Chapter 93
The Impact of Healthcare Information Technology on Patient Outcomes

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ABSTRACT

The purpose of this article is to review the existing literature on health information technology (HIT), specifically electronic health records (EHR) and life-long patient records, in order to provide a broad assessment of the current state of this technology in the United States. Relevant literature was reviewed to determine whether key hypotheses were validated. Areas for additional research and development were identified, and a potential path forward was proposed. HIT adoption is a worthwhile effort in the United States, and it is possible for us to enact an interoperable central records system within our current fee-for-service healthcare system. Wide scale adoption will require subsidies and regulatory involvement at the state level, but professional networks may be exploited to speed the rate of adoption. A four-tier architecture with autonomic security systems, properly validated, can provide the infrastructure necessary.

INTRODUCTION

There can be no doubt that one's health is a major factor in quality of life. According to the World Health Organization (WHO), in their online World Bank Statistics, 9.7% of the world's total gross domestic (GDP) product was spent on healthcare in 2014. That equates to trillions of dollars spent annually on the direct delivery of healthcare from skilled health workers. This includes in-patient hospital care, out-patient preventative care, diagnosis and treatment, laboratory testing and imaging, emergency medical services and long-term care. The range of conditions is wide and disparate – everything from acute illness to chronic conditions, prenatal to end of life, physical and mental health. There is no facet of our life that does not, in some way, interact with the healthcare industry at one point or another.

Yet, this important industry does not always deliver the standard of care it ought to. In the United States, annual spending exceeds $2.7 Trillion. This is the highest percentage of GDP for any nation on Earth, and yet our quality of care is ranked 37th in the world by the WHO. Clearly, there is a disconnection between our spending and outcomes (The World Bank, 2017).

The advancement of information technology in health care is pivotal to the guidelines set in the Patient Protection and Affordable Care Act. As health care organizations have become clinically data driven, the need for information systems and IT is imperative (Vo & Bhaskar, 2012). Analysts in IT departments at hospitals play the role in maintaining and implementing systems. Clinical staff members, such as nurses and physicians, play the role of end users and require the skills needed to effectively operate these systems and forms of technology in order to carry out their clinical duties (Najaftorkaman, Ghapanchi, Talaei-Khoei, & Ray, 2015). Key developments in IT include the transformation of the medical record from paper to digital, the use of mobile devices, and the emergence of integrated health care systems that have the capacity for handling the many complexities that the industry has to offer.

Equally impacted are all U.S. employers who offer health insurance to their employees and the dependents of their employees. While employers attempt to contain the trend of health insurance expense, information systems are needed to pinpoint conditions that prove to be the most costly and implement benefit redesign plans to reduce costs and promote wellness. Employers also keep their staff productive by keeping them healthy. In the same light, information systems help employees examine disease management programs that are geared towards steering employees to engage in healthy behavior and seek preventive care regularly. If health care was once described as being technically challenged when compared with other industries, that notion is being put to rest by the progression of IT in the industry (Vo & Bhaskar, 2012).

A potential bridge to creating a level of care commensurate with our spending is the use of integrated health information technology (HIT). It is theorized that increased use of HIT will reduce medical errors, streamline operations, and reduce overall costs while improving healthcare outcomes. In 2009, the US committed to a set of policies called the Health Information Technology for Economics and Clinical Health (HITECH) Act, aimed at spurring widespread use of Electronic Health Records (HER) and a level of interoperability among individual facilities and care providers (Adler-Milstein & Jha, 2014). Related to this Act, President Barak Obama committed $20 billion to computerizing medical records. Yet, adoption of EMR in the United States remains slow, with only 30% of hospitals across the country participating in the Health Information Exchange as of 2012.

This paper will explore the literature documenting the benefits of HIT. Case studies from other countries provide useful insights into the actual validity of theorized and purported benefits. We will explore two such cases. The risks of implementing HIT will be discussed, along with some of the mitigating approaches that can be used to reduce the risk. Finally, we will look more closely at the implementation barriers that have kept this technology from having more impact on our healthcare system.

STUDIES ON PATIENT OUTCOMES

The Patient Protection and Affordable Care Act (PPACA) was signed by President Barack Obama on March 3, 2010 and upheld by Congress on June 28, 2012. The act mandates that all Americans are required to be insured with health coverage or pay a penalty to the government beginning in 2014. Another

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