CHAPTER 21

The Implementation of Electronic Medical Records into Existing Medical Practice

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KEY TERMS

Electronic medical records
Stress
Structuration theory
Technology adoption

ABSTRACT

Electronic medical records (EMRs) are computerized medical record systems that allow for the storage, retrieval, and modification of patient records and information. The 2009 federal stimulus fund sought to expand EMR adoption in the United States to replace traditional paper-based records in physician offices and health care facilities. Although the potential benefits of EMRs to patient care include reductions in medical errors, information retrieval time, and staffing costs, the process of integration often means a stressful redesign of years of accumulated workflow in a short period of time (Baron, Fabens, Schiffman, & Wolf, 2005). During this transition period, both health care providers (e.g., physicians, nurses) and management personnel (e.g., CEO, administrators)

must adjust their communication practices to minimize the impact of the EMR on quality patient care. This case study focuses on adaptive structuration theory as a lens to discuss how technology like EMRs can affect communication practices, staff dynamics, and organizational pressures within a medical setting. This case is inspired by the observations and semistructured interviews collected at a small hematology and oncology center.

Health information technology like electronic medical records (EMRs) has been proposed as a sustainable solution to improve the quality and safety of health care (Bourgeois & Yaylacicegi, 2012). However, the push to adopt EMRs puts immense pressure on private medical practices, which already struggle with small staffs, overhead costs, and the rapidly changing health care systems and laws (Lohr, 2009). This case study describes EMR adoption within a small, family-owned hematology and oncology center and provides the key elements of adaptive structuration theory as a lens to investigate how technology can change the social and organizational dynamics within a medical context. Unlike most technology adoption studies that focus on the end users altogether (Chaudhry et al., 2006; DesRoches et al., 2008), this case study considers EMR adoption from two different vantage points—those who are *health care personnel* and others who are *management personnel*—within one organization. Because the high stress-inducing environments of medical facilities and medical occupations can have significant effects on job satisfaction, turnover, and the quality of care provided to patients (Aiken, Clarke, Sloane, Sochlski, & Silber, 2002; Coomber & Barriball, 2007), there is a need to understand the communication practices that can mitigate the drawbacks and stress of EMR adoption directly and indirectly related to patient care.

ADAPTIVE STRUCTURATION THEORY

Because information systems like newly implemented EMRs affect human action and organizational structures within health care facilities, adaptive structuration theory (AST) is an appropriate theory to consider in the context of a complex, fast-paced, and technologically evolving health care environment. AST, proposed by Poole and DeSanctis (1990) and grounded in Giddens (1984) structuration theory, stresses the role of new technology in organizational change. AST examines the types of structures that are *provided* by new technology and the structures that actually *emerge* as a result of organizational members' interactions with new technology. Indeed, new technologies present a novel structure of rules and operations to an organization,

but the organization does not passively adopt the new technology as-is. Rather, the organization actively adapts and integrates the new technology into its existing needs and practices, which often results in limiting the full capabilities of the new technology within the organization's own interaction system. Thus, new technology can be thought of as a set of social practices that emerge and evolve over time.

AST captures how an organization is not a permanent, concrete set of relations between members and their tasks but rather how structure is an evolving set of rules and resources available to members to produce and reproduce a stable interaction system. In AST, structures, systems, and interaction patterns can function within two major types of processes: adaptive structuration and appropriation. One major process, *adaptive structuration*, captures how rules or resources in the organization (*structures*) recursively shape the interaction patterns among organizational members (*systems*). The interaction patterns among organizational members also help implement the rules and resources in the organization. Another process, *appropriation*, occurs when an organization selects features of the new technology and socially constructs meaning to it. Through appropriation, an organization can choose whether to use a new technology in intended and unintended ways. When a new technology is implemented as intended by the designers of the technology, this process is referred to as *faithful appropriation*. In contrast, implementing a new technology in the manner other than its intended use is referred to as *ironic appropriation*. Overall, AST focuses on structures, rules, and resources provided by new technologies and organizations as the basis for organizational members' interactions. The structures in new technology and interactions are intertwined and continuously shaping each other. This case study uses EMRs to examine the role of adaptive structuration theory on organizational change.

UNDERSTANDING ADAPTIVE STRUCTURATION THEORY IN THE HEALTH CONTEXT

AST is rapidly becoming an important theoretical paradigm for comprehending the effect of advanced information technologies. Using findings from a research study conducted during a 10-month period, the authors apply AST to illustrate the complex interactions of technology embedded in medical and organizational processes. As the organization attempted to install and implement a new EMR system, they found that to maintain daily operations, they had to modify and adapt workflow practices and expectations.

Using AST, researchers can identify existing social structures within a private practice and also come to understand any competing social structures within the

system. For example, a social structure understood and followed by nurses might compete with a more economically driven social structure esteemed by the office administrators and business personnel. Therefore, rather than *change* a cultural system altogether, the current workflow systems and social structures might benefit more from efforts to *evolve* existing social structures (Schein, 2000).

Other studies have also applied adaptive structuration theory in information systems and health research. Groves, Meisenbach, and Scott-Cawiezell (2011) found that nurses are crucial players in the production and reproduction of a safety culture system through discourse. They described nurses as "agents" who are very knowledgeable about their social worlds, actions, and intentions. Nurses are also self-reflexive in that they can monitor the flow of their own activities as well as the physical and social cues of their environments. As agents, however, nurses can reinforce a shared health care language and exercise power to shape the ways dominant discourse (and by extension rules and resources) travels from experienced mentors to new nurses.

When implementing health information systems, adaptations may also vary at the organizational level. Whereas physicians and nurses may be most concerned about working around technological barriers to provide quality care, administrators tend to focus most on facilitating guideline maintenance and charting formats (Lyons et al., 2005). Schwieger, Melcher, Ranganathan, and Wen (2006) found that, in order to maintain daily activities, a health organization had to modify several aspects of the new medical billing technology and operations. By the time the medical billing system was integrated into existing daily operations, the organization's needs had evolved to accommodate the series of adaptation processes (Schwieger et al., 2006). Patient–physician interactions can also experience adaptations. Many physicians consciously modify the position of computer monitors so that patients could engage with their own medical records and even use more computer-guided questioning in their examinations (Ventres et al., 2006). Overall, AST is an appropriate guide for understanding and evaluating the workflow processes within small clinic settings.

THE ROAD TO EMR ADOPTION AND IMPLEMENTATION

The following case study is inspired by the observations and semistructured interviews collected at an actual small hematology and oncology center. Although the names and parts of the dialogue have been modified, the descriptions and situations are realistic representations of the organizational and communication challenges faced during the transition into EMR adoption.

The Decision to Implement EMRs

Dr. Anthony "AJ" Johnson struggles to keep his family's small cancer treatment center afloat. His experience is similar to other private medical practices coping with small staffs, rapidly changing health care laws, and increasing overhead costs. His mother, Dr. Jamie Johnson, opened the center more than 40 years ago and always had a steady flow of patients to treat. However, at more than 70 years old, her energy is not what it used to be. Despite this, she is determined to keep up with her patients. She says, "As long as I have patients, I will keep treating them." Her patients, though aware of her age, boast of Dr. Johnson's invaluable expertise and exceptional bedside manner.

AJ, though a physician himself, has more of a managerial role at the center. Aware of his mother's age and the growing demand for internists and oncologists, AJ made several attempts to hire new physicians to help his mother's workload. Although they hired some physicians successfully, it was not long before they left the center. Throughout the years, AJ noticed a distinct trend in the medical profession—more physicians chose existing health care communities like those in hospitals instead of private solo practices. Still, many patients coveted Dr. Johnson's expertise, and she continued to treat them.

In January 2011, AJ made the decision to phase out paper-based medical charts and utilize EMRs throughout the center. He said, "I had been looking for an EMR for years. I paid attention to what was available, the costs, and the services. Before the licensing fee was more than $100,000—now it's a $25 monthly licensing fee with better programs for infusion and oncology." Aside from the improved affordability of the program, the federal government awarded $40,000 per physician who adopted EMRs during the course of four years. AJ expressed, "The center struggles month to month to break even. It really was a no-brainer. There was so much money—an offer that the center could not refuse."

As an added bonus, the EMR allowed AJ to "virtually" manage the center. He could easily log into the system from home and see how many patients were scheduled, the time they checked in and out, and the activity of each employee signed into his or her own log-in name. "Adopting the EMR was an inevitable and obvious business step," AJ said. Staff also recognized that if they were resistant to using the EMR, someone willing to use the system would replace them. AJ said, "The EMR reduced need for staff. If the health care personnel didn't attend the two-day training or use the EMR, they would not be as valuable to the center." In addition, EMRs allowed the center to do their own in-house billing and eliminate the third party biller. "Between the government incentive and reduced staff needs, the EMR pays for itself," AJ said.

Besides the financial incentives, AJ considered the time savings associated with the EMRs. Because cancer patients visit the center frequently and for lengthy periods of time, patients often had more than one paper chart the size of a thick encyclopedia. With this paper-based system, charts, sticky notes, and medical documents were often misplaced or mixed up with other paperwork. "Now everything is in one place in the EMR. This should streamline the patient care process. For example, Dr. Johnson can document all her notes, orders, and referrals in a patient's medical chart at one time. In addition, medical assistants will no longer have to pull and re-file patients' charts. The time saved performing routine tasks can be put to better use in providing quality patient care," AJ said.

Perspectives from the Management Personnel

With EMR use in full effect, the management personnel (i.e., CEO, CFO, purchasing manager) completed all their tasks within the system—ordering supplies, managing insurance claims, billing, and following up with patients. AJ said, "From finding diagnosis to procedural codes to billing, everything is more efficient now. It is just a matter of time before the center sees the practice efficiencies translate into lower operating costs." While the top managerial staff stressed how the EMR reduced the amount of time used to look for a chart, the purchasing manager was more even keel, "It was sold as an enormous time saver but turns out to have slowed Dr. Johnson down. She has difficulties in entering patient information in a timely manner, but it will be good in the future." Although the EMR's intended use was to increase efficiency and save costs, the purchasing manager noticed that the health care team in general struggled more than the management personnel to proficiently replace the paper-based system with the EMR.

Perspectives from the Health Care Team

The health care team, including nurses, medical assistants, and the doctor, resisted most to the changes in their workflow. The most senior nurse, Stephanie, described overall dissatisfaction with the EMR adoption: "I do not understand AJ's decision to implement the EMR and interfere with our paper-based system that was working just fine. I am a firm believer if it's not broke, don't fix it." Stephanie was particularly concerned about learning something new and making mistakes on top of their already demanding workloads. Multiple health care team members also expressed concerns about inadequate training.

Medical assistant Robert vented, "Two days of training is just not enough for such a complex system." Dr. Johnson echoed this sentiment, "I have never used a system like this before. I need more practice before I feel comfortable entering actual patient files." During the first two months after initial EMR adoption, not a single electronic chart was closed due to fear of erasing something in the system or entering something incorrectly. Concerned with losing their jobs, the health care team kept their concerns to themselves. Instead of replacing their use of paper charts, schedules, and notes, they did twice the amount of work to appease the management personnel.

Additionally, the health care personnel were very concerned that they would be at their computers all the time rather than walking around and interacting with the patients. Dr. Johnson expressed, "Patient care is my number one priority. The few times I tried to use the EMR during patient visits I found it extremely difficult to multitask entering patient information with maintaining eye contact and effectively addressing concerns. The majority of the visit was dedicated to clicking checkboxes with a mouse to satisfy billing and administrative requirements that do little to help my patients. I refuse to spend more time typing and clicking on a computer than treating my patients. My motto: patients first, EMR when time allows." Robert shared a similar sentiment about the EMR, "I write the patients' vitals on paper first, and then later when I have time, I put it into the system."

The nurses utilized the two whiteboards to keep themselves up-to-date about patient care. There was one whiteboard located in the lab area where the nurses' schedule was posted. The second whiteboard located in the nurses' station listed the patients' initials that were receiving chemotherapy. This whiteboard listed the last time the patient was at the clinic, when he/she was coming in next, how frequently he/she came to the center, and what type and how much medication he/she was to receive. Stephanie referred to the white board as "The Bible." In addition to the whiteboard, the nurses also entered these notes into the EMR and in the patient's paper chart as well. Stephanie said, "Dr. Johnson prefers the paper charts to the EMR to review previous patient exams and to assess disease progression. The paper charts have the most recent patient information."

Dr. Johnson also duplicated her paper process into the electronic system, "I conduct my examination of the patient and write my notes in their paper chart. Then after the center closes, I sit at the computer and enter in my notes." As a result, Dr. Johnson often fell behind in entering patient information and progress notes into the EMR. As the doctor was the only one authorized to enter certain pieces of patient information, she quickly became hundreds of charts behind and health care staff grew concerned the EMR was neither cost-effective nor efficient. "Like any new technology, EMRs can be used well or poorly. The center's current system of maintaining both paper and electronic files does

not streamline the patient care process. If anything, it wastes medical personnel's time by duplicating documentation efforts and takes away from other more important treatment-related tasks," Stephanie summed up. Robert added, "The biggest problem with the EMR is that it requires Dr. Johnson to input all her notes and orders, rather than dictate them. Essentially, they've taken the busiest and least technologically savvy person at the center and turned her into a data entry clerk who is a slave to her computer."

A Typical Day at the Hematology and Oncology Center

"I need the chart. Where is the chart?" demanded Dr. Johnson. At this point, all patients had left and the physician was entering her notes for the day. Unable to locate the chart and nearing closing, all available staff members were asked to stop their current tasks and locate the charts. The staff had been frantically searching for the paper chart for more than 20 minutes now. Locating a large folder of prognosis, lab results, and blood work should not be difficult, but the task was daunting when similar folders traveled throughout the front desk, the nurses' station, the doctor's office, and the billing office. All staff showed clear frustration after the chart was found. Robert whispered, "This happens all the time."

DISCUSSION QUESTIONS

1. Based on the key constructs of structuration theory, what communication strategies would you recommend to a similar cancer center that is just beginning the implementation stages of electronic medical records into their practice?
2. Describe at least three advantages and three disadvantages of EMR adoption. Considering these advantages and disadvantages, create an argument for or against implementation of the EMR into your own medical practice.
3. How does the use of EMRs transform the overall health care experience for the patient? Consider transformations from the patient, health care personnel, and management personnel perspectives.
4. How does adoption of a new technology, in this case EMRs, influence organizational culture? How did the goals of the management personnel different from the goals of the health care staff?
5. Based on the case study details, create your own ending. How do think the health care and management personnel feel about EMRs a year after adoption?

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