Chapter 64

Pre–Implementation Case Studies Evaluating Workflow and Informatics Challenges in Private Primary Care Clinics for Electronic Medical Record Implementation

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ABSTRACT

Despite the potential benefits of electronic medical records (EMRs), their implementations have failed in a number of instances because of misfit between the technology design, work practices, workflows, and clinicians' needs. To promote effective design and implementation of an EMR system, the present pre-implementation study modeled the clinical workflow processes in private primary health care clinics and identified the associated gaps, weaknesses, and informatics challenges in the processes. Systematic field observations were performed to collect workflow data. Forty-three health care professionals (16 physicians and 27 clinical assistants) of fifteen private primary health care clinics were studied. The results, presented in a workflow diagram, demonstrate step-by-step details of the clinical work processes, their gaps and weaknesses, and possible improvement opportunities offered by the application of EMR. The workflow model provides important implications that may be applicable to other health care settings that plan to implement EMRs.

INTRODUCTION

An initiative that focuses on implementation of an electronic medical record (EMR) sharing system in both public and private health care sectors in Hong Kong has been launched. Though potential benefits of EMR are evident, it has been a challenge to gain buy-in for the technology from private doctors (Hong Kong Legislative Council Panel on Health Services, 2009) which provide more than 70% of outpatient consultations for the population. Many of them continue to use paper-based medical records; for the few that use electronic records, most do not have data sharing capabilities (Hong Kong Legislative Council Panel on Health Services, 2009). Non-adoption of EMR is a significant concern for patients and health care organizations because its adoption is a prerequisite for benefits of the technology to be realized.

Extant literature has indicated that slow adoption or abandonment of a health information technology (IT) is likely to occur when the technology impedes routine clinical practices or when the design of the technology is not compatible with the users, tasks, or external environment (i.e., misfit between the technology and its sociotechnical system elements) (Lorenzi, Riley, Blyth, Southon, & Dixon, 1997; C. K. L. Or et al., 2009; Tan & Or, 2015, in press). For EMR systems, in particular, their implementations have failed in a number of instances because of misfit between the technology design, work practices, workflows, and clinicians' needs (e.g., Ash & Bates, 2005; Chin, 2006; DesRoches et al., 2008; Sicotte, Denis, & Lehoux, 1998). According to the sociotechnical theories and models for (health) technology implementation (Hendrick & Kleiner, 2000; C. Or, Dohan, & Tan, 2014; Sittig & Singh, 2010), to address the issue of misfit one of the necessary initial steps is pre-implementation workflow and work system assessment since it facilitates understanding of the characteristics and needs of the end-users and work units (McGowan, Cusack, & Poon, 2008; C. Or, Wong, Tong, & Sek, 2014; Samuels, 2008). By understanding the characteristics and needs, practitioners can design the technology in a way that can enhance the technology-user-workflow integration. Indeed, studies assessing workflow and work systems largely via observations for health IT implementation and adoption exist. For instance, Dykes et al. (2005) conducted an observational analysis of workflow to determine how primary care providers interacted with an EMR system. Their analysis led them to establish new adoption and training strategies that resulted in improvement in the adoption of some of the system features. Or et al. (2014) performed field observations and interviews to understand why a clinical information system of a nursing home was abandoned and how work tasks were performed in order to identify factors affecting the implementation of the system. Unertl et al. (2009) modeled the workflow, information flow, and work practices of ambulatory clinics providing chronic disease care by using observational and interview data. Their study led to the development of guidelines for health IT design to support chronic disease care.

The present study aimed to scrutinize pre-implementation clinical workflows in private primary health care clinics in order to address the following questions: 1) what were the major clinical activities in the private primary health care clinics in Hong Kong and the associated gaps and weaknesses as well as informatics challenges in the clinical process; and 2) what would be the focuses when developing an effective EMR system for the gaps, weaknesses, and challenges.

METHODS

Grounded in the theory of sociotechnical analysis of work system (Hendrick & Kleiner, 2000), this study used a direct field observation method to analyze the workflows and possible improvement opportunities.

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