An Application of the Socio-Technical Systems Approach to Implementation of Electronic Evidence into Practice: The Clinical Practice Model Framework

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ABSTRACT

Implementation of electronic evidence into the practice environments of clinical staff is an ongoing challenge in health care organizations. Despite localized efforts to integrate point-of-care technology with clinical practice, system-wide transformation across multiple clinical settings has not commonly occurred. This paper examines a framework designed to guide the implementation of evidence-based practice using technology in health care settings from the theoretical lens of the Socio-Technical Systems (STS) approach. The framework under study is called the CPM Framework™, developed by the Clinical Practice Model Resource Center (CPMRC). The CPMRC is a collaborative consortium of health care providers representing over 300 rural, community, and university settings. The CPMRC developed the Clinical Practice Model (CPM) Framework™ to guide the integration of evidence based CPG’s into the work worlds of clinicians. The authors propose that the CPM Framework is consistent with STS approach concepts, and can serve as an exemplar for other health care organizations seeking to implement technology in a manner that is consistent with established theoretical foundations.

Keywords: CPM Framework, Electronic Evidence, Implementation, Point-of-Care Technology, SocioTechnical Systems (STS) Approach

INTRODUCTION

Billions of dollars have been spent on the purchase and implementation of technology to reduce variability in care practices and harm to patients (Blumenthal, 2009; Braithwaite, Runciman, & Merry, 2010). In recent years the focus of these efforts has become point-of-care solutions, in particular the implementation of evidence-based practice using clinical practice...
guidelines (CPG’s) within the technology to improve the safety and quality of care. CPG’s are designed to encourage consistent, efficient applications of scientific evidence into the daily practice of clinicians. Despite localized efforts to integrate electronic CPG’s into the work world of clinicians, system-wide transformation of health care across multiple clinical settings has not commonly occurred.

Implementation of technology to bring research evidence into the daily practice of clinicians is an ongoing challenge for health service organizations. Implementation decisions such as product selection, method of introduction, and project timelines are often made by non-clinicians working within Information Technology (IT) departments. The end-users, clinicians with expert knowledge of their own practice environments, are then expected to adapt to these decisions. Additionally, technological innovations tend to be highly specific to the purchasing organization and can be challenging to implement across multiple settings (Dewett & Jones, 2001; Orlikowski & Scott, 2008).

In this manuscript we examine a framework designed to guide the implementation of evidence based practice using technology in health care settings from the theoretical lens of the Socio-Technical Systems (STS) approach. The framework under study is called the CPM Framework™, developed by the Clinical Practice Model Resource Center (CPMRC). The CPMRC is a collaborative consortium of health care providers representing over 300 rural, community, and university settings. The CPMRC developed the Clinical Practice Model (CPM) Framework™ to guide the integration of evidence based CPG’s into the work worlds of clinicians. The CPMRC has been successful in demonstrating improved clinical outcomes while sustaining a satisfied and productive clinical workforce (CPM Resource Center, 2009; Grigsby, Westmoreland, & Shiparski, 2002; Mason & Wesorick, in press; Wesorick, 2002; Wesorick & Doebbeling, in press). The STS approach, developed through Trist and Bamforth’s 1951 examination of work processes in the mining industry, has been widely applied to the domain of IT implementation in health care (Borycki & Kushniruk, 2010; Dillion, 2000; Katz & Kahn, 1978). We propose that the CPM Framework is consistent with STS approach concepts, and can serve as an exemplar for other health care organizations seeking to implement technology in a manner that is consistent with established theoretical foundations.

THE SOCIO-TECHNICAL SYSTEMS APPROACH

The Socio-Technical Systems (STS) approach to organizational change arose in the 1950’s through Trist and Bamforth’s examination of work re-designs in the mining industry. STS proposes that successful re-organization of work relies on a reciprocal relationship between the social context and the technological innovation; neither must conform to the other, instead they mutually adapt to co-create an improved work environment (Katz & Kahn, 1978; Scott, 1992; Trist, 1981). The STS approach does not attribute successful implementation to either the individual characteristics of users or the quality of the technological tool (Dillion, 2000). Alternatively, outcomes are mutually dependent on the collective influence of individual users and technological tools; it is the integration of the social and technical systems that determines success (Petarakaki, Cornford, & Klecen, 2010).

The STS approach has been widely applied to IT domains in recent years, and frequently is used to describe implementation techniques that account for social or organizational context in the planning process (Borycki & Kushniruk, 2010; Dillion, 2000). However, a true STS approach to organizational change goes beyond simple consideration of social context. It acknowledges that implementation of technology in organizational settings presents the unique dilemma of designing tools for individual use while bearing in mind that the outcome, or success of implementation, is collective (Coiera, 2004). When applying STS to IT in health care settings, the technology must do more than support each clinician’s practice and work style; it
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