

Chapter 7

Informatics and Health Services: The Potential Benefits and Challenges of Electronic Health Records and Personal Electronic Health Records in Patient Care, Cost Control, and Health Research – An Overview

Nelson Ravka
York University, Canada

ABSTRACT

Personal electronic health records are seen as a key component to improved health care for patients, empowering motivated patients by giving them access to their own records resulting in increased self-care, shared decision making, and better clinical outcomes. Benefits through electronic record keeping would also accrue to health care providers through the availability and retrievability of data, reduced duplication of medical tests, more effective physician diagnosis and treatment, reduced incidence of prescription errors, and flagging inappropriate drug combinations. Utilizing information technology could also moderate the cost of health care services. Electronic health records would also improve clinical research through access to a large database of patient electronic records for research and determining best practices. Although potential benefits are considerable, many challenges to implementation must be addressed and resolved before this potential of improved health care provision and cost efficiency can be realized.

INTRODUCTION

Personal Health Records (PHRs) and Electronic Health Records (EHRs) are seen as key components to improving health care to patients as well as promoting wellness to the public at large

(Tang, Ash, Bates, Overhage, & Sands, 2006). Electronic health records are digital depositories for clinician records and managed by clinicians or health institutions. Hayrinen et al. describe EHRs as repositories of patient data in digital form, stored and exchanged securely, and accessible by multiple authorized users that contain retrospective, concurrent, and prospective information. Their primary purpose is to support continuing,

DOI: 10.4018/978-1-4666-4321-5.ch007

efficient, and quality orientated health care (Hayrinen, Saranto, & Nykanen, 2008). An advisory panel to the U.S. government's Health Information Technology Adoption Initiative has listed the functions of EHRs as 1) having the ability to electronically collect and store data about patients, 2) having the ability to supply that information to health providers on demand, 3) having the ability to allow physicians to enter patient care orders on the computer, and 4) having the ability to provide health professionals with health care decision making support (Blumenthal & Glasor, 2007). Garde et al. describe EHRs as having the following necessary characteristics:

- **Patient-Centred:** The EHR relates to the patient, not an encounter with an institution.
- **Longitudinal:** A long-term record of patient care.
- **Comprehensive:** Record of care from all health care providers and institutions.
- **Prospective:** Plans, goals, orders, and evaluations are recorded (Garde, Knaup, Hovenga, & Heard, 2007).

Conceptually, PHRs are digital health information vehicles that can be managed by individuals (patients or surrogates) compared to EHRs that are managed by health providers or clinical institutions. Although there is no absolute consensus on what defines PHRs, a description suggested by the Markle Foundation's working group on policies for information sharing between doctors and patients is useful. It describes PHRs as: "an electronic application through which individuals can access, manage and share their health information...in a private, secure and confidential environment" (Markle Connecting for Health, 2004). The National Alliance for Health Information Technology further clarifies an idealized model of PHRs as "an electronic record of health-related information that conforms to a common interoperability standard allowing information to be drawn from

multiple sources while being managed, shared and controlled by the individual" (Kahn, Aulakh, & Bosworth, 2009, p. 369).

There is a range of formats that PHRs can be classified. The simplest is a stand-alone patient-initiated application that is not linked with any other system. The patient enters their own health data using commercial applications. Google Health and Microsoft Health Vault are examples of companies that have introduced such systems. However there is a concern that patients would not keep records up to date in a stand-alone PHR (Tang et al., 2006). Consequently these PHRs could be unreliable instruments for conveying information to clinicians or health institutions. Tang, et al. suggest that although some information can be supplied by patients, clinicians must have access to their own past inputs to assist in decision making. They stated; "[T]he 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." (Tang et al., 2006, p. 122) In a study conducted by Ira C. Denton, 1000 patients were offered their medical information in a stand-alone PHR system. Only 330 accepted. After 10 months, of those who responded to a survey, 37% continued to use the electronic record (Denton, 2001). According to Linda Reed, chief information officer, Atlantic Health; "[M]any people are more willing to keep their Facebook page updated than their medical records" (Page, 2010).

Acknowledging the limitations of stand-alone PHRs that depend on patient-only inputs, a more information reliable model would involve health records that are stored in the patient's EHR. Such a 'tethered' system of provider owned and maintained PHR would consist of a summary of clinically relevant health information that is made available to patients. These systems can include functionalities such as appointment requests and prescription renewals. There can also be an opportunity for patient input that can be uploaded

24 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/informatics-and-health-services/78691

Related Content

Parameterless Clustering Techniques for Gene Expression Analysis

Vincent S. Tseng and Ching-Pin Kao (2006). *Advanced Data Mining Technologies in Bioinformatics* (pp. 155-173).

www.irma-international.org/chapter/parameterless-clustering-techniques-gene-expression/4251

A Particle Swarm Optimization based Hybrid Recommendation System

Rabi Narayan Behera and Sujata Dash (2016). *International Journal of Knowledge Discovery in Bioinformatics* (pp. 1-10).

www.irma-international.org/article/a-particle-swarm-optimization-based-hybrid-recommendation-system/172002

The Avatar as a Self-Representation Model for Expressive and Intelligent Driven Visualizations in Immersive Virtual Worlds: A Background to Understand Online Identity Formation, Selfhood, and Virtual Interactions

Colina Demirdjian and Hripsime Demirdjian (2020). *International Journal of Applied Research in Bioinformatics* (pp. 1-9).

www.irma-international.org/article/the-avatar-as-a-self-representation-model-for-expressive-and-intelligent-driven-visualizations-in-immersive-virtual-worlds/261865

In Silico Analysis of the CST6 Tumor Suppressor Gene

Athanasia Pavlopoulou and Georgios Tsaramiris (2013). *International Journal of Systems Biology and Biomedical Technologies* (pp. 42-58).

www.irma-international.org/article/in-silico-analysis-of-the-cst6-tumor-suppressor-gene/97741

Continuous Description of Discrete Biological Data: Algorithms Based on a Stochastic Flow Model

Serge V. Chernyshenko (2019). *International Journal of Applied Research in Bioinformatics* (pp. 36-49).

www.irma-international.org/article/continuous-description-of-discrete-biological-data/231589