Chapter 4.10
Assessing Physician and Nurse Satisfaction with an Ambulatory Care EMR:
One Facility's Approach

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ABSTRACT

Evaluating clinician satisfaction with an electronic medical record (EMR) system is an important dimension to overall acceptance and use, yet project managers often lack the time and resources to formally assess user satisfaction and solicit feedback. This article describes the methods used to assess clinician satisfaction with an EMR and identify opportunities for improving its use at a 300-physician academic practice setting. We administered an online survey to physicians and nurses; 244 (44%) responded. We compared physician and nurse mean ratings across 5 domains, and found physicians' satisfactions scores were statistically lower than nurses in several areas ($p<.001$). Participants identify EMR benefits and limitations, and offered specific recommendations for improving EMR use at this facility. Methods used in this study may be particularly useful to other organizations seeking a practical approach to evaluating EMR satisfaction and use.

INTRODUCTION

The degree of interest and momentum in furthering the widespread adoption and use of electronic

medical record (EMR) (or electronic health record systems) is at an all time high in the United States. Healthcare providers, purchasers, payers and suppliers are all looking to the EMR as a tool to help promote quality, enhance patient safety, and reduce costs. Despite this energy, recent estimates indicate EMR adoption rates in ambulatory care remain in the 15-20% range (Hillestad et al., 2005). Cost, lack of uniform interoperability standards, limited evidence showing use improves patient outcomes and clinician acceptance are among the barriers to widespread EMR adoption (Bates, 2005). Those who have overcome these initial hurdles and made the transition from a paper-based medical record system to an EMR often lack the time, resources and expertise to evaluate the system's impact on the organization, including clinician use and satisfaction with the system (Anderson & Aydin, 2005; Wager, Lee, & Glaser, 2005).

Use and satisfaction are two key measures of the success of any information system (DeLone & McLean, 2003), including EMR system success (Anderson & Aydin, 2005). Various researchers have assessed physician use and satisfaction with the EMR (Sittig, Kuperman, & Fiskio, 1999; Gadd & Penrod, 2001; Penrod & Gadd, 2001; Likourezos et al., 2004; Joos, Chen, Jirjis, & Johnson, 2006) and some have found that user group perspectives can differ even within the same institution (Wager, Lee, White, Ward, & Ornstein, 2000; O'Connell, Cho, Shah, Brown, & Shiffman, 2004b; Hier, Rothschild, LeMaistre, & Keeler, 2005). Assessing user reaction to the human-computer interface is also an important dimension (Sittig, Kuperman, & Fiskio, 1999; Despont-Gros, Mueller, & Lovis, 2005) in evaluating EMR satisfaction. Likewise, the timing of the evaluation study is important. Conducting formative evaluation studies during enterprise EMR implementation can be particularly useful in identifying perceived problems and making adjustments to the implementation plan or reallocating resources as needed (Friedman & Wyatt, 1997; Burkle, Ammenwerth, Prokosch, & Dudeck, 2001; Anderson & Aydin, 2005; Brender, 2006).

Our study was designed to assess physician and nurse use and satisfaction with an enterprise-wide ambulatory care EMR. We incorporated into the evaluation a means of assessing physician and nurses' reactions to the human-computer interface and also solicited their input and suggestions on how to improve the system's usefulness to our organization. This article summarizes the methods used, findings, and relevance to other organizations in the throes of implementing and evaluating EMR acceptance.

BACKGROUND

The Medical University of South Carolina (MUSC) in Charleston, South Carolina has implemented an electronic medical record (EMR) system, known as Practice Partner Patient Record® in the majority of its ambulatory clinics over the past few years. Although EMR use is not new to MUSC (family medicine has used the system since the early 1990s and internal medicine since the mid-1990s), it was not until February 2004 that we secured funding to deploy the EMR throughout the ambulatory care enterprise. When the system is fully implemented, paper medical records will have been replaced, and both primary care and specialty providers will share a *single* electronic medical record for their patients. This message was conveyed from the top down, starting with senior leadership and the dean of our medical school.

The EMR product itself has many of the attributes of a typical EMR system, including electronic health data capture, results management, decision-support, and electronic communications. However, MUSC has not yet installed enterprise-wide direct order entry nor activated the preventive care reminder functions. Disease-specific progress note templates are available for facilitating program note entry; however, direct data entry is not a requirement for using the system,