Chapter 17
Effects of a Home-Based Monitoring Device on Innovation in Healthcare Delivery: A Pilot Study

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ABSTRACT

Information technology has been suggested to improve patient health outcomes and reduce the burden of care. In this study, we explored the effects of collaborative innovation between caregivers and patients on healthcare delivery as a consequence of the use of an IT-based device by patients with atrial fibrillation. Two cardiologists and two nurses were interviewed while questionnaires were mailed to 75 patients querying them about the use of a home-based ECG for remote monitoring. Findings indicated that the caregivers considered the device to enhance the quality of clinical decision-making. Patients found the device to be useful and felt more involved in their own care. However, the introduction of the device presented work overload for the caregivers. Thus, the facilitation of timely diagnostics and decision-making were not realized. IT is an enabler through which innovation in healthcare delivery can be realized, but it must be integrated into work practices to realize potential benefits.

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INTRODUCTION

Information Systems (IS) have long been acknowledged as an enabler to facilitate consumerism in a digital world where information is available with just a click. Organizations are striving to integrate information systems that support numerous business processes, including communication, operations, marketing, customer service, quality assurance, management, and healthcare organizations are no exception. Healthcare is continually evolving with new technologies, organizational arrangements, changes in regulations and policies inherent to this industry. It has been reported that IS has the potential to transform the delivery of care by providing timely and accessible information at the point of care (Hincapie et al., 2011) ultimately to improve operational performance, reduce cost and medical errors, and improve patient outcomes (Menachemi & Collum, 2011; Resnick & Alwan, 2010). Nonetheless, the adoption of Information Technology (IT) innovations in healthcare lags behind other industries and may be attributed to the complexities intrinsic in healthcare (Daim et al., 2008; Shortliffe, 2005).

Innovation drives the pursuit of reduced cost and improved quality of healthcare. Technological innovation offers immense opportunities for both product innovation and process innovation. Product innovation involves the introduction of new goods, and services aimed at predominantly generating revenue. Omachonu & Einspruch (2010) state “process innovation involves the implementation of a new or significantly improved production or delivery method and includes significant changes in techniques, equipment and/ or software” (p.2). Process innovation entails improvement in internal capabilities (Johne & Davies, 2000). As healthcare migrates from organizational to patient centricity, the need for collaboration between patients, caregivers and other stakeholders in healthcare has become essential now more than ever. In essence, the introduction of new technologies in healthcare organizations creates the opportunity for novel means of delivering care and various forms of collaboration to be established between caregivers and patients with a shared vision of improved quality outcomes. Thus, IT-based applications may serve as an enabler for collaborative innovation between caregivers and patients to innovate the process of healthcare delivery.

Chronic cardiovascular diseases, including atrial fibrillation present a growing burden on healthcare because they are associated with increased mortality and morbidity (Braganca et al., 2010; Khoo, 2010). They are also associated with a large percentage of cost due to the relatively high frequency of hospitalizations, emergency visits (Mensah & Brown, 2007; Paré et al., 2007; Pinna et al., 2007), and extended length of hospital stays (Gaikwad & Warren, 2009). The progressive introduction of IT as a tool to innovate healthcare delivery and improve patient outcomes is becoming increasingly significant in the management of chronic diseases (Boriani et al., 2007; Huddleston & Kobb, 2004) for its contribution to enhancing clinical decision-making, physician-patient communication and administrative efficiencies through the automation of manual processes. For instance, the use of a home-based electrocardiogram in the management of cardiovascular diseases has received positive reaction (Piotrowicz et al., 2012). The application of information technology in the management of chronic cardiovascular diseases has been previously discussed in several studies. However, most of these studies have viewed IT applications as tools to support remote monitoring or consultations at a distance. They are mostly concentrated on the contribution of IT to clinical outcomes, including quality of life, mortality, hospitalization, emergency department visits (Martin-Lesende et al., 2011; Takahashi et al., 2010; Mortara et al., 2009; Seto et al., 2012; Chaudhry et al., 2010; Bowles et al., 2009; Winkler et al., 2010; Scherr et al., 2009).

While a number of studies on the innovation process in healthcare have been conducted (Fleu-
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