Implementing an Electronic Medical Record in a Family Medicine Practice: Communication, Decision Making, and Conflict

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ABSTRACT

PURPOSE Electronic medical record (EMR) systems offer substantial opportunities to organize and manage clinical data in ways that can potentially improve preventive health care, the management of chronic illness, and the financial health of primary care practices. The functionality of EMRs as implemented, however, can vary substantially from that envisaged by their designers and even from those who purchase the programs. The purpose of this study was to explore how unique aspects of a family medicine office culture affect the initial implementation of an EMR.

METHODS As part of a larger study, we conducted a qualitative case study of a private family medicine practice that had recently purchased and implemented an EMR. We collected data using participant observation, in-depth interviews, and key informant interviews. After the initial data collection, we shared our observations with practice members and returned 1 year later to collect additional data.

RESULTS Dysfunctional communication patterns, the distribution of formal and informal decision-making power, and internal conflicts limited the effective implementation and use of the EMR. The implementation and use of the EMR made tracking and monitoring of preventive health and chronic illness unwieldy and offered little or no improvement when compared with paper charts.

CONCLUSIONS Implementing an EMR without an understanding of the systemic effects and communication and the decision-making processes within an office practice and without methods for bringing to the surface and addressing conflicts limits the opportunities for improved care offered by EMRs. Understanding how these common issues manifest within unique practice settings can enhance the effective implementation and use of EMRs.

INTRODUCTION

Both the Institute of Medicine and the Future of Family Medicine project have recommended the use of information technologies and electronic medical record (EMR) systems as tools for improving the quality of care[1] and patient safety.[2,3] Recent research has shown that information technologies can reduce medication errors,[4] improve adherence to clinical practice guidelines,[5] and improve the delivery of preventive health services,[6] thereby potentially improving health outcomes for patients.[7] In addition, using an EMR that includes electronic prescribing as well as electronic charting offers substantial financial benefits to primary care organizations and the health system as a whole.[8] Even so, relatively few primary care practices use EMRs.[9] Reasons for not adopting EMRs may include the temporary loss of revenue associated with EMR implementation,[8] physician perception that EMRs negatively affect workflow, and concerns about patient privacy.[9] Even in settings where clinicians are committed to EMRs, implementation requires skilled users and a commitment to making the EMR an integral part of the

organization.[10] Without these personal and institutional commitments to full implementation, EMRs may actually represent a net financial drain on primary care practices and offer little or no patient care benefits.[8]

Because primary care practices are complex adaptive systems interconnected with many other organizations and made up of individuals with widely varying educational backgrounds, processes and outcomes of organizational change are largely unpredictable.[11,12] In these complex systems, the interactions between participants are nonlinear in that the behavior of the whole is not simply the sum of the behaviors of all of the participants.[13] Accordingly, organizational-level change efforts often have implications and effects beyond the directly targeted system. The process of implementing an EMR system is one such organizational-level change wherein system-level behaviors emerge nonlinearly from the interactions of practice participants as they adapt to changes in their work and work relations necessitated by the adoption of a new technology.

Previous studies of EMR implementation have focused on the technical and organizational rather than cultural aspects of this process.[14] In this article, we describe how one primary care practice implemented and used an EMR and how organizational culture and capacities affected these processes.

METHODS

We adapted the multimethod assessment process (MAP) described by Crabtree, Miller, and Stange,[15] which offers the potential for triangulating data collected using different methods. A field researcher used a template of topics, adapted from previous work,[15-17] to structure observations of the practice during the course of 9 consecutive workdays in July and August of 2002, recording observations each evening in field notes expanded from jottings. The field researcher interviewed the physician owners of the practice, the office manager, the head nurse, a medical assistant, and a receptionist and asked each interviewee to describe a recent practice change, who made the decision to implement this change, and how members of the practice learned of the change. The field researcher also conducted informal key informant interviews with other practice members, including the referral specialist, another nurse, medical assistants, the front office supervisor, and other receptionists. The office manager for the practice completed a practice information form listing practice employees and their positions, giving estimates of patient demographics, and describing various aspects of the business. Although the goal of data collection was a broad understanding of organizational culture and capacities, that the practice had recently implemented a new EMR led many

practice members to concentrate on this recent change in their discussions with the field researcher. Because adopting an EMR was a major recent event for this organization, the field researcher collected more data than initially planned on this topic, thereby providing sufficient data for analysis.

After the first 4 days of observation, a multidisciplinary team including the field researcher reviewed the data. The field researcher then returned to the practice to collect additional data to answer questions relating to organizational processes that arose during this review. At the end of the data collection period, the research team along with the field researcher drafted a summary report highlighting communication patterns, decision making, and information flow in the practice. The field researcher shared this report with the lead physician and then with all members of the practice at a general meeting to check and confirm our observations and interpretations. The field researcher then collected additional data 1 year later using direct observation and key informant interviews.

Data Analysis

Data consisted of rich text files containing transcripts of tape-recorded interviews and field notes. We imported these data into QSR NVivo for coding and modeling.[18] The lead author coded all data, another member of the research team (CS) verified the coding, and a consensus of the authors resolved disagreements. The research team consisted of a political scientist (JC), a medical anthropologist (BC) who had extensive experience in clinical research, 2 primary care physicians (JS, BS), and a public health researcher (CS).

We used a template organizing style[19] for initial interpretation and coding of the data drawing on theories of organizational change and development that highlight the importance of working with significant differences. We coded the data for instances relating to EMR usage or implementation. Because we were interested in the interactions between practice members, we also coded the data for communication patterns, decision-making authority, and how the organization worked with conflicts. As these categories are closely related, we often coded particular examples to more than 1 category. While coding using this template, other themes emerged from the data. Specifically, we found that financial pressures and issues relating to the scheduling program used by the office did not fit well with our a priori coding scheme (Supplemental Appendix, which is available online at http://www.annfammed.org/cgi/content/full/3/4/307/DC1). We sorted the collected text and used an immersion/crystallization approach[20] to refine our understanding of the data.

RESULTS

The practice was located in an upper middle-class suburban community and had a modern computer system and a laboratory for drawing blood. At the start of data collection, there were 8 health care professionals, including physicians (2 of whom owned the practice), physician's assistants, and nurses. There were 19 other full- and part-time staff members, including an office manager, medical assistants, and administrative support staff. The turnover rate at the front desk was high; one patient voiced a typical feeling that "every time you come here there are different women working here." We have withheld additional details regarding the practice to preserve anonymity.

Initial data analysis showed that communication patterns, decision-making processes, and conflict management processes were strong determinants of practice functioning across many areas. We focused subsequent analyses on the recent implementation and use of the EMR as an example of how organizational culture and capacities affected change processes. Direct quotes from audiotape transcripts or those recorded verbatim in field notes appear in quotation marks; additional information comes from field notes.

Communication Patterns

Members of the practice reported differing perspectives regarding the value and appropriate use of the EMR. For example, the senior partner in the practice saw the EMR as a tool to increase efficiency in the clinical encounter by eliminating a recurrent problem with lost charts while providing better management of complex patient data. For him, "the more information is in there, the more reliable it is … and there are complex patients I have in here who have 12 medications and 12 diagnoses, and I come into the room and I am saving immeasurable time … I am plotting out blood pressures to show patients, and weights and heights and things and … that has been very well received I think, by the patients." The junior partner in the practice also saw the EMR as improving efficiency, but his focus was on how the system affected patient flow through the practice. As he put it, "We always wanted to … help prevent some of the congestion … signing in vs checking out.… Well, we cannot expand the office … [and] the only place that was deemed removable would be the charts.… The hope is … that now we can collect co-pays when the patients are coming in, which was harder to do before, because the person who would be checking in, would also be getting checked out … [and] having to answer the phones." Although both physician owners focused on efficiency, during the observation period, they did not discuss with each other or with other practice members their competing goals of

managing complex data efficiently during the clinical encounter and managing practice space more efficiently.

Lack of practice-wide discussion regarding how the practice would use the EMR led to unforeseen consequences. For example, the office manager reported that before implementation of the EMR, the paper charts had reminder stickers on them to monitor screening, prevention, and disease management. Despite a commitment from the head nurse to facilitating wellness and preventive health maintenance and despite the practice leader's stated vision for the practice of "provide[ing] high-quality health care to our patients," during the observation period, practice members did not discuss how to adapt the previous reminder system to the new EMR. Thus, although the EMR had the capacity to track immunizations, preventive health screening, and disease management through a system of built-in reminders, these reminders were disabled. One reason was that the practice used a system for storing laboratory results in the EMR as scanned images, bypassing the internal database. When the field researcher turned on the reminders, the system did not recognize data from the scanned images and required the user to respond to reminders about every possible screening and health maintenance issue related to a particular patient, dramatically slowing review of patient records. When asked why the practice used the EMR in this way, the nurse replied that they did not need the alerts because "our clinicians know what to do." A member of the nursing staff reported, however, that "doctors documented things better when they had paper charts and … were more likely to read through the past records before treating a patient." Informed by the field researcher that the practice had stopped using reminders with the EMR, the office manager seemed surprised and somewhat disappointed and had no explanation for this change.

A member of the front desk staff reported, "the supervisors don't really speak to each other that much." One possible reason for this inadequate communication, as well as a general impediment to communication in the practice, was the degree to which interpersonal conflicts focused around the front office supervisor. Both the office manager and the head nurse described the front office supervisor as "not a team player" and reported her unwillingness to engage in collaborative problem solving, with the nurse reporting that the supervisor "doesn't really like committees." The front office supervisor conveyed clear messages about her lack of trust with other practice members. For example, her computer screen saver continually cycled the words "keep away, do not mess, scram," and she regularly rearranged front office space to demarcate her personal work area. Conflict with this supervisor affected the ability of the junior partner to realize his vision of the

EMR as a method for improving patient flow through the practice and collecting co-payments when patients checked in. Although the front office supervisor had resisted this change for nearly 9 months, the office manager seemed unwilling to confront her. The practice leader reported that the office manager tolerated staff behavior that the previous manager would not. Rather than relying on the office manager to confront this difficult person, the junior partner waited until both the office manager and lead physician were out of the office and then implemented the change in the collection procedure. The front desk supervisor was upset about the change and stated that the office manager had left specific instructions that this should not happen while she is away and that the change was being implemented without a plan. The change in the process, implemented without the leadership team consistently confronting the resistance of the front desk supervisor, created confusion and tension among the front desk staff.

Decision Making

The lead physician reported, and other practice members confirmed, that he had a "top down" decision-making style and rarely consulted others within the practice before making decisions. He described the process of choosing the EMR system: "I worked on [it] probably for 6 months to a year prior to doing it … [checking] all kinds of programs, finally came up with what had what I wanted, and thought further about it, and got the process going …. [Then] when I came up with those plans … I tried to get [the office manager] and the staff to enact the goals that I recommended." Later the practice leader characterized the practice as "a fascist dictatorship" that belongs to him and where he makes the decisions. The office manager confirmed that she and the junior partner are brought into the planning discussions only after long-term goals are set by the lead physician, who then directly manages the change process.

By using this top-down decision-making process, the practice leader did not anticipate the disruptions to office functions related to the EMR. For example, adopting the new program necessitated changes in the scheduling software used by the practice. Schedulers reported that training in this application was ineffective. Either because of program limitations or training deficiencies, schedulers were observed telling patients that schedulers were observed telling patient that schedulers were observed telling patient that they were not able to schedule appointments approximately 6 weeks into the future and reported that they called between 50 and 100 patients each week to reschedule or change their appointments because of errors made by the scheduling software. Both patients and schedulers were unhappy with these results.

DISCUSSION

Inadequate communication within the practice allowed members to develop divergent understandings of why the practice adopted the EMR and what purposes it should serve. In the absence of clear communication regarding goals and objectives for the EMR, the previous practice technology for monitoring wellness and preventive health maintenance was lost. Practice communication patterns and decision-making processes also affected the organization's ability to recognize and address serious differences in understanding regarding the purpose of the EMR. Thus, the EMR functioned much like a paper patient record but without the physician reminders that the earlier system included. Moreover, the existing interpersonal conflicts in the practice affected communication and helped block effective collaborative efforts needed to implement the EMR. Failing to address the underlying conflicts within the practice or the considerable differences in understanding among practice members limited the ability of the organization to manage complex change processes.

One important determinant of how primary care practices integrate organizational-level changes is their ability to manage the inherent diversity of practice participants and address conflict constructively by identifying and working with rather than eliminating major differences within an organization.[21] Organizations that are better able to recognize and work simultaneously with multiple perspectives, rather than striving to achieve a consensus about the correct way to move forward with change, are best able to make improvements.[21,22] Patterns of communication and styles of decision making are important determinants of how an organization raises and addresses differences and conflicts among organization members. Inadequate communication and a heavy reliance on top-down decision making created serious organizational problems in the case described here and would likely cause problems for other organizational change initiatives. It is important to note, however, that these problems are not unique to this practice. We saw similar communication and decision-making issues in other practices participating in this program, and previous research[17,23] has found that communication patterns and other system features affect practice improvement efforts.

Because we report a case study of a single primary care practice in the northeastern United States, we cannot capture the full impact that EMR implementation may have on primary care practices. This study does show that, at a minimum, communication, decision making and conflict within practices are important issues determining the results of EMR implementation. Future studies will need to examine additional cases to identify other implementation issues in these settings.

Although EMRs hold great potential for improving the quality of patient care in primary care settings, taking advantage of this potential requires planning and communication. Further, because each primary care practice is a complex adaptive system with implementation issues specific to the initial conditions of the practice, unanticipated results are likely to emerge. Members of the practice, especially decision makers, must address these specific implementation issues through a mechanism that allows conflicts to surface safely and that encourages communication.

The effect of EMRs on patient care outcomes is not likely to be linear, leading from improved technology to improved care. Rather, because the functionality of the EMR as implemented and used derives from the interactions of practice members with each other and with the technology, the effects of this technology will likely vary. Stories such as the one that we present here may explain some of the reticence that many practice leaders have about implementing EMRs. The diffusion of this innovative technology may thus be slowed by the implicit understanding of practice leaders that implementation will require high levels of collaboration among diverse practice members and considerable change in the organizational cultures of many practices.[24] Thus, many may have recognized and anticipated the disruptions that are likely to accompany EMR implementation. To implement successfully the Institute of Medicine and the Future of Family Medicine recommendations for using EMR technology to improve patient care quality in primary care settings,[1,3] future research should test implementation strategies that can improve existing communication patterns, relationships, and decision-making processes in these settings.

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