management. In order to concentrate the search on electronic health records and their availability, we used the terms electronic, patient, health, information, availability, and record to search the Internet. The Google search produced 25,100,000 items, and the PubMed search produced 33 items. From the initial review, we were able to select terms pertaining to patient health information management that were most frequently addressed in these articles: Electronic Health Record (EHR), Electronic Patient Record (EPR), Electronic Medical Record (EMR), Personal Health Record (PHR), ASTM Continuity of Care Record (CCR), Patient Medical Record Information (PMRI), interoperability, Master Patient Index, Regional Health Information Organization (RHIO), Health Information Exchange (HIE), Smart Cards, Health Information Management (HIM), Medical Internet, Computerized Patient Record (CPR), Computer-based Patient Record (CPR), and Computerized Medical Record (CMR). We used each of these terms to obtain articles to further explore each of these concepts. By reviewing the findings, we were able to determine that some of these terms are used interchangeably to describe the same or similar concepts. We were also able to select seven terms that represent different approaches or serve different roles in the process of patient health information management.
**Body of Review**

There are thousands of articles proposing different types and methods of making patient health information available. Many terms are used to describe these methods.

*Table 1* presents terms and definitions pertaining to patient health information storage and management. The first three terms (ASTM CCR, HL7 CDA, and HL7 EHR System Functional Model) represent standards. The first standard (ASTM CCR) focuses on the content of patient health information, and the second (HL7 CDA) focuses on the format of patient health information. ASTM (American Society for Testing and Materials) International is one of the largest voluntary standards development organizations in the world—a trusted source for technical standards for materials, products, systems, and services. Health Level Seven (HL7) is an ANSI-accredited, not-for-profit standards-development organization whose mission is to provide standards for the exchange, integration, sharing, and retrieval of electronic health information; support clinical practice; and support the management, delivery, and evaluation of health services. Since we were trying to determine what information should be available rather than how it should be formatted, we focused on ASTM CCR. The third standard (HL7 EHR System Functional Model) "provides a reference list of functions that may be present in an Electronic Health Record System (EHR-S)." The next terms (EHR, EMR, CPR, EPR) represent different types of electronic patient health records created and maintained by healthcare institutions. The last term (PHR) represents patient health records maintained by a patient or healthcare consumer. Concentrating on the idea of what patient information should be readily available, we divided these concepts into three categories representing three models of patient health information management: (1) the electronic health record group model (EHR, EMR, CPR, EPR), (2) the Personal Health Record (PHR) model, and (3) the Continuity of Care Record (CCR) model.

**The Electronic Health Record Group Model**

Although there are differences between Electronic Health Records (EHR), Computer-based Patient Records (CPR), Electronic Medical Records (EMR), and Electronic Patient Records (EPR), all these terms describe systems that provide a "structured, digitized and fully accessible record." The main idea behind these systems is that they will be linked together by a patient identifier. Unfortunately, it is very unlikely that the concept of national patient identifiers will be ever accepted in this country. Without such identifiers, a full interoperability between different systems would be very complex and realistically unachievable. Therefore, each patient usually has several
disconnected electronic or paper medical records, with duplicated or incomplete information. In addition, the lifelong accumulation of health information may have little value to the current caregiver yet may violate the patient’s privacy.\textsuperscript{12}

The Personal Health Record (PHR) Model

The Personal Health Record represents another approach to patient health information, putting the patient in the driver’s seat for managing health information.\textsuperscript{13} (See Table 3.) The common operational method is that a patient chooses one of the many PHR products available.\textsuperscript{14} These PHR products may differ by cost, interface, security, storage methods (Web-based, desktop-based, portable devices), and terms and conditions of service.\textsuperscript{15} Depending on the specifics of the chosen product, either the patient or a designated/authorized person enters or collects the patient’s health information. There are also products offered by the patient’s health insurance plan or employer. For example, a patient’s health insurance plan has knowledge of the patient’s medical activities from claims, which can significantly improve the workflow of managing patient health information.\textsuperscript{16} Thus, the PHR may be a way of coordinating (managing) a patient’s otherwise dispersed health records. Different products have different characteristics, but according to the Markle Foundation Connecting for Health, a PHR should have the following characteristics:

1. Patient-controlled
2. Contains patient’s lifetime health information
3. Contains information from all healthcare providers
4. Accessible anytime and anywhere
5. Private and secure
6. Transparent (traceable access and editing)
7. Interoperable\textsuperscript{17}

Some of the characteristics are difficult to achieve. For example, characteristics 2, 3, and 7 are limited by the individual’s ability to track all the past health information and by the limited interoperability of current health information systems.\textsuperscript{18} The fact that the patient controls his or her PHR can also be problematic. Tang et al. point out that “it is unlikely that a stand-alone PHR that depends solely on patient input can act as a trusted conduit for transmission of medical record data among clinician offices or health care institutions” and that “while patient-entered segments are desirable for some information and only patients can provide some types of health data, clinicians must also have access to their own past considerations and interpretations, as well as have reliable objective data, if they are to depend on records for clinical decision making. The reliability of patient-entered data depends on the nature of the information per se, the patient’s general and health literacy, and the specific motivations for recording the data.”\textsuperscript{19} Hence the authorship of the PHR is a
limiting element and must be addressed accordingly.

**ASTM Continuity of Care Record (CCR) Model**

There are many EMR, EHR, and CPR systems in use, and there are many healthcare entities that still use paper-based health records. There is a need for a standard that will precisely define what information should be recorded and how it can be transported so that all the systems can interoperate in handling patient health information. The ASTM CCR (see Table 4) was developed to store the most relevant patient information electronically and make it available to all providers, systems, and patients that require this information.20 An important aspect of the ASTM CCR is that it is technology neutral.21 It is an XML-based system; therefore, it is human- and machine-readable and can be displayed in variety of formats (html, Microsoft Word document, or PDF file).22 Another important aspect is its validity: the CCR can be completed only by authorized healthcare personnel.23 It is also important to understand that the CCR is not a clinical document but a collection of clinical documents to summarize information from one or many existing patient health information systems.24

**Discussion**

Based on the reviewed articles, it becomes clear that terms obtained from the initial search fall into three categories:

1. The clinician-controlled, electronic patient health record (CPR, EHR, EMR), owned by a particular healthcare entity (provider, clinic, practice, hospital, etc.), offers limited interoperability and external access but great reliability and a number of useful and helpful functionalities. Although it may be a source of comprehensive patient health information, the limited interoperability may cause a lack of coordination of the patient’s healthcare records. This in turn leads to the currently common situation where a patient has a number of uncoordinated, dispersed paper and electronic health records, lacking one that is reliable and up-to-date, containing the information most relevant to the healthcare provider at any point of care.

2. A patient-controlled, patient-owned, and patient-managed Personal Health Record (PHR) can serve as the coordination vehicle among various sources (records) of patient health information. The patient can obtain his or her health information from various healthcare providers and continually update the PHR. However, patients may not be very diligent about updating the PHR or may use their own judgment about what should or should not be included in the PHR. Therefore, this makes the PHR model highly unreliable and its validity and value questionable.
The ASTM Continuity of Care Record (CCR) is the depiction of patient health information at any given time. It is updated by a provider at the conclusion of a medical encounter. The standards clearly define what type of information should be included in a CCR instance. Some of the data are required; some are optional. The provider decides which of the optional data are relevant and should be included. The patient’s most recent CCR can be printed, faxed, transmitted electronically, or made available on the Internet. It appears to be the best model to make the patient’s most relevant health information available and trustworthy for any provider at any point of care.

Conclusion

There is no one single perfect model or approach cited in the reviewed literature that would handle all aspects of patient health information. It is worth mentioning that every healthcare institution manages a health record (mostly paper-based) for each of its patients. The electronic health record adds many dimensions to the management of patient health information within the healthcare institution. However, the limited multi-enterprise interoperability requires other methods of coordinating patient health information. This is when the other models come into play. When patients embark on the task of managing their own health information, they can use one of many Personal Health Record products available to facilitate this process. Unfortunately, the reliability and validity of the end product can cause it to be of limited value to a provider. The ASTM CCR takes care of this problem by placing the provider in charge of creating the patient’s health summary after every encounter and by clearly defining the content of the document. The versatility of how a CCR can be accessed and transported across different platforms and institutions makes it a valuable model for managing patient health information.

Kamila Smolij, MS, is an instructional designer at Sterling Bank in Houston, TX.

Kim Dunn, MD, PhD, is an assistant professor at the School of Health Information Sciences at the University of Texas.

Notes

3. Ibid.


9. Ibid.


12. Ibid.


18. Ibid.


21. Waegemann, C. P. "EHR vs. CCR: What Is the Difference between the Electronic Health Record and the Continuity of Care Record?"
23. Ibid.

Article citation: Perspectives in Health Information Management 3:10, Winter 2006

Printer friendly version of this article
There are no comments yet.