

## Chapter 7

# Optimizing the Use and Adoption of Healthcare Information Systems: A Systematic Review

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### **ABSTRACT**

*Advancements in Information and Communication Technology (ICT) have led to the development of various forms of electronic records to support general practitioners and healthcare providers in capturing, storing, and retrieving routinely collected medical records and/or clinical information for optimal primary care and translational research. These advancements have resulted in the emergence of interoperable Healthcare Information Systems (HIS) such as Electronic Health Records (EHRs), Electronic Medical Records (EMRs) and Personal Health Records (PHRs). However, even as these systems continue to evolve, the research community is interested in understanding how the use and adoption of HIS can be optimized to support effective and efficient healthcare delivery and translational research. In this chapter, a systematic literature review methodology was used not only to explore the key benefits and technical challenges of HIS, but also to discuss the optimization approaches to maximizing the use and adoption of HIS in healthcare delivery.*

DOI: 10.4018/978-1-4666-9882-6.ch007

## **INTRODUCTION**

Advancements in Information and Communication Technology (ICT) have led to the development of various forms of electronic records to support general practitioners and healthcare providers in capturing, storing, and retrieving routinely collected medical records and/or clinical information for optimal primary care and translational research. These advancements have resulted in the emergence of interoperable Healthcare Information Systems (HIS) such as Electronic Health Records (EHRs), Electronic Medical Record (EMRs) and Personal Health Records (PHRs). However, even as these systems continue to evolve, the research community is still interested in understanding:

- What constitutes Health or Healthcare Information Systems?
- What are the key benefits, challenges, and obstacles of using Health or Healthcare Information Systems?
- What optimization techniques and approaches can be used to maximize the use and adoption of Health or Healthcare Information Systems in healthcare delivery?

HIS are powerful ICT-based processes, tools and applications that support effective and efficient healthcare delivery and translational research (Rodrigues, 2010). HIS have the potential to not only support seamless exchange of clinical information, but also improve both service efficiency and effectiveness for both inpatient and outpatient services (Harrison & McDowell, 2008). Hence, the need for optimizing HIS is of great essence in the healthcare industry.

The objective of this paper was to use a systematic literature review methodology not only to explore the key benefits and technical challenges of HIS, but also to discuss the optimization approaches to maximizing the use and adoption of HIS in healthcare delivery. The first part of the paper describes the systematic review methodology. In the second part, the focus is on the overview of HIS and their associated key benefits and challenges in the healthcare domain. The third part focuses on the optimization techniques and approaches to maximizing the use and adoption of HIS to support effective and efficient healthcare delivery and translational research.

## **METHOD**

A systematic literature review, based on peer reviewed articles from 2000 to 2014, was used not only to explore the key benefits and technical challenges of HIS, but also to discuss the optimization approaches to maximizing the use and

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