

Chapter 16

Improving the Implementation of Evidence-Based Practice and Information Systems in Healthcare: A Social Network Approach

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ABSTRACT

In healthcare, evidence-based practice (EBP) integrates clinical expertise with the best available external evidence from systematic research. Yet even with the aid of technology, implementation of EBP in many settings remains a challenge due in part to the complexity of the healthcare system and the lack of a strong theoretical and analytical foundation to guide implementation efforts. This paper combines research from the fields of healthcare implementation science and social networks to present a theoretically based, integrated framework for the study of EBP implementation. This study explores the application of the framework to a complex healthcare collaborative, the MRSA infection control project, a project intended to foster the implementation of EBP to reduce the spread of MRSA infections. The authors consider how the framework can also be used to inform future research into EBP-related information system implementations and innovations.

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INTRODUCTION

Today's healthcare organizations face challenges of unprecedented complexity, breadth and intensity. Only a fraction of new scientific discoveries and innovations enter day-to-day clinical practice (Westfall, Mold, & Fagnan, 2007). Large studies of health care delivery demonstrate that fewer than half of physician practices use recommended processes of care (McGlynn, Asch, & Adams, 2003). Following recommended processes regarding patient care is often referred to as evidence-based practice. Evidence-based practice (EBP) is practice that integrates clinical expertise with the best available external evidence from systematic research (Sackett, Rosenberg, Haynes, Muir Gray, & Richardson, 1996). Interventions implemented to help integrate evidence into practice include healthcare practice guidelines as well as audit and feedback reports (Berwick, 2003; Sales, Estabrooks, & Valente, 2010). Healthcare organizations also frequently turn to technology to aid in EBP implementations, to quickly disperse innovations into patient care and to guide decision making (Scott, 2009; Wickramasinghe & Davison, 2004). Technologies implemented often include evidence-based decision support as well as patient progress tracking and collaborative work systems.

However, even with the aid of technology, EBP often fails to be fully implemented and integrated into patient treatment. In part this is due to the complexity of the healthcare system, which includes patients, providers or care teams, clinic or hospital management, as well as local community input (Ferlie & Shortell, 2001). In considering healthcare change, it is important to consider a multi-factor model of the healthcare system (National Academy of Engineering and Institute of Medicine, 2005). There is a need to understand the complexity of each of the components of care as they contribute to contextual barriers and impact EBP implementation.

In addition, EBP implementation research has often lacked the rigorous scientific approach that

is the hallmark of EBP research itself (Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005; Nutley & Davies, 2000; Shojania & Grimshaw, 2005). In a review of 235 evaluations of implementation strategies, most of the studies provided no rationale for their intervention choice (Grimshaw & Eccles, 2004). Studies frequently lack a theoretical and analytical base that would predict implementation success (Shojania & Grimshaw, 2005). We therefore sought to answer the question, "What theoretical and analytical approach would help inform EBP implementation research and how would it be applied to the factors that influence EBP implementation success?"

We suggest that one approach, social network analysis (SNA), is well suited to informing EBP implementation. We position social network analysis within PARiHS (Promoting Action on Research Implementation in Health Services) (Kitson, Harvey, & McCormack, 1998; Kitson, et al., 2008), which is a widely published framework for conceptualizing EBP implementation. We integrate research on EBP implementation with the PARiHS framework and illustrate how social network analysis can be leveraged as a foundation for scientifically rigorous research.

Our goals are twofold. First, the paper provides a brief introduction to EBP implementation issues and the basics of social network analysis. Second, the paper integrates work from the EBP, social network and information systems research to present research questions for future EBP-related information systems and healthcare process studies. A primary audience for the paper is healthcare practitioners and researchers who are looking for new approaches to improve the implementation of EBP-related systems. For academics, the paper demonstrates the application of SNA concepts in a research area that is in need of theoretically based analytical approaches.

To ground our discussion we provide examples from an on-going healthcare collaborative, the MRSA infection control project. We offer suggestions on how the framework could be applied to that

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