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Examining Electronic Medical Records System Adoption and Implications for Emergency Medicine Practice and Providers

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EXAMINING ELECTRONIC MEDICAL RECORDS SYSTEM ADOPTION
AND IMPLICATIONS FOR EMERGENCY MEDICINE PRACTICE
AND PROVIDERS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Communication Studies

by

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August 2015

This dissertation was inspired by and is dedicated to my husband, the love of my life. Obtaining my doctorate would not have been possible without his love, support, patience, and encouragement. I am forever grateful to him.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRACT	x
CHAPTER ONE: INTRODUCTION	1
CHAPTER TWO: REVIEW OF LITERATURE	12
Communication Research in Healthcare Contexts	12
Communication and Health Information Technologies	29
Communication Research in Emergency Room Settings	42
Emergency Medicine and Electronic Medical Records Systems	56
Consequences of Using Electronic Medical Records Systems	84
Conclusion	95
CHAPTER THREE: PRELIMINARY RESEARCH, THEORETICAL FRAMEWORKS, AND RESEARCH QUESTIONS	97
Preliminary Research	97
Theoretical Frameworks Used to Analyze Effects of Electronic Medical Records Systems in Emergency Rooms	114
Research Questions	134
CHAPTER FOUR: METHODOLOGY	135
Methodological Issues in Observational Emergency Room Studies	135
Ethnographic Methods	137
Research Sites	140
Participants	148
Data Collection	151
Validity of Findings	162
Researcher Subjectivity	163
Ethical Concerns	169
Data Analysis	172
CHAPTER FIVE: FINDINGS	177
Electronic Medical Records System Training for Providers	177
Appropriation Moves	192
Structurational Divergence	234
Providers' Strategies for Coping with Electronic Medical Records Systems	273
How the Electronic Medical Records System Affected Communication Patterns among Providers	283

How the Electronic Medical Records System Affected Provider–Patient Interactions and Patients’ Satisfaction	291
Unintended and Perverse Consequences of Electronic Medical Records Systems	298
Conclusion	314
CHAPTER SIX: DISCUSSION	319
Research Goals	319
Summary of Major Findings that Addressed the Research Questions and Contributed to the Scholarly Literature	322
Conceptual/Theoretical, Methodological, and Practical Implications of the Findings	330
Limitations of the Study and Directions for Future Research	359
Conclusion	363
REFERENCES	365
APPENDIX	
A. INTERNAL REVIEW BOARD EXEMPTION	389
B. HIPAA AGREEMENT	393
C. QUESTIONNAIRE ADMINISTERED DURING PRELIMINARY RESEARCH	394
D. PHYSICIANS’ TSHEET	413
E. PHYSICIANS’ ORDER SET	415
F. NURSES’ NOTE	417
G. AFFILIATION AGREEMENT	423
H. QUESTIONNAIRE	427
I. MODIFIED INTERNAL REVIEW BOARD EXEMPTION	432
VITA	433

LIST OF TABLES

4.1	Themes and Subthemes for Identifying Structural Changes Amid an Electronic Medical Records System Adoption	175
5.1	Microanalysis of Providers' Talk: The 12 Words and Phrases Used Most Frequently to Describe the Electronic Medical Records System	194
5.2	Responses to the Questionnaire Item, "Overall, how satisfied are you with the EMR that your emergency room uses?"	232
5.3	Responses to the Questionnaire Item, "I feel burned out from my work."	247
5.4	Responses to the Questionnaire Item, "I have become more callous toward people since I took this job."	248
5.5	Individual Burnout Scores	249
5.6	Individual Structural Divergence Scores	272
5.7	Responses to the Questionnaire Item, "How has the EMR system impacted communication between you and your coworkers?"	284

LIST OF FIGURES

5.1	Word Cloud Illustrating the Words and Phrases Used Most by Providers to Describe the Electronic Medical Record System.....	195
5.2	Physician Workflow When Using Paper TSheets.....	213
5.3	The Interpenetration of Contradictory Structures and the Resulting Negative Spiral.....	242
5.4	Computer on Wheels.....	293

ABSTRACT

This ethnographic research study documented the use and effects of an electronic medical records system (EMR) by healthcare providers working in a community hospital-based emergency room. Using data collected from participant observation, in-depth interviews, questionnaires, and hospital documents, the research findings suggest EMRs impinge providers' agency, alter emergency room systems, affect communication patterns among providers, and exacerbate structural divergence (SD) conditions. Findings suggest that providers' attempts to regain lost agency tips the SD-nexus into an SD-cycle, characterized by negative communication spirals between providers. The discussion chapter examines the impact of EMRs on emergency room structures, system reproduction, providers' workflow and communication patterns, patients' experiences, and unintended consequences, and it expounds implications of the study with regard to what lessons learned from this analysis suggests might be best practices for hospitals and emergency rooms adopting EMRs.

CHAPTER ONE: INTRODUCTION

In September 2014, a 42-year-old man with abdominal pain and a fever sought medical care in a Dallas emergency room. A nurse assessed his condition and determined that his symptoms did not require immediate medical attention, so he was sent back to the waiting room. A short while later, a nurse called him into an examination room, where a more thorough history was solicited from him and recorded into an electronic medical records (EMR) system. The patient then was examined medically, first by a nurse and then by a physician. The physician gave the patient a prescription for antibiotics and discharged him from the emergency room. A few days later, on September 28, the man's symptoms worsened, an ambulance was dispatched to his home, and the emergency medical services crew returned the man to the same emergency room from which he had been discharged on September 25. The patient was diagnosed with a virus and was admitted to the hospital's intensive care unit—he died 10 days later from complications associated with the virus. The patient was Thomas Duncan and the virus was Ebola.

According to the Centers for Disease Control and Prevention (2015b), the 2014 Ebola epidemic, the largest Ebola epidemic in history, killed nearly 10,000 people in West Africa. Mr. Duncan, a Liberian, traveled from West Africa to the United States at the height of the epidemic. He became symptomatic for Ebola (e.g., fever, vomiting, and diarrhea) a few days after he arrived in Dallas, and, subsequently, he exposed almost 50 people to the virus, including members of the ambulance crew who transported him back to the emergency room where he had been misdiagnosed initially and sent home with antibiotics (Neergard & Weber, 2014; Stengle, 2014). Mr. Duncan infected two of the

nurses who cared for him at Texas Health Presbyterian Hospital (Stengle, 2014), which set off a media firestorm. The public demanded to know how a “hospital slip up” (Neergard & Weber, 2014, para. 12) could send an Ebola patient into the local community, exposing dozens of individuals, including five school children, to the deadly virus (Stengle, 2014).

In investigating the case, reporters uncovered certain key facts relating to Mr. Duncan’s initial misdiagnosis and discharge from the emergency room. It appeared that although Mr. Duncan told a nurse that he had been in “disease-ravaged West Africa” just days before, “that information was not shared,” with a hospital spokesperson explaining that Mr. Duncan’s travel history was “not fully communicated throughout the medical team” (Neergard & Weber, 2014, paras. 1, 7, 8). Hospital administrators conceded that the lapse in communication meant that relevant information was not factored into Mr. Duncan’s initial diagnosis, which “led others to be exposed to the virus” (“Dallas Ebola Patient,” 2014, para. 15).

Hospital administrators released a statement on October 3, 2014 that identified the reason for the communication breakdown between the healthcare providers in the emergency room: a flaw in the hospital’s EMR system (Jones, 2014). The flaw, which separated “physician and nursing portions of the electronic health record [EHR]¹” (Jones, 2014, para. 3), meant that “doctors never saw a nurse’s note that an emergency room patient with fever and pains had recently been to Africa” (Gilblom & Chen, 2014, para. 1). The patient’s travel history “was located in the nurses’ portion of the EHR and, as designed, would not automatically appear in the physicians’ standard workflow” (Jones,

¹The phrases “electronic health records system” and “electronic medical records systems” are synonymous.

2014, para. 5). A hospital spokesperson admitted that the hospital “wrongly designed its digital record system” (Gibblom & Chen, 2014, para. 5), but many members of the press wondered why the nurse did “not verbally alert Duncan’s emergency physician to the travel” (Gaddis, 2015, p. 36) or why the physician “did not double check himself rather than depend on someone else” (Gibblom & Chen, 2014, para. 3) for pertinent patient details.

According to Frazao (2014), “What happened at the Texas Presbyterian Hospital was a break down of critical information sharing using electronic health records, a relatively new technology now used in about every major American hospital” (para. 7). EMR systems were supposed to improve healthcare coordination and reduce errors, but “in the case of the Liberian Ebola patient, a major medical error—the decision to send the sick man home instead of into isolation—is blamed directly on an EHR” (Jones, 2014, para. 13). Press coverage of the Dallas Ebola case “thrust into social scrutiny the impact of EMRs on workflow in hospitals” (Reyes, 2015, p. 7), especially with regard to the imperfect communication patterns that they, potentially, create among healthcare providers. Because I had been studying an emergency room’s adoption of an EMR system for nearly a year when the Dallas Ebola case made headlines, an emergency medicine physician shared the following with me:

The postmortem, as discussed on CNN and broadcast to millions, is that the house of emergency medicine failed (and potentially exposed a city to a catastrophe) for one specific reason: the [emergency room] nurses and doctors did not talk to each other. They “talked” instead into an electronic medical record, and assumed that all knew what was reported. So, a question: How often do we speak to each other about our patients, our thoughts about their care, what the plan is from the beginning and throughout the course? How can we maximize our patients’ visit with us? . . . What is the potential consequence of our failing to adequately talk to

each other, across the silos in which we live, and past the tunnels of our understanding and knowledge? (C. Overton, personal communication, October 9, 2014)

The Ebola case shows that communication is vital for effective and safe healthcare delivery, and, furthermore, it demonstrates that providers' reliance on EMRs for pertinent patient information cannot take the place of providers communicating with one another. Health communication researchers have bemoaned the "undeniable decline in the centrality of communication" (Rotor & Hall, 2011, p. 55)—the lack of talk—in healthcare delivery that the Dallas Ebola case epitomized. To broaden understanding of communication in healthcare delivery, health communication researchers have focused, largely, on patient–provider interactions and, especially, on bounded exchanges, such as those occurring between patients and providers during medical examinations (Ackerson & Viswanath, 2009; Ellingson, 2003). According to Ellingson (2003), the emphasis on patient–provider interactions has resulted in "a relative lack of problematizing of discourse among health care practitioners," especially with respect to "backstage" interactions between and among providers "that occur away from patients" (p. 95). The Dallas Ebola crisis brought the topic of communication (or, rather, the lack of communication) between healthcare providers to the forefront.

Studying healthcare providers' backstage interactions, as Ellingson (2003) endorsed, allows researchers to broaden understanding of cultural and communication processes that constitute medical practice (Chapman & Berggren, 2005). Provider-focused health communication research, for instance, has found that ineffective communication between healthcare providers during hospital admissions delays patient care (Apker, Mallak, & Gibson, 2007; Eisenberg et al., 2005), that poor communication

is a leading cause of medical errors (Shannon, 2012), and that nurses in emergency rooms do not talk regularly with physicians (Fairbanks, Bisantz, & Sunm, 2007). Such findings may explain, in part, what happened in the emergency room at Texas Presbyterian Hospital.

It is important to note that the communication breakdown at Texas Presbyterian Hospital occurred, primarily, between healthcare providers: Mr. Duncan told the nurse that he had come from Liberia and, presumably, he would have told the physician, had the physician asked. Many in the press speculated that Mr. Duncan could have assumed, reasonably, that the details he shared with the nurse were part of a medical record that the physician would have accessed and/or that members of his healthcare team would have communicated with one another (Frazao, 2014). The nurse, however, did not tell the physician what she knew—a man with a fever and abdominal pain had just arrived from Ebola-stricken West Africa—and the physician did not ask about Mr. Duncan’s travel history. Hence, studying ways in which EMRs change nurse–physician interactions, especially in emergency room contexts, may explain what happened at the Texas Presbyterian Hospital and why it happened, and it may prevent similar communication breakdowns and/or medical errors from occurring in the future.

There is, however, a lack of health communication research set in emergency rooms compared with research set in primary care venues, such as physicians’ medical offices and clinics (Cameron et al., 2010; Fairbanks et al., 2007). Primary care-based research findings, unfortunately, are not generalizable to emergency rooms for many reasons. For instance, unlike primary care providers, who treat one patient at a time, emergency medicine providers care for several patients at once in an atmosphere that is

“rife with staff shortages, limited resources, overcrowding, and long wait times” (Roscoe & Eisenberg, 2014, p. 393). Additionally, emergency medicine providers rarely have established relationships with patients they treat (Govindarajan et al., 2010) and many of those patients are unable to communicate because they are impaired (e.g., they have dementia, are mentally ill, and/or are inebriated) or unconscious (Garra, Albino, Chapman, Singer, & Thode, 2010). Moreover, frequently, interstaff conflicts compound problematic provider–patient communication (Person, Spiva, & Hart, 2013), as do “professional fault lines” (Eisenberg et al., 2005, p. 392) that separate physicians from nurses. For these reasons, emergency rooms are especially ripe for communication breakdowns and are at risk for medical errors (McCarthy et al., 2013), which is why scholars have called for more research to be situated in emergency rooms (Paltved & Musaues, 2012).

It is especially important for scholars to focus on emergency room practices, because understanding communication patterns within that healthcare context is essential for ensuring that safe, effective care is delivered to the millions of patients relying on emergency rooms for care. Emergency rooms, increasingly, are becoming the primary source of healthcare for uninsured and publically insured patients, and for patients seeking care after hours and on weekends (O’Shea, 2007; Overton, in press-b). In 2008, there were 124 million emergency room visits and the number of visits was expected to increase by 3%–6% each year thereafter (Hooker, CIPHER, Cawley, Herrmann, & Lelson, 2008). By 2011, the annual number of emergency room visits hit 136 million (Centers for Disease Control and Prevention, 2015a). A shortage of primary care physicians contributes to emergency room overutilization, because patients without healthcare

homes have nowhere else to go when they become ill or are injured (Hooker et al. 2008; Overton, in press-b). Moreover, the Affordable Care Act, which expanded Medicaid and insurance coverage to 30 million people in the United States, is expected to increase the number of emergency room visits: Studies show that Massachusetts's healthcare reform (after which the Affordable Care Act is modeled) and the Oregon Medicaid experiment both resulted in more, not fewer, emergency room visits (Overton, in press-b; Smulowitz, O'Malley, Yang, & Landon, 2014). The nation's emergency rooms already are at or over capacity (Dunn & Becker, 2013; O'Shea, 2007), the number of emergency room visits is increasing steadily, and, in the last decade, "the number of emergency departments declined significantly" (O'Shea, 2007, p. 2), as did the number of emergency medicine physicians (Hooker et al., 2008). There, thus, are fewer emergency rooms and emergency medicine providers available than ever before to meet the growing demand (Hooker et al., 2008), which means that an already communicatively challenged environment is poised to get worse.

Health information technologies, such as EMRs, were supposed to reduce medical errors (Farley et al., 2013; Pipersburgh, 2011), cut healthcare costs (Hillestad, et al., 2005), and improve the quality of healthcare (Noor, Mahmoo, & Kahn, 2012), but, instead, EMRs have introduced unintended negative consequences and new types of clinical errors (Shachak & Reis, 2009). The Dallas Ebola case demonstrated what health communication researchers already knew: EMRs impede face-to-face communication between healthcare providers (Hill, Sears, & Melanson, 2013; Park, Lee, & Chen, 2012) and increase medical errors (Bukata, 2011; Kellermann & Jones, 2013). A patient safety advocate interviewed by Frazao (2014) criticized the flawed EMR used at Texas

Presbyterian Hospital, declaring, “The electronic health record systems in this country are not even close to ready for prime time” (para. 8).

Although EMRs may not be “ready for primetime,” federal legislation passed in 2009 mandated that hospitals must adopt and use EMRs by 2015, or face fines. That legislation has catapulted emergency medicine providers into unfamiliar territory: In 2010, fewer than 2% of U.S. emergency rooms had fully functioning EMRs (Landman, Bernstein, Hsiao, & Desai, 2010). As of 2015, most emergency medicine providers in the United States were struggling to adapt to EMR-induced changes in workflow and communication patterns; specifically, providers were spending more time completing documentation tasks and less time communicating face-to-face with other providers or with patients (Park et al., 2012). These changes can have dire consequences for patients.

Several studies, published since 2012, have examined how EMRs change emergency room dynamics and emergency medicine practice. Those studies have focused on quantifiable changes in emergency room operations after EMR adoption, such as the number of laboratory tests ordered, time that providers dedicated to documentation tasks, and time that providers spent with patients (Callen et al., 2013; Hill et al, 2013; Ward, Froehle, Hart, Collins, & Lindsell, 2013). Only one study to date, conducted by Park et al. (2012), followed an EMR adoption from start to finish, presenting a compelling account of an academic medical center’s emergency room before, during, and after its EMR installation. However, fewer than 10% of the 5,724 hospitals in the United States are *academic medical centers*, hospitals affiliated with medical schools (Dunn & Becker, 2013); hence, although Park et al.’s findings are important, for several reasons, they are not generalizable to the majority of emergency room settings. For instance,

academic medical centers offer extensive specialty and subspecialty support to patients (Dunn & Becker, 2013), and they rely on *medical residents*, who are physicians in training, to staff specialty services and emergency rooms; consequently, physician-to-patient ratios are much lower in academic medical centers compared with community hospitals, which, typically, do not utilize medical residents and, thus, have fewer physicians available to treat patients. Community hospitals, by contrast, have far fewer specialty services compared with academic medical centers, and community hospital-based emergency rooms are staffed, usually, by one or two physicians, who will see as many as 40–50 patients a day.

The current study, thus, addresses gaps in the scholarly literature and extends work on EMR adoption by investigating EMR-induced changes over time in a community hospital's emergency room during its EMR adoption, especially with regard to how EMRs affect emergency medical providers' day-to-day experiences; how their interactions with coworkers and patients are altered; how emergency room culture, itself, is changed by the presence of this technology; and unintended negative consequences that EMRs have on emergency medicine practice. More specifically, this study documents (a) role reversal, dissonance, and reactance during EMR training; (b) ways that providers incorporate EMRs into their workflow and subsequent changes to workflow patterns; (c) the presence of conflicting structures, providers' immobilization, and ineffective communication spirals associated with using the EMR; (d) providers' strategies for coping with EMR adoption; (e) providers' perceptions of changes in their communication patterns following the EMR installation; (f) EMR-induced changes in provider–patient interactions; and (g) unintended negative consequences of EMRs that affect providers

and patients alike. In investigating these important matters, the study was guided by structuration theory, adaptive structuration theory, and structurational divergence theory (as explained in chapter 3), with the data collected using ethnographic methods and a survey questionnaire (as explained in chapter 4).

This dissertation is organized into six chapters, including this first chapter. Chapter two reviews literature on interpersonal communication in healthcare contexts, starting with patient-focused health communication research, followed by provider-focused health communication research. Literature on communication and health information technologies, generally, then is reviewed, followed by emergency room communication research, with studies that privileged patients' perspectives of emergency room communication reviewed first, followed by provider-focused studies. I then discuss emergency medicine and EMRs, followed by literature on EMR legislation and use.

Chapter three describes the preliminary research that I conducted in 2013, as well as the theoretical frameworks that inform this study, and it concludes with the research questions that were posed for this study. Chapter four describes the qualitative, ethnographic methods that were employed to achieve the research goals: participant observation and in-depth interviewing. I explain how the methodology that I employed, ethnography, allowed me to develop "understanding about complex social interactions" (Paltved & Musaeus, 2012, p. 773) in situ, by illuminating how processes and practices, such as providers' workflow and communication habits, changed over the course of the EMR installation. I then describe the research sites, navigating access to those sites, study participants, institutional review board approval, and data collection, including sensitizing concepts that shaped that collection process. I subsequently describe

additional data-collection procedures that I used (a questionnaire and document analysis), before discussing validity issues, researcher subjectivity, ethical concerns, and data-analysis procedures. Chapter five presents the findings from this study regarding EMR adoption in the community hospital's emergency room studied. Finally, chapter six discusses conceptual/theoretical and applied implications of the findings of this study about EMR adoption, describes limitations that characterized the study, and offers suggestions for future health communication research conducted in emergency room settings about health information technologies.

CHAPTER TWO: REVIEW OF LITERATURE

This chapter reviews literature that informs and supports the research agenda that was advanced in chapter one. This chapter begins with a discussion of interpersonal communication research in healthcare contexts; specifically, with patient- and, then, healthcare provider-focused communication research, because both sets of literature contribute to understanding provider–patient interactions and are necessary for understanding how electronic medical records, consequently, impact provider–patient relationships. A review of communication and health information technology research then precedes a discussion of emergency room-based communication research. Finally, a brief history of electronic medical records research and recent legislation about them then informs a review of the adoption, use, and implications of electronic medical records for emergency medicine practice.

Communication Research in Healthcare Contexts

A substantial amount of interpersonal health communication research has explored interactions between healthcare providers and patients, often within the context of one-on-one bounded exchanges, such as those occurring during medical examinations (Ackerson & Viswanath, 2009). Some of that scholarship has privileged patients’ perspectives and experiences, whereas other research has centered on healthcare providers (hereafter, “providers”). Patient-focused research has examined issues such as patients’ satisfaction with providers’ communication skills, how communication between providers and patients impacts patients’ health outcomes, perceived communication barriers between patients and providers, interactants’ competing and mismatched goals during medical encounters, and ramifications of hierarchical differences for patient–

provider relationships. Provider-centered research has examined communication in healthcare teams, interactions among providers, and providers' communication errors and inefficiencies. Both types of interpersonal health communication research aim to improve communication between providers and patients to promote positive patient health outcomes.

Arguably, the patient-focused perspective has received more attention from scholars, but by also focusing on providers, by shifting attention from the subordinate to the dominant in what Nader (1972) called "studying up," researchers have an opportunity to broaden understanding of social, cultural, and communication processes that are part of medical practice (Chapman & Berggren, 2005). Although this empirical study employs the concept of studying up, in that it focuses, largely, on providers' experiences with and communication about electronic medical records (EMRs), the patient perspective *is* important and warrants review, because, as this dissertation demonstrates, providers' experiences with EMRs influence their interactions with patients, and, for some patients, those consequences can be life-threatening. Both sets of literature, patient- and provider-focused, thus, contribute to understanding provider–patient interactions. Furthermore, exploring both perspectives offers a more complete understanding of communication patterns that are unique to emergency room contexts, and, consequently, how EMRs affect provider–patient communication therein. Therefore, below, an overview is provided first of patient-focused health communication research, followed by a review of provider-focused research.

Patient-focused Health Communication Research

Themes relating to patients' satisfaction with healthcare have driven much of the health communication research (Brundage, Feldman-Stewart, & Tishelman, 2010), and that research is important because, for most emergency rooms, financial reimbursements, mainly in the form of Medicare and Medicaid payments, are tied directly to patients' satisfaction (McCarthy et al., 2013). Satisfaction often is based on patients' perceptions of physicians' communication efforts (Bryant, Moshavi, Lande, Leary, & Doughty, 2011; Ruiz-Moral, 2009), with patients wanting their physicians to listen to them and to ask questions (Clark et al., 2008), and to encourage rapport, mutual understanding, and participation, as well as offer reassurance, guidance, compassion, and information (Smith-Dupre & Beck, 1996). Clark et al. (2008) found that jointly negotiated treatment plans significantly and positively affected patients' health outcomes; in particular, collaboration "was associated with subsequent reductions of patients' emergency department and urgent care visits and hospitalizations" (p. 54). Despite calls for more patient participation in medical interactions, however, the physician-patient dyad rarely is characterized by equally valid, negotiated selves (Smith-Dupre & Beck, 1996). Many medical interactions continue to operate according to a consistent pattern that, typically, does not include patients' participation (Thompson, Whaley, & Stone, 2011); instead, physicians too often are "more concerned . . . with efficiency—keeping the encounter short and to the point" (Smith-Dupre & Beck, 1996, p. 74). Consequently, the medical examination has become "an area of struggle" (Thompson et al., 2011, p. 299) between patients and providers.

Patients who are dissatisfied with their providers' communication efforts, when compared with patients who are satisfied, often have worse health outcomes. For example, dissatisfied patients are more likely to have high blood pressure (Thompson et al., 2011). One way that providers trigger dissatisfaction in their patients is by interrupting patients when they explain their symptoms or tell their stories (Thompson et al., 2011). Rhodes et al. (2003), studying provider–patient interactions in emergency rooms, found that most providers' interruptions consisted of closed questions that did not invite patients to elaborate on their symptoms or complaints—in fact, less than a quarter of patients finished describing their symptoms after having been interrupted by providers. According to Thompson et al. (2011), patients who tell their complete stories to providers, without interruption, typically, have lower blood pressure, comply more with prescribed treatments, and are more satisfied with their physicians. Patients' uninterrupted stories also can mean fewer diagnostic tests and lower healthcare costs (Duggan & Thompson, 2011).

Although interrupted storytelling impacts patients' dissatisfaction with provider–patient interactions, patients' dissatisfaction also can be attributed to mismatched goals that providers and patients bring to medical interactions, and to the asymmetrical nature that characterizes provider–patient relationships. These interactions, typically, privilege providers' objectives and perspectives. Studies that have explored these two additional sources of patients' dissatisfaction are described next.

Competing and mismatched goals. Research has identified at least two goals that *are* shared by physicians and patients: accurate diagnosis and effective treatment (Gu, 1996; Cegala, McGee, & McNeilis, 1996; Pilnick, Hindmarsh, & Gill, 2009;

Roberts & Aruguete, 2000; Smith-Dupre & Beck, 1996). However, physicians and patients privilege these objectives differently, which can stymie communication between them. The physician's aim is for "the patient's condition to improve after the visit, whereas the patient's is that he or she gets cured" (Gu, 1996, p. 165). Thus, patients who are not cured, do not have their goals met and are more likely to be dissatisfied with both their providers and their interactions with those providers. Roberts and Aruguete (2000) identified at least one additional goal, aside from being cured, that patients have: anxiety reduction. Physicians, however, rarely address patients' anxiety because physicians fail to enact "socioemotional behaviors such as expressions of concern and reassurance" (Roberts & Aruguete, p. 310). For most physicians, and, especially, primary care physicians, time constraints limit the number of goals they attend to during medical examinations because they are engaged in "managed care."

Managed care requires concise medical encounters; accordingly, physicians invite patients' questions in fewer than half of examinations (Duggan & Thompson, 2011), and they restrict conversation to medically relevant topics by focusing on treatable complaints (Eisenberg, Baglia, & Pynes, 2006; Eisenberg et al., 2005; Gu, 1996; Herdon, Chaney, & Carden, 2011; Lateef, 2011; Smith-Dupre & Beck, 1996; Vance, 2010). Emergency medicine physicians are especially vulnerable to managed care edicts that require short encounters with patients—regularly exceeding "length of stay targets" means that physicians can be fired ("Metric Madness," 2014; Vance, 2010). It is not surprising, then, that emergency medicine physicians usually dedicate less than five percent of their talk with patients to "friendly interactions" (Smith-Dupre & Beck, 1996, p. 76). A study by Gu (1996) found that, typically, there was "no small talk" (p. 169) in emergency

rooms. Patients, nonetheless, often “overrun the diagnosis and discussion” (Gu, p. 169), by offering multiple complaints and rambling sick narratives (Cegala et al., 1996), at least as viewed from providers’ perspectives. Although most emergency room patients expect to have all or most of their issues addressed (Lateef, 2011), “physicians pressure them to focus on *one* complaint per visit” (Eisenberg et al., 2005, p. 401). According to Eisenberg et al. (2005), “Physicians work at getting patients to get to the crux of the story quickly” (p. 401), which, as noted previously, means that patients rarely tell their stories without interruption (Thompson et al., 2011). In fact, emergency room patients, typically, are interrupted after only 12 seconds of speaking (Burley, 2011).

Instead of diagnose and treatment, some scholars have maintained that the medical interactions are characterized by two *other* goals: information exchange and relational development (Cegala et al., 1996). Cegala et al. (1996) found that both patients and physicians prioritized information exchange as a measure of general communication competence. Differing perceptions about how much and what information should be exchanged, however, contributed to misunderstandings between physicians and patients, with physicians rating themselves as far more competent communicators than their patients rated them (Cegala et al.). Cegala et al. noted that patients wanted much more information than they were given, whereas physicians’ overestimated the quantity and quality of information that they provided to patients. Moreover, physicians were “not relational enough in their interactions with patients either” (Cegala et al., p. 5); thus, they failed to achieve consistently either goal.

Patients’ dissatisfaction with poor relational development with their physicians is related to physicians’ “lack of feedback, insensitivity to and misinterpretations of

relational needs, failure to express empathy, and disregard for patient input in decision-making” (Cegala et al., 1996, p. 5). However, patients also often are equally responsible for these problems, as they leave relational development to physicians. Smith-Dupre and Beck (1996) found that patients felt inhibited by asymmetrical relationships between themselves and their physicians, and that they behaved as if they did “not have the right . . . to express opinions, to ask questions, and to assert goals” (p. 80). Hence, although patients often are dissatisfied with their interactions with physicians, many patients abdicate responsibility for improving the quality of their medical care. How the asymmetrical nature of provider–patient interactions can hinder relational development and thwart patients’ satisfaction with health care is described next.

Asymmetrical provider–patient interactions. The asymmetrical nature of provider–patient relationships means that patients, usually, converge, or defer, to physicians (Giles, 2008). Generally, people converge to others who have more power or high status (Giles, 2008); thus, in provider–patient interactions, patients’ deference gives providers the right to direct medical interactions, ask questions, and assert goals (Smith-Dupre & Beck, 1996). As noted previously, many communication problems stem from hierarchical differences that discourage patients’ participation in the medical examination (Real & Poole, 2011). For example, as Goffman (1956) remarked, patients “may not have the right to question their doctor” because it would deny the physician “special apartness from the lay public” (p. 482). Physicians sometimes rebuff patients’ questions with medical jargon (i.e., rescind downward convergence), in “a show of social ‘one-upmanship’ . . . that results in a lack of understanding on the part of the patient” (Thompson et al., 2011, p. 295). When patients perform defiance and/or withhold

deference (e.g., by asking questions), the relationship may become “unstable” (Goffman, 1956, p. 480).

Although O’Hair (1989) reported that patients assert themselves more than “they generally used to” (p. 9), studies still suggest otherwise; specifically, Bensing et al. (2006), analyzing videotaped provider–patient interactions that occurred between 1986 and 2002, found *decreasing* rates of patient question asking during medical examinations. Gáspárik, Abram, Lörincz, and Ceană (2012) wrote that the typical patient “does not ruin [the examination] with long, elaborate descriptions of sufferings, questions, or worries” (p. 164). Even when patients do have questions or concerns, they are not likely to speak up (Thompson et al., 2011).

Physicians’ dissatisfaction with interactions with patients also is well documented and studies suggest that many physicians attribute communication failures disproportionately to their patients. Coran, Arnold, and Arnold (2010), for instance, found that physicians wanted patients to improve their communication by listening more and by asking questions only when invited to do so by physicians, which underscores the assumed supremacy of physicians in many physician–patient relationships. Studies privileging patients’ perspectives, however, have found that patients believe their physicians should spend more time listening to them (Roter & Hall, 2011; Sundar, Rice, Kim, & Sciamanna, 2011).

Researchers have noted an “undeniable decline in the centrality of communication to the care process” (Roter & Hall, 2011, p. 55), with negative consequences for patients exemplified by poor medical outcomes, such as higher blood pressure (Thompson et al., 2011). Poor communication also means that physicians are less liked and trusted by

patients (Roter & Hall, 2011). Nonetheless, physician-training programs remain focused on the development of “clinical skills” rather than “learning relational/patient centered communication skills” (Coran et al., 2010, p. 10). Referencing a 2008 survey of medical students, Coran et al. (2010) noted that the majority believed that communication was “common sense” and that they already had “sufficient communication skills for practicing medicine” (p. 9).

Because many physician-training programs do not develop physicians’ communication skills, as noted above, health communication scholars have advocated for a change in medical education to prioritize communication and relational development skills. Coran et al. (2010) and Thompson et al. (2011), for example, suggested that rather than focusing on physicians alone, programs should adopt an interdisciplinary, dyad-centered training approach that includes *both* physicians and patients. The result, accordingly, would be medical interactions that better incorporate both providers’ *and* patients’ goals. The move to a more patient-centered medical interaction, one that does not prioritize providers’ objectives over patients’ concerns, is “an achievable goal” (Roberts & Sarangi, 2005, p. 639) that slowly is being realized in some healthcare settings. Described below is research that has highlighted changing patterns in provider–patient communication.

Changing patterns in provider–patient communication. Researchers have noted a gradual shift in physician–patient discourse, with studies highlighting interactions that include more patient autonomy and collaboration (Clark et al., 2008; Grey, 2011; Herman, Karpinos, & Rothman, 2012). Labeled *patient-centered communication*, this approach advocates a “humanistic perspective that emphasizes patient participation in

shared clinical decision making” (Schulman-Green, Naik, Bradley, McCorkle, & Bogardus, 2006, p. 145). This approach, more specifically, strives to elicit patients’ thoughts, expectations, feelings, values, and goals (Grosch, Medvene, & Wolcott, 2008), with the goal of “understanding the whole person” (Cegala & Post, 2009, p. 203). Sharf, Harter, Yamasaki, and Haidet (2011) theorized that integrating both physicians’ and patients’ perspectives during medical interactions would produce “genuine shared understanding” (p. 46) between them. Similarly, Politi and Street (2011) described the ideal medical encounter as one in which physicians and patients have a “shared understanding of the patient’s health condition and each other’s perspective” (p. 401). Better outcomes, such as lower blood pressure (Thompson et al., 2011) and patients taking medications or adhering to treatment regimens as prescribed (Peck, 2011), are associated with “shared perspective and understanding” (Grey, 2011, p. 287) between physicians and patients.

Patient-centered communication, arguably, represents a return to old-fashioned medicine. Dr. Abraham Flexner, who was instrumental in revamping physicians’ training during the 1910s and 1920s, encouraged both “clinical reasoning *and* the development of . . . compassion” (as cited in Cooke, Irby, Sulliva, & Ludmerer, 2006, p. 1339). Flexner advocated a biopsychosocial approach to physicians’ communication that incorporated patients’ feelings, thoughts, and expectations (cited in Beach, Easter, Good, & Pigeron, 2005). Roter and Hall (2011) wrote that the “ascendency of chemistry-oriented sciences” and technology, however, directed “medical inquiry away from the person of the patient and to the pathophysiology of the patient” (p. 55). Once the medical interview was recast as “wholly scientific and objective” (Roter & Hall, p. 55), patients’ participation waned.

The resulting biomedical approach downplayed patients' input and privileged physicians' control, as noted earlier (Grey, 2011).

Hence, although patient-centered communication currently is being encouraged (du Pré, 2010), many physicians persist in using a biomedical approach. As described previously, medical training deemphasizes physicians' skills of developing relationships with patients; thus, according to Rosenstein (2012), physicians, inevitably, adopt "autocratic, egocentric, domineering behaviors that are the antithesis of collaboration and [effective] communication" (p. 34). Other health communication scholars have blamed patients for not participating, noting that engaged patients "who actively participate in the medical interview influence physicians to adopt a more patient-centered approach" (Cegala & Post, 2009, p. 203).

Several obstacles deter physicians from engaging in patient-centered communication, with some medical specialties seemingly incapable of embracing the trend. Although physician training remains focused on developing "clinical skills" rather than "learning relational/patient centered communication skills" (Coran et al., 2010, p. 10), lack of time and insufficient financial reimbursement are the biggest impediments to physicians adopting patient-centered communication (Marcinowicz, Pawlikowska, Windak, & Chlabicz, 2013). The "one complaint per visit" approach means that most conversations between physicians and patients are symptom specific, with little time left to discuss patients' overall health and medical interaction goals.

Ideally, medical encounters should encompass broader health issues, moving away from the acute problem presentation–treatment model (Marcinowicz et al., 2013). Lateef (2011) noted, however, that this shift is not likely to occur in busy emergency

rooms for many reasons. Although emergency rooms have become the de facto primary care home for uninsured patients (Eisenberg et al., 2006), physicians rarely form meaningful partnerships with patients they see and treat once or twice (Lateef). In overcrowded emergency rooms, where resources and staff usually are “stretched thin,” patient-centered communication would “add to wait times and delay care” (Lateef, p. 165). In that context, physicians must treat patients as quickly as possible, but they often are stymied by slow-to-report laboratory and radiology departments, and by specialists who delay consults (Apker et al., 2007; Shershneva, Carnes, & Bakken, 2006; Vance, 2010).

Emergency medicine physicians also treat patients with high acuity, many of whom present with several comorbidities, which further complicates diagnosis and treatment. More than half of patients have health literacy skills at or below a ninth-grade level, and those patients rarely comply with prescribed treatments, are more likely to return to the emergency room with acute exacerbations, and report higher levels of dissatisfaction with their healthcare (Herndon, Chaney, & Carden 2011). These, and other communication problems, as discussed later, are compounded by the use of EMRs.

To review, patients’ satisfaction with their providers’ communication efforts is linked with better health outcomes, especially for patients who are not interrupted when describing their symptoms. The competing and mismatched goals that patients and providers bring to the medical examination, however, impede effective communication, as well as relational development, between them. Frequently, the managed care system dictates short encounters and, thereby, forces physicians to restrict conversations to

medically relevant topics. Although, in response, scholars have advocated for patient-centered communication, asymmetrical relationships continue to privilege providers.

Patient-focused research, although taking providers' perspectives into account, largely privileges patients' experiences and their perceptions of communication with providers. Provider-focused health communication research, however, focuses almost exclusively on providers' perspectives, which are equally important if scholars are to understand and improve provider–patient interactions. As described in the next section, much of the provider-focused research has examined interpersonal communication patterns between individual providers, as well as communication in healthcare teams.

Provider-focused Health Communication Research

Most communication research in healthcare contexts has focused on provider–patient discourse, or what Ellingson (2003) called “the frontstage of medical care” (p. 95). That tendency, in her view, is problematic because it limits analysis to bounded episodes between patients and physicians (e.g., brief, examination room-based interactions), with the result being a “relative lack of problematizing of discourse among health care practitioners that occurs away from patients”; hence, she argued that “the clinic backstage . . . [also] must be recognized” (pp. 95, 109). In her long-term ethnography of an oncology team, which consisted of physicians, nurses, a pharmacist, a nurse practitioner, a dietician, and a social worker, Ellingson noted that “team members conducted significant teamwork in hallways, desk areas, break rooms, and other clinic spaces not designated as meetings” (p. 109). Meetings of healthcare personnel, like patient examinations by physicians, are bounded communication episodes, and such episodes are the focus of extensive research on healthcare providers and team

communication. However, according to Ellingson, that focus limits scholarship because most communication about patient care, actually, is informal and unscheduled. Informal and unscheduled discussions, for example, often are the only interactions between nurses and physicians in busy emergency rooms (Park et al., 2012; Xiao, Schenkel, Faraj, Mckenzie, & Moss, 2007).

Research on healthcare team meetings, however, does contribute to understanding healthcare providers' hierarchical relationships and communication patterns, which is an important area of study, because discordant interactions can have serious ramifications for patient care. One such study by Atwal and Caldwell (2005) analyzed 14 multidisciplinary team meetings and concluded that "doctors . . . had more dominant roles in teams" than did other members, and that "therapists, social workers, and nurses are reluctant to voice their opinions" (pp. 271, 268). In their literature review, Atwal and Caldwell cited numerous studies that found nurses rarely questioned physicians, "even in matters of life and death" (p. 272). In fact, studies examining interactions among healthcare providers have found consistently that divergent communication patterns, particularly between nurses and physicians, inhibit collaboration and affect negatively patients (see Eggertson, 2012; Johnson & Kring, 2012). Several studies have noted nurses' reluctance to challenge physicians' orders, even when physicians make glaring mistakes (see Eggertson, 2012; Haddad, 2003; Johnson & Kring, 2012; Robinson, Gorman, Slimmer, & Yudkowsky, 2010; Tschannen et al., 2011). Indeed, Duhigg (2012) reported that communication habits between physicians and nurses were "so toxic" at one hospital that they caused "terrible mistakes and patients died" (p. 157).

The problematic relationship between nurses and physicians is well documented in the health communication literature. As Johnson and Kring (2012) noted, “The relationship has been an unequal one characterized by the dominance of the doctor, with the nurse assuming a position of lower status” (p. 343). Physicians have more formal education than do nurses, and, hence, they enjoy “a higher standing in the social pecking order of the hospital” (Haddad, 2003, p. 28). According to Goffman (1956), such hierarchical relationships are governed by “asymmetrical rules,” which lead “others to treat and be treated by an individual differently from the way that individual treats and is treated by them” (p. 476). As Goffman (1956) explained, “Doctors give medical orders to nurses, but nurses do not give medical orders to doctors” (p. 476). Apker, Propp, and Ford (2005) described the “nurse–doctor game” that takes place when nurses attempt to “guide or direct physicians’ clinical decisions by appearing to be passive to the traditional hierarchy” (p. 102). Medical schools, arguably, deemphasize physicians’ relationship development skills, and the result, according to Rosenstein (2012), is that many physicians adopt “autocratic, egocentric, domineering behaviors that are the antithesis of collaboration and effective communication” (p. 34).

Many physician-issued medical orders play up role differences (divergent communication) by asserting physicians’ dominance and by highlighting nurses’ perceived incompetence (Robinson et al., 2010), but worth noting is that the strong hierarchical culture in most hospitals, which elevates physicians over nurses, also favors *certain* physicians over others; specifically, primary versus secondary care designations prioritize specialists over general practitioners, with specialists having more authority and their orders superseding generalists’ orders (Shershneva et al., 2006). In asymmetric

interactions between primary and secondary providers, fragmented care and ineffective communication have had “a negative effect on quality [of care], patient outcomes, and health care costs” (Shannon, 2012, p.16). Indeed, communication problems were the most-cited cause of medical errors in 2010 (Shannon, 2012).

Communication between groups of physicians, although not always divergent, often can be classified as “nonaccommodative,” which “can be manifest in ‘speech maintenance’ where the speaker sustains a communicative stance . . . to maintain an aura of authenticity” (Giles, 2008, p. 165). For example, generalists may refuse to converge to specialists (i.e., assume a subservient position), but they stop short of divergence and still save face. Speech maintenance is most likely to occur when the conversational “Other” is a member of an undesirable group (Street & Giles, 1982), and the “Other” in many hospitals is the emergency medicine physician. As Apker et al. (2007) noted, emergency medicine physicians and admitting specialists suffer routine communication breakdowns (see the discussion later on provider-focused emergency room communication research). Emergency medicine physicians often have to “sell or force admissions when they believe patients need inpatient care, whereas admittings believe they’re being dumped on—there’s a lack of collegiality between the two services” (Apker et al., 2007, p. 889). Ineffective communication during admission has been identified as a leading cause of medical error, and it plays a significant role in emergency room overcrowding (Apker et al., 2007).

Communication research has shown that although interactions among providers can be problematic, many providers actually are interacting *less* with one another. According to Shannon (2012), communication between hospital-based and primary care

physicians happened in fewer than 20% of discharges. Without effective communication and coordination of care, patients suffer. The Joint Commission of Accreditation of Healthcare Organizations (the accrediting body for U.S. hospitals) has reported that nearly 70% of adverse patient outcomes are caused by communication failures (Eggertson, 2012). Most consultations between providers are not billable, and asynchronous communication, particularly reliance on EMRs, limits conversations among providers (Shannon). Fairbanks et al. (2007) noted that in emergency rooms, triage nurses and ambulance crews do not talk regularly with physicians, meaning that “most handoff information is either secondhand verbal or written” (p. 403). *Handoff* or *handover communication*, which is the process of information exchange that occurs during transfer of a patient’s care from one provider to another to ensure both patient safety and continuity of care, is an especially problematic component of emergency medicine care that has been noted in several studies (Cameron et al., 2010; Eisenberg et al., 2006).

Communication breakdowns have important ramifications for both patient care and hospitals’ finances. Agarwal, Sands, and Schneider (2010) conducted a study of communication challenges among healthcare providers in seven hospitals, finding that those challenges were related to perceived communication delays (e.g., estimated time spent waiting for providers to return calls or respond to pages) and actual time “wasted” looking for providers and/or waiting for calls. Agarwal et al. devised an economic model that quantified three categories of waste: physician time, nurse time, and patient length of stay. They estimated that these communication inefficiencies cost U.S. hospitals more than \$12 billion annually, with increased length of stay alone accounting for 53% of the

burden. A typical 500-bed hospital, by Argarwal et al.'s projections, "loses over \$4 million annually as a result of communication inefficiencies" (p. 265). Argarwal et al. suggested that "technologies aimed at improving communication inefficiencies in hospitals" should be adopted, because those communication technologies will "aid in connecting to the right person about the right patient at the right time" (pp. 278, 279). Numerous studies have pointed to improved communication and patient care following such adoptions, but, as explained below, other research has shown that communication and health information technologies negatively impact provider–patient relationships, communication efficiency, and patient safety.

Communication and Health Information Technologies

Abundant research has revealed mixed results concerning the effects of using communication and health information technologies in medical settings. The ramifications of using such technologies, for both patients and providers, are well documented; however, many studies are situated in primary care clinics and privilege one-on-one bounded exchanges between patients and physicians (see the discussion later about emergency medicine and EMRs). Nonetheless, an overview of this research shows the impact that these technologies continue to have on interpersonal relationships and communication within and across healthcare settings. Research about effects of technologies on provider–patient interactions is especially important given that recent legislation has mandated that U.S. hospitals and emergency rooms adopt EMRs by 2015 (see the discussion later about EMR legislation); hence, there soon will be even more computers in examination rooms, and, consequently, it is important to understand what this will mean for patients and providers alike.

Communication and health information technologies, broadly defined, include computers, EMRs, walkie-talkies, mobile phones, tablets, and electronic whiteboards. Health information technologies (HIT) can improve the quality of patients' charts and medical histories, facilitate communication among providers, allow access to online resources, and may reduce medical errors, but technology also can have unintended consequences: it can increase work for providers, alter workflow, and introduce new types of clinical errors (Shachak & Reis, 2009). Research also has shown that computers and EMRs decrease the amount of interpersonal contact between primary care providers and patients (Montague & Asan, 2014; Overton, in press-a). According to Montague and Asan's (2014) analysis of videotaped interactions between physicians and patients, computers in examination rooms hindered communication, with a third of the physicians' time spent looking at the computer screen instead of at their patients, meaning that those physicians may have missed important nonverbal cues given by patients (e.g., facial expressions that may have signaled patients not understanding physicians' use of medical terminology). Other studies have found that patients express decreased confidence in physicians who use diagnostic support tools in examination rooms (Arkes, Shaffer, & Medow, 2007; Hall, 2014). Although computers are supposed to improve operational efficiency, Teufel, Kazley, and Basco (2012), instead, found that hospitals using computerized physician order entry systems (CPOE) showed no significant difference in patients' length of stay or total cost per stay compared to non-CPOE hospitals; in fact, CPOE hospitals averaged \$70 more per case.

Not all of the findings about the effects of HIT have been negative, as some patients have reported being more satisfied with providers who use EMRs (Hsu et al.,

2005). A study conducted in a Veterans Administration hospital that analyzed videotaped provider–patient interactions also found that physicians’ examination room computer use was associated with patients asking more questions, and, moreover, long pauses in high EMR-use conditions created more conversational turn-taking (McGrath, Arar, & Pugh, 2007). Ward et al. (2013) also found that when EMRs were used in hospitals, patients’ length of stay was reduced.

Hence, the literature has not provided a clear-cut answer regarding the effects of HIT in the medical context. However, before reviewing additional findings, it is worthwhile to discuss briefly the history and practice of patient documentation, especially because most HIT and EMR research has centered on this aspect of medical practice.

Healthcare Documentation

Patient records have existed since the first hospitals were opened and they have evolved to serve two primary goals: documenting expenses and improving medical education (Overton, in press-c). The first goal is of particular interest, because many physicians believe that the patient record still serves, primarily, a financial function for hospitals: facilitating billing and collections (Siegler, 2010). Early hospitals established basic rules to track patient admissions, diagnoses, and outcomes, but the purpose, largely, was bureaucratic, with administrators using patient tallies to justify expenditures (Hess & Ledebur, 2011). As far back as 1737, surgeons in Berlin, Germany were required to note patients’ conditions each morning and to prescribe lunches accordingly; for example, soup was prescribed for patients who were too weak to chew. The purpose of this recordkeeping, according to Hess and Ledebur (2011), was to help administrators track food costs in hospitals; it had little bearing on actual patient care. In 1791, according to

Siegler's (2010) analysis of early medical recordkeeping, the New York Board of Governors required lists of patients' names and their prescribed medications, but no descriptions of their conditions were required; the principal objective was to track fixed medication costs. Documenting formally the care that individual patients received was fairly uncommon in U.S. hospitals at that time; it was not until the end of the 19th century that U.S. physicians began recording the specifics of daily patient care for all patients. From 1860 on, physicians used standardized medical forms to record patients' demographic data, along with their symptoms, treatments, daily events, and outcomes. The reports, however, usually were written retrospectively and in widely varying narrative styles.

Widespread use of templates in U.S. hospitals helped to standardize patients' records, but the resulting numerical data superseded narrative content (Overton, in press; Siegler, 2010). According to Siegler (2010), by the start of the 20th century, graphs and tables dominated patient records, and physicians' narrative summaries began to disappear. The freestyle narrative form that previously had comprised the bulk of patients' records allowed physicians to write as much or as little as they wished. Templates, in contrast, left little room for lengthy narratives—no more than a few inches; consequently, summary reports gave way to brief descriptions of putatively pertinent findings. As medical technology advanced, according to Siegler, the medical record became more complicated and cumbersome with the addition of yet more forms for reporting each new type of test conducted (e.g., chemistry, hematology, and pathology tests). Although most physicians kept working notes on active patients, those scraps of paper notating observations, daily tasks, and physicians' thoughts seldom made their way

into the official patient record. The official record, which emphasized tests and numbers, as Siegler noted, changed medical discourse, with interactions between physicians and patients becoming more data driven. This shift paralleled the change from biopsychosocial to biomedical-driven care, as discussed previously, with healthcare becoming less about the totality of patients' experiences and physicians' perceptions of those experiences.

Today, irrespective of the charting format used, patient records are maintained according to strict guidelines (Overton, in press-c). Several agencies publish recommended guidelines, including the American Association of Nurses, American Medical Association (AMA), Joint Commission of Accreditation of Healthcare Organizations (JCAHO), and Centers for Medicare and Medicaid Services (CMS). Each organization/association regards the medical record as a communication tool for everyone involved in patients' current and future care. The primary purpose of the medical record is to identify patients, justify their treatment, document the course of their treatments and the results, and facilitate continuity of care among healthcare providers. Each agency's charting guidelines require certain fixed elements in patients' record: their name, address, birthdate, attending physician, diagnosis, next of kin, and insurance provider. The patient record also contains physicians' orders and progress notes, as well as medication lists, X-ray records, laboratory tests, and surgical records. Several agencies require patients' full names, birthdates, and a unique patient identification number that appear on each page of the record, along with the name of the attending physician, date of visit or admission, and the treating facility's contact information. Every entry must be signed or initialed legibly, and the date/time must be stamped by the provider.

Although patient records have evolved to ensure continuity of patient care, Siegler (2010) claimed that their current form facilitates billing over communication concerns. Many EMRs, for instance, are modeled after accounting systems, with providers' checkbox choices of diagnoses and tests, typically, being categorized and notated in billing codes. All medical procedures and treatments administered in the United States are reported in Current Procedural Terminology (CPT) codes. The AMA owns that coding schema and charges users a yearly licensing fee for the CPT codes and codebooks, which are updated annually. CMS and most insurance companies require CPT-coded data for reimbursement (AMA, 2014). The results often are medical charts that few providers, and even fewer patients, can decipher without a codebook (Overton, in press-c). Bukata (2013) echoed this assertion, writing, "All that charting . . . is read by virtually no other medical person" (p. 4). EMRs have evolved in this financially driven way, in large part, because the first computers used in healthcare settings were adapted from "the business world [and] have been directly and successfully applied to billing, scheduling, and numerical functions of medicine" (Ash & Ulrich, 1986, p. 361). One important place where such technologies, including EMRs, have affected health care, as described below, is examinations rooms.

Technology in Examination Rooms

Computer-aided healthcare documentation is a fairly recent development. Before computers were brought into examination rooms, providers documented findings on paper charts during or immediately after medical exams. Although there were early adopters, the first EMR users (like many new technology users) struggled with inefficient and sluggish systems. Some progressive hospitals experienced backlash when EMRs

were installed in the early 1980s: “Attempts to force [providers] to use charting or artificial intelligence systems have, in some cases, resulted in open rebellion” (Ash & Ulrich, 1986, p. 362). Ash and Ulrich (1986), in their review of literature on the adoption of computer-based patient charting systems, dating back to 1980, surmised that EMRs were unsuccessful because they were difficult to use, did not generate reader-friendly reports, and were not interoperable (these reasons remain the most cited in present-day research). Cost also was a factor, because mainframe terminals were very expensive in the 1980s. Ash and Ulrich, however, lauded the introduction of “battery-powered” and “mobile” computers with “over 500K RAM” that were suitable for use in “hospital wards, specialty care units, emergency rooms, and the professional’s home” (p. 363). Although rudimentary by today’s standards, that groundbreaking technology allowed patients’ data to be stored and transferred on floppy discs. Ash and Ulrich reviewed one of the first commercially available charting programs, SmartChart, and reported that when the system worked, it resulted in faster documentation over paper charting by 1 to 2 minutes per patient. Versions of the software installed on a Geneva 64K CP/M computer suffered memory overload in 20% of visits, but the prototype was received well by primary care physicians and by nurses working in intensive care units (Ash & Ulrich). The problems that plagued these early computer systems, however, persisted well into the 21st century.

Modern-day computer use in examination rooms has been well documented and researched. Frankel et al. (2005), for instance, conducted a longitudinal study in which they videotaped interactions between primary care physicians and patients at prescribed intervals before, during, and after computers were installed in examination rooms.

Frankel et al. concluded that the “introduction of computers in the exam room affected the visual, verbal, and postural connection between clinicians and patients,” and that these factors “had the potential to alter the sense of connection . . . essential to relationship building and maintenance” (pp. 677, 681). Frankel et al. also noted that preexisting “facilitators and barriers” in both physicians’ verbal and nonverbal communication were “carried forward and amplified when exam room computers were used” (p. 681). In essence, computers magnified already engrained behaviors, both positive and negative.

Pearce, Kumarapeli, and de Lusignan (2013) reached similar conclusions in their systematic review of empirical studies examining computer-induced changes in physician–patient interactions: Across numerous studies, the addition of computers amplified existing positive and negative communication behaviors. Computer-specific behaviors (e.g., typing and screen gaze) also diminished rapport between physicians and patients, as well as the provision of emotional support by physicians. Shachak and Reis (2009), whose study was cited by Pearce et al., concluded that computers negatively affected patient-centeredness but positively influenced biomedical information exchange, noting that the “introduction of the EMR organizes encounters around data gathering demands rather than the patient’s narratives” (p. 645). This point can have repercussions for patients (see the discussion later about consequences of EMR use), with Shachak and Reis offering providers several recommendations for maintaining rapport with their patients. These recommendations include opening visits by addressing patients’ concerns, explaining to patients why computers are being used, pointing to the computer screen, inviting patients to participate actively in building their medical charts, looking at

patients often, separating routine data entry from patient encounters, and learning to type. Typing, especially, “has a negative impact on communication” (Shachak & Reis, p. 647) insofar as communication grinds to a halt when providers type, leading Ventres, Kooienga, and Marlin (2006) to encourage physicians to become better typists.

A study by Ventres, Kooienga, Vuckovic et al. (2006) identified typing as a main factor fueling physicians’ dissatisfaction with EMRs. Ventres and his colleagues (2006) conducted an ethnographic study of four primary care clinics and amassed 80 hours of observations, interviews, and videotaped clinical encounters. With respect to how computers are both used and regarded in clinical practice, they identified four themes: spatial (physical placement of the computer), relational (beliefs that both physicians and patients had about the computer), educational (physicians’ proficiency and ability to teach patients about the utility of computers), and structural (institutional and technological forces that influenced physicians’ perceptions of their computer use). Structural constraints included monetary concerns, “especially regarding the question of whether to type or dictate office visit notes . . . [and] typing was seen as the only way to limit further expenditures” (Ventres, Kooienga, Vuckovic et al., p. 129), because dictation would have required hiring one or more transcriptionists. The result was that typing led physicians to rely on “quick-text features,” templates, and shortcuts to save time. Ultimately, physicians’ shortcuts meant that patients’ charts “all started looking the same,” leading some study participants to bemoan the practice of “cookbook medicine” (Ventres, Kooienga, Vuckovic et al., p. 129). Ventres, Kooienga, Vuckovic et al. concluded that the computer “becomes much like a third party to a conversation . . . and both physicians and patients project their perceptions onto this identity” (p. 130).

Because the use of computers affected several cognitive and social dimensions of medical practice, Ventres, Kooienga, Vuckovic et al. cautioned that “it would be a grave mistake to believe the effects of EMRs will be automatically and universally positive” (p. 130).

Although one obvious benefit of using EMRs is readily accessible medical records (Shachak & Reis, 2009), providers often underutilize this feature because they lack the expertise and time to search for and retrieve patients’ histories. A study by Christensen and Grimsmo (2008) found that physicians rarely spent time searching EMRs for patients’ histories; instead, they either relied on their memories or asked patients about previous visits. Both tactics are problematic given the potential for poor recall, which could lead to medical mistakes. Although virtually all of the physicians in the study reported that it would be useful to review patients’ histories before encounters with patients, 35% reported that asking patients about their past visits was easier than using the computer system. For those physicians who attempted to access digital records, 37% gave up because the task was too time-consuming. More than half of the study’s participants reported difficulty displaying progress notes in a user-friendly, readable format, which harkens back to Ash and Ulrich’s (1986) findings and hints at a problem that is becoming more pronounced: the accessibility and readability of medical data.

Patients’ records contain more data than ever before (Siegler, 2010), and the result is that healthcare providers are experiencing data overload. Many providers have difficulty wading through mounds of data to discern important information from insignificant attestations and results. Although computers and EMRs are supposed to make searching for patients’ data easier, Christensen and Grimsmo (2008) found just the opposite. Even when electronic charts *are* accessed, making sense of the data can be

difficult, as providers have trouble processing quickly the amount of numerical data and graphs that are contained in most medical records (Overton, in press-a; Overton, in press-c; Siegler, 2010). Scott, Hallett, and Fettiplace (2013), for example, found that providers who were given narrative summaries of patients' records performed better on questions about patients' conditions than did providers who were given complete medical records, and they did so in half the time. Their findings highlighted the importance of narrative summaries that *should* be included in patients' records. Hence, there is a clear need to balance numbers with words in medical records, and, thereby, ensure optimal patient care (Siegler, 2010).

In addition to computers and EMRs in examination rooms, other technology has been studied in healthcare settings. For instance, personal wireless communication devices (e.g., walkie-talkies) used in an emergency room were found to improve providers' perceptions of quality communication, because rather than relying on a public address system, the wireless technology facilitated quiet and efficient access to on-call providers and specialists (Richards & Harris, 2011). Fewer intercom announcements, participants maintained, created a better and safer work environment that was free from distractions (Richards & Harris, 2011). To assess how patients viewed physicians using wireless devices, Miller, Ziegler, Greenberg, Patel, and Carter (2012) assigned participants to either a treatment group, in which they received information regarding the utility of these devices, or to a control group. The treatment group expressed more favorable opinions, leading Miller et al. to conclude that "sharing even a small amount of information with [patients] about the utility of handheld wireless technologies such as PDAs, smartphones, or tablets may improve their perception of what physicians are

doing” (p. 59). Sikka et al. (2012) found that patients were very receptive to the role that smartphones could play in managing lacerations; specifically, the majority of participants agreed that sending a mobile phone picture of a minor cut to a physician for treatment recommendations would be an acceptable alternative to going to the emergency room. As Sikka et al. explained, “Patients’ responses were in agreement that mobile health applications can reduce cost, save time, be more convenient, and improve communication with their healthcare providers” (p. 37). In fact, this approach now is being used successfully by Stat Doctors, a telemedicine service that offers urgent medical care consultations via a smartphone app (DeGaspari, 2014).

Whiteboards, which are dedicated bulletin boards used to track patients’ status and length of stay, also have been examined and have particular significance for this dissertation. A 5-year ethnography conducted in a trauma surgical suite charted how the whiteboard facilitated communication and teamwork (Xiao et al., 2007). Although Xiao et al. (2007) studied a whiteboard that could be written on with markers, they made the argument that “replacing traditional whiteboards with electronic systems may weaken communication if we do not fully understand how traditional whiteboards support collaborative work” (p. 388). As it pertains to the present study, it bears mentioning that EMRs have electronic whiteboard components; before EMRs were commonplace, a quarter of communication events in emergency rooms occurred at or near whiteboards (Fairbanks et al., 2007). Xiao et al. found that the surgical suite’s whiteboard encouraged synchronous communication, with staff members meeting frequently at the board, and “during face-to-face interactions, the operating room board provided common reference points . . . [that] enhanced communication while reducing the effort of explicit

communication” (pp. 391, 388). The board also enabled asynchronous communication, as “notes were written to alert all staff to critical issues” (Xiao et al., p. 391). The whiteboard, thus, supported collaborative work in these ways, but it also facilitated task management, status tracking, socialization, and team building. Its location (at eye level), interactivity, and usability made it a valuable “communication information artifact” (Xiao et al., p. 387). Electronic whiteboards, according to Xiao et al., “do away with the socialization and team building that the central board encourages,” and the placement of electronic boards, usually near the ceiling, discourages asynchronous communication and “impedes easy interaction [and] some aspects of visibility” (p. 392). Applying these findings to emergency departments, Xiao et al. wrote:

In the ED [emergency department], a central whiteboard provides an obvious gathering space for sign-out rounds The obvious gathering of physicians encourages notice and involvement by other staff, whereas an isolated sign-out around a computer-based tracking system replicates the hospital’s underlying silo structure: physicians gather with physicians, nurses with nurses. (p. 393)

This final point underscores some of the inherent communication challenges that providers experience in hospitals and, especially, in emergency rooms.

In sum, research has revealed mixed effects of communication and health information technology. Although these technologies have improved some aspects of healthcare delivery, they also have had unintended consequences; namely, increases in providers’ workload, medical errors, and healthcare costs. Computers in examination rooms appear to amplify providers’ existing positive and negative communication behaviors, which can either bolster or stymie their interactions with patients. Computer-assisted documentation has privileged billing functions over medical records’ readability. Furthermore, data entry tasks, especially typing, have led providers to adopt shortcuts

that render patients' charts almost indistinguishable. Other technologies, such as electronic whiteboards, also can impact the collaborative nature of emergency room work. The "silo structure" in many hospitals also contributes to communication challenges that plague providers, especially those who work in emergency rooms. Because emergency rooms are unlike other healthcare settings, it is important to understand both the unique nature of provider–patient relationships and communication patterns that occur in that site. Therefore, the following section provides an overview of research that has examined how providers and patients communicate in emergency room settings.

Communication Research in Emergency Room Settings

Emergency rooms are high-stakes, fast-paced, communicatively challenged environments, yet few studies focus exclusively on emergency rooms or communication patterns in them (Cameron et al., 2010; Fairbanks et al., 2007). Increasingly, emergency rooms are becoming default healthcare homes for underinsured and uninsured patients (Overton, in press-b; Roscoe & Eisenberg, 2014); consequently, it is especially important to study communication in that setting. Moreover, for several reasons, findings about primary care practices, where a substantial amount of interpersonal health communication research takes place, are not generalizable to emergency rooms. First, emergency medicine practice, inherently, involves "caring for multiple patients with highly variable complaints simultaneously," whereas primary care providers see and treat just one patient at a time; hence, "work in [emergency rooms] is unbounded, as there is little control over the workload" (Roscoe & Eisenberg, 2014, p. 393). Second, emergency care is provided in an atmosphere rife with "staff shortages, limited resources,

overcrowding, and long wait times” (Roscoe & Eisenberg, 2014, p. 393). The environment is crowded and loud, and there is no backstage where providers can communicate outside of earshot of patients; such a setting creates a “significant source of communication vulnerability” (Eisenberg et al., 2005, p. 404). There also are frequent interruptions and interstaff conflict in emergency rooms (Person et al., 2013). Third, providers and patients in emergency rooms rarely have an established relationship (Govindarajan et al., 2010; McCarthy et al., 2013). Most visits represent a single encounter, and, according to Hobgood, Riviello, Jouriles, and Hamilton (2002),

the duration and quality of that encounter are influenced by time pressures The emergency physician must quickly establish rapport and trust with the patient, gather information, assess the cause of the emergency, and design a treatment plan. (p. 1257)

Establishing rapport is especially difficult in an emergency room because the interactions that occur there are “between strangers in an emotionally charged environment and . . . [they are] often dominated by tests and painful procedures” (Hobgood et al., p. 1264). Additionally, emergency medicine physicians experience communication barriers in nearly half of their encounters with patients who are unconscious, suffer from dementia, confusion, or altered mental status, are mentally ill, or have limited intellectual ability (Garra et al., 2010). From patients’ perspectives, “piecemeal delivery of information as it becomes available” from multiple care providers can be confusing, especially for those “accustomed to the normal flow of information in the outpatient setting” (McCarthy et al., 2013, p. 266). The emergency room, therefore, is especially ripe for communication breakdowns and is at risk for medical errors (McCarthy et al., 2013; Wei et al., 2012).

For these reasons, it is important to review communication research based in emergency rooms to understand how EMRs have and will affect that already

communicatively challenged environment. As explained below, that research has focused on the patient's perspective, communication strategies that providers use when interacting with patients, discharge communication, and interactions between groups of providers, including communication occurring during the transfer of care and admission processes.

Patient-focused Emergency Room Communication Research

Several studies have privileged patients' experiences and their perspectives of communication with emergency room staff. Much of that research, however, suggests that emergency room patients receive too little information from providers and have few opportunities to express their concerns or to ask questions (Crane, 1997; Farmer, Rotor, & Higginson, 2006; Rhodes et al., 2003; Samuels-Kalow, Stack, & Porter, 2012). For example, Rhodes et al. (2003) videotaped and analyzed 93 interactions between emergency medicine residents and patients at an urban academic medical center, and concluded that "the physician-patient encounter was brief and lacking in important health information" (p. 262). Specifically, Rhodes and her colleagues noted that residents introduced themselves only in two-thirds of encounters, only about half of the patients were told their diagnosis, only 60% were advised of specific symptoms that would warrant returning to the emergency room, fewer than 20% were told what they could expect over the course of their illness or recovery, only 16% were asked if they had questions, and none of the residents confirmed if patients understood the information that had been conveyed to them. Despite most residents beginning examinations by asking patients open-ended questions about their health, only 20% of patients described their chief complaints without interruption. Only 17% of the interruptions were categorized as

“elaborators,” whereby residents sought additional information or clarification; most interruptions were closed questions, and 82% of patients who were interrupted did not finish describing their chief complaints. Interruptions, as mentioned previously, occurred, on average, only 12 seconds after patients began speaking. These behaviors are commonplace among practicing physicians as well; in a study of 74 encounters between physicians and patients over a 4-month period, Farmer et al. (2006) found that physicians, typically, controlled examinations with interruptions and closed-ended questions.

Seven years later, McCarthy et al. (2013), surveyed 266 patients in an urban academic medical center and found more positive outcomes, at least when compared with Rhodes et al.’s (2003) study, as the medical staff did not interrupt patients when they spoke and the staff communicated in terms that patients could understand. The lowest scoring item on the patient questionnaire, however, was “encouraged me to ask questions.” Although McCarthy et al.’s (2013) findings may have hinted that communication patterns in emergency rooms had improved in the decade since Rhodes et al.’s study was published, the majority of the research conducted in emergency rooms has concluded that physicians and residents perpetuate ineffective communication patterns because they do not receive adequate communication skills training (Coran et al., 2010; Hobgood et al., 2002) and/or because they lack the time needed to engage in highly person-centered communication (Cohen, Wilkin, Tannenbaum, Plew, & Haley, 2013; Crane, 1997; Farmer et al., 2006; McCarthy, Cameron, Courtney, & Vozenilek, 2012; Samuels-Kalow et al., 2012). Because physicians *are* “under pressure for timely diagnosis and rapid disposition” (Farmer et al., 2006, p. 141), they often chose efficient communication at the expense of comprehension and rapport (Dean & Oetzel, 2014).

Cohen et al. (2013) found that although emergency room staff recognized the need for engaging in empathic communication, only the nonmedical staff were able to devote time to that type of communication. Many physicians are familiar with techniques that *could* facilitate better communication with patients, but they rarely use them, according to McCarthy et al. (2012), who surveyed a nationwide sample of 169 emergency medicine physicians and residents working in community hospitals and academic medical centers. Effective techniques, identified by McCarthy et al. (2012), include talking slowly, using simple language, reading aloud, using pictures, “following home” (asking patients to explain how they will take medicines or dress wounds at home), and “teach back,” whereby patients demonstrate for providers what they have learned about their conditions or treatments. Of these methods, McCarthy et al. (2012) found that physicians used only the first two regularly. They surmised that this finding occurred because more advanced techniques involve asking patients questions, which could prolong the encounter.

Effective provider communication (e.g., that which is sensitive to patients’ emotional and information needs) is associated with reduced anxiety in patients, as well as with increased trust of physicians (Shankar, Bhatia, & Schuur, 2013). As McCarthy et al. (2013) noted, “The need for good communication is so widely accepted that patient satisfaction with physician communication is now linked to hospital Medicare incentive payments” (p. 262). However, although good provider–patient communication throughout patients’ entire emergency room visit is important, as documented below, discharge communication is an especially important aspect of the emergency medical interaction.

Discharge communication. *Discharge communication* is the exchange of information between providers and patients that occurs when patients have been evaluated, diagnosed, treated, and are being prepared to leave the emergency room. Typically, at that time, providers summarize the visit and clinical findings, teach patients how to care for themselves at home, and address questions or concerns that patients may have (Samuels-Kalow et al., 2012). According to Samuels-Kalow et al. (2012), “At patient discharge, the emergency provider must effectively complete three tasks: communicate the crucial information, verify comprehension, and tailor teaching to areas of confusion or misunderstanding to ensure patient safety” (p. 152). Frequently, however, discharge “becomes an afterthought, limited only to a brief exchange of forms and prescriptions” (Samuels-Kalow et al., p. 152). In their analysis of empirical research, Samuels-Kalow et al. found that many patients did not know their diagnosis, suggested treatments, or reasons that would necessitate a return to the emergency room. An earlier survey of 314 patients immediately upon their discharge from an emergency room by Crane (1997) yielded similar results, with a quarter of the patients not understanding their diagnosis or the purpose of their prescribed medications. Furthermore, most patients were missing over a third of the necessary information that they needed for safe discharge from the emergency department (including reasons to return). Crane (1997) identified time constraints, in particular, as a factor inhibiting effective discharge communication.

Physicians consistently underestimate the time that is needed for discharge communication, according to Ackermann et al. (2012). In their study, physicians were given a vignette involving a chest pain patient and a list of 81 items from which they had to select the most important to include in a 15-minute discussion with patients. The items

chosen, by the authors' estimation, would have taken more than a half hour to communicate. Ultimately, this study and other studies suggest that physicians need additional training in discharge communication. Samuels-Kalow et al. (2012) concluded that patients need "structured content, presented verbally, with written and visual cues to enhance recall" (p. 152). Additionally, messages should be tailored to take into account patients' level of knowledge, and providers should "provide education in a manner that is clear, comprehensible, and culturally sensitive" (Shankar et al., 2013, p. 21).

Provider-focused Emergency Room Communication Research

One of the communication studies about emergency rooms that is cited most often was conducted by Eisenberg et al. (2005), who spent 32 days over 10 months observing interactions among providers in two emergency rooms that were affiliated with academic medical centers. Eisenberg et al. (2005) also interviewed providers and "attended regularly scheduled rounds, shift changes, case conferences, and formal and informal meetings" (p. 396). One of the key findings to emerge from the nearly yearlong study was that providers subjugated patients' stories into actionable lists, a practice that can affect substantially patient care (see the discussion below about consequences of EMR use).

Although Eisenberg et al.'s (2005) study privileged patient outcomes, it also shed light on providers' experiences and interactions. Eisenberg et al. (2005) noted that emergency departments were especially susceptible to communication challenges given their fragmented and hierarchical environment. As Eisenberg et al. (2005) explained:

The ED is internally fragmented by professional fault lines separating physicians from nurses and nurses from techs/aids/EMTs, and externally fragmented by the frequent presence and influence of extra-ED entities (e.g., consultants, pre-hospital services, laboratory, radiology). (p. 392)

In particular, they claimed, these divisions were apparent when nurses disagreed with physicians. Ownership over patients often fueled disagreements; whereas physicians see every patient and, therefore, spend less time with each patient, nurses are responsible for just a few patients. The result, as described by Eisenberg et al. (2005), is that

nurses spend more uninterrupted time with patients and feel more of an authority on particular individuals. Physicians, on the other hand, have more technical training and can claim more authority over diagnosis and treatment; final word always goes to the physician in terms of diagnosis and patient care. Many nurses simply remained silent when they disagreed, following physicians' orders and only later expressing their objections to other nurses. This hierarchical behavior is a serious weakness in the system, and is reminiscent of flight attendants' unwillingness to assert themselves with pilots when they feel something is amiss. (p. 402)

This passage is evocative of findings described in the sections above, underscoring the magnitude of problematic physician–nurse relationships and communication across healthcare settings.

Hierarchical behavior, as described by Eisenberg et al. (2005) and elsewhere (see Eggertson, 2012; Haddad, 2003; Johnson & Kring, 2012; Robinson et al., 2010; Tschannen et al., 2011), is problematic, as is the tendency of providers to cluster in similar groups. As Xiao et al. (2007) found, the hospital “silo structure” means that providers tend to maintain professional boundaries, congregating and communicating with ingroup members, such that “physicians gather with physicians, nurses with nurses” (p. 393). Eisenberg et al. (2005) also observed ingroup members clustering together, noting that, unlike scheduled physicians' rounds, there were no formal “face-to-face interactions between nurses and physicians”; instead, nurses either sought out physicians if they had questions or relied simply “on the chart as their primary medium of

communication” (p. 402). EMRs, however, do away with the common chart, further restraining “the collaborative and social nature of clinical work” (Park et al., 2012, p. 215).

Although Eisenberg et al.’s (2005) study is an important example of the type of communication literature that informs the present study, the medical literature also abounds with examples of between-group differences that are applicable to the current study and, therefore, warrant mention. For instance, in a study assessing physicians’ and nurses’ perceptions of nonurgent communication and communication barriers in an academic medical center, Morgan, Kavar, Rahman, Gatewood, and Fairbanks (2011) found that opinions varied largely by group. Interestingly, half of respondents reported that communication difficulties resulted in negative outcomes and medical errors during some shifts. Wei et al. (2012) also found that physicians, nurses, and technicians had significantly different views about teamwork, patient safety, and communication. Moreover, Farhan, Brown, Woloshynowych, and Vincent (2012) found that group differences influenced perceptions of handoff communication, its purpose, and its execution in an academic medical center. Like discharge communication, as described next, handoff is particularly problematic (Eisenberg et al., 2005), as poor handoff and admission communication often lead to medical mistakes (Farhan et al., 2012; Kessler, Kutka, & Badillo, 2012).

Handoff communication. Handoff or handover communication, as defined previously, is the process of information exchange that occurs during transfer of patients’ care from one provider to another, and it happens under several conditions: during shift changes, when patients are brought to emergency rooms by ambulance, or when patients

are transferred from another hospital. In the first scenario, providers educate incoming staff about patients' conditions, tentative diagnoses, pending test results, and treatment plans (Farhan et al., 2012); in the second case, the ambulance crew communicates pertinent findings from the field, which may include patients' vital signs, medications, symptoms, and social histories (Redfern, Brown, & Vincent, 2009). The ambulance crews' report may be the only information available about unconscious patients and, therefore, is very important for ensuring that providers give patients the most appropriate care (Redfern et al., 2009). When patients are transferred from another facility, handoff may occur over the phone between the referring and accepting providers, or it may occur asynchronously through medical charts accompanying patients upon presentation. In all scenarios, "handover is a vulnerable time for patient safety" (Farhan et al., 2012, p. 941).

Farhan et al. (2012), in their study of handoff in an academic emergency medicine department, found that perceptions of good handoff communication varied as a function of role and training. As Farhan et al. noted, "Handover is a skill that is not formally included in medical training" (p. 941). Study participants estimated that they wasted up to 3 hours of shift time "catching up with issues following poor handover" (Farhan et al., p. 943), with one respondent stating that an entire shift had been spent tracking down information about a patient after receiving *no* handoff communication. Problematic handoffs were believed to have led to adverse events, including delays in treatment. The authors devised a handoff tool that could be implemented easily, irrespective of staff members' training or role. Their recommendations included providing a written and/or verbal account of each of the following: acuity and diagnosis for each patient, any equipment problems, waiting times, number of available beds, number of admitted

patients housed in the emergency room awaiting inpatient beds, deaths occurring during the previous shift, violent or aggressive patients, and any staff issues or shortages.

Farhan and her colleagues folded their recommendations into an easy to remember mnemonic: the ABC method. It is formatted as follows: Areas and Allocations (location of patients and available resources); Beds, Bugs, and Breaches (available beds, infectious patients, and breaks with protocol); Colleagues and Consultants; Deaths, Disasters, and Deserters (patients who leave against medical advice); and Equipment and External Events. Early tests demonstrated that the process “takes less than 5 minutes to complete” (Farhan et al., p. 945).

Handoff communication can be especially problematic for patients arriving by ambulance. As noted earlier, Fairbanks et al. (2007) found that triage nurses and ambulance crews do not talk regularly with physicians, meaning that “most handoff information is either secondhand verbal or written” (p. 403). Redfern et al. (2009) made a similar observation in their analysis of the handoff process involving an ambulance crew in a London emergency room, noting that there was limited face-to-face interaction—the ambulance crew simply handed over written assessments of patients during brief verbal exchanges with nurses. The written report, the bottom copy of a triplicate form, was given to a receptionist who then scanned it into the hospital’s digital record system. The scanned document, however, was completely illegible 82% of the time and only partially legible for the remaining 18%. The forms “contained substantial amounts of important clinical information that was often essential to proper care of the patient” (Redfern et al., p 659), but they never were read by physicians. A simple solution was devised: scan the top sheet of the triplicate. After implementing that small

change, the scanned forms were “100% wholly legible,” proving that “simple interventions produce significant results” (Redfern et al., pp. 659, 660). Redfern et al. expressed dismay over staff members’ inaction, citing the “extraordinary tolerance of healthcare staff for inefficient or failure prone systems and the degree to which they cope with frustrating working conditions rather than attempting to change them” (p. 661). As shown in chapter 3, such inaction may be explained, in part, by tenets of structural divergence theory.

To review, effective and safe handoff requires clear communication between groups of providers when care for patients is transferred. However, although handoff has been examined within the context of shift change, patients arriving by ambulance, and patients being transferred from other hospitals, an additional domain of handoff communication, as described below, includes admission to the hospital from the emergency room.

Communication during admission. Ineffective communication during admission is a leading cause of medical errors and contributes to emergency room overcrowding (Apker et al., 2007). Similar to handoff, admission involves transferring care; in this case, from the emergency department to an inpatient hospital unit. The task of admitting patients often poses communication challenges for emergency room staff, because, according to Eisenberg et al. (2005), it “is a political process.” From the perspective of emergency room physicians, admitting patients involves persuading another physician (typically, a specialist) to accept patients into their service, but specialists “are selective in whom they wish to admit, at times applying different criteria for admission than the ED” (p. 407). As Stephens, Clark, and Patterson (2012) found,

communication barriers between physicians and specialists inhibit timely admission and delay patient care. In their ethnographic study of an academic emergency department, Stephens et al. (2012) noted key barriers: paging system problems that resulted in delays, uncertainty as to who to contact regarding admitting patients to particular services (e.g., cardiology or internal medicine) and how to contact those providers, specialists who do not respond to pages or return calls, and inability of emergency physicians to follow up on communication requests given their workload (i.e., they are busy seeing new patients). These barriers, in addition to delaying timely care, create additional and duplicate work for emergency room staff forced to page and call specialists several times.

Problematic communication plagues 14–24% of admissions, according to Kessler et al. (2012). Kessler et al. found that poor admission communication increased costs for patients and decreased the quality of care that they received and their overall satisfaction. In their analysis of communication patterns that occurred in an academic emergency department, Kessler et al. uncovered interpersonal and communication conflicts that were a result of specialists “not responding to a page, not communicating, taking hours to get an answer, being rude to ER staff, and treating ‘us as if we’re stupid’” (p. 708). When conversations did take place, emergency room staff were expected to “speak briefly” and get “to the point quickly” (Kessler et al., p. 708). Marshall et al. (2011), surveying emergency medicine and internal medicine residents about the perceived quality of the admission discussions in which they engaged regularly, found equally problematic admission discussions. Emergency medicine residents had a much more positive view of the quality of information that they conveyed during the admission process than did the internal medicine residents who received it. Internal medicine residents reported that

admission communication was clear and organized only half of the time, whereas 80% of emergency medicine residents believed that most admissions were communicated clearly and effectively. Internal medicine residents also thought that poorly communicated admissions led frequently to delays in patient care and actually harmed patients, whereas emergency medicine residents believed that these problems happened in fewer than 10% of admissions. Taken together, both of these studies underscore the hierarchical nature of physician specialties and the problematic communication between them.

Discordant provider interactions that delay admissions also contribute to emergency room overcrowding. Patients “waiting for beds” often are boarded in emergency departments; admitted patients “are routinely pushed into the hallway to make room for new patients,” but this practice “creates significant physical and psychological noise that negatively impacts patient care” (Eisenberg et al., 2005, p. 408). Ironically, these “visible” patients, according to Eisenberg et al. (2005), are “psychologically ‘out of mind’ and receive less attention” (p. 408).

Admission also creates difficulties for both emergency room nurses and floor nurses who continually navigate differing expectations of the admission process and its associated workload. Emergency room nurses push for quick admission because boarding patients, as described previously, compounds an already difficult working environment and erodes the quality of patient care. Although boarded patients may receive less care than active patients (i.e., patients who have not been dispositioned and/or discharged), nurses still are responsible for them, along with all of the new patients presenting to the emergency room. Most floor nurses, however, enjoy a “ratio of two patients to one nurse” (Eisenberg et al., 2005, p. 408). Even if beds are available,

“the units will not accept new patients” if doing so violates the two patients-to-one nurse quota, even though emergency room nurses “may be caring for twice as many critical patients” (Eisenberg et al., 2005, p. 408). This practice of delaying or refusing patient admissions results in perceived inequities, and, given the uneven distribution of patients, it creates tension between floor and emergency room nurses.

In summary, emergency rooms are communicatively challenged environments, with studies demonstrating consistently that “key communication variables associated with rapport and satisfaction . . . are somewhat lacking in provider–patient interactions” (Rhodes et al., 2003, p. 266). Incomplete discharge, poor handoff, and problematic admissions affect patients’ safety, but they also erode providers’ job satisfaction. Structural constraints demand timely and efficient care, but inadequate resources and overcrowding are ever-present obstacles in most emergency rooms. The problem is compounded further by hierarchical relationships and discordant interactions between groups of providers. As Person et al. (2013) noted, “The ED is an intense and stressful work environment and . . . frequent interruptions, overcrowding, inter-staff conflict, and technology barriers contribute to workplace stress” (p. 226). Understanding these factors informs a more nuanced analysis of the impact that EMRs are having in an already compromised communication environment, with the next section examining literature on EMRs, EMR legislation, and effects of EMRs used in emergency room settings.

Emergency Medicine and Electronic Medical Records Systems

Although many primary care providers have used EMRs with varying degrees of success since the 1980s, emergency room EMRs are rare, with Landman et al.’s (2010) study finding that fewer than 2% of U.S. emergency rooms had fully functioning EMRs.

As noted earlier, studies have shown that EMRs change workflow patterns, communication, and patient care (Xiao et al., 2007). In 2007, Fairbanks et al. called for more research on the effects that EMRs will have on emergency medicine practice; since then, the U.S. Federal Government has mandated that hospitals must begin using EMRs by 2015, and the consequences of that mandate are far-reaching.

What follows is a review of that legislation, with a subsequent discussion of emergency room-focused EMR research. I then review literature pertaining to factors inhibiting EMR adoption, as well as consequences of EMR use, including economic costs and implications for patients and providers.

Electronic Medical Records System Legislation

Although EMRs are not used widely in U.S. hospitals, recent legislation aims to change that practice. The Health Information Technology for Economic and Clinical Health Act (HITECH) was passed in 2009 as part of the American Recovery and Reinvestment Act. The HITECH Act was modeled after the Wired for Health Care Quality Act of 2007 and the Healthcare Technology Act of 2008; both acts addressed healthcare privacy management and attempted to establish unifying technology standards (Stark, 2010). These legislative acts were fueled, in part, by reports from the Institute of Medicine (IOM) and the World Health Organization (WHO). IOM released *To Err is Human* in 1999, which reported medical errors as the eighth leading cause of death in the United States (Kohn, Corrigan, & Donaldson, 1999). In 2000, WHO ranked the United States 37th in overall health system performance, citing, specifically, its poor use of information technology as a factor contributing to the low ranking (Pipersburgh, 2011). In 2001, IOM's *Crossing the Quality Chasm* suggested that widespread use of health

information technology (HIT) could reduce medical errors (Farley et al., 2013). That claim was based, in part, on research that suggested EMRs could reduce medication errors by up to 80% (Pipersburgh, 2011). Still other reports suggested that EMRs would cut health care costs; not only would EMRs “improve efficiency and amplify the quality of healthcare” (Noor et al., 2012, p. 15) but access to patients’ complete medical histories would prevent overprescribing medications, which, potentially, could save billions of dollars.

In what has emerged as an oft-quoted and maligned report (Bukata, 2013), Hillestad et al. (2005) estimated that EMRs would result in a potential annual savings of more than \$81 billion. Hillestad et al. (2005) compared information technology (IT) use in other sectors (e.g., banking and online shopping) with healthcare’s IT adoption and projected enormous potential savings, provided “interconnected and interoperable EMR systems [were] widely adopted and used effectively” (p. 1104). Telecommunication and retail industries invested heavily in IT during the 1990s, and, as a result, they later saw “60% annual productivity growth” (Hillestad et al., 2005, p. 1106). Assuming similar IT investments, the report projected that hospitals could expect savings of \$371 billion over 15 years. Many physicians, however, took issue with that comparison, noting that “the analogy doesn’t hold [because] healthcare is not the airline or banking industry, it’s about two humans, face-to-face, and computers don’t fit into this transaction” (Bukata, 2009, p. 4). Other highlights from the Hillestad et al. (2005) report included an estimated reduction in the number of medication errors by 200,000 a year and \$147 billion in annual savings attributed to EMR-enabled chronic disease prevention and management programs. Hillestad et al.’s report pointed out, however, that insurance companies would

likely reap most of the savings, and, consequently, “providers face limited incentives to purchase EMRs because their investments typically translate into revenue losses for them and [savings] for payers” (p. 1108).

Despite promises of improved patient safety and operational efficiency, EMR adoption rates have remained low. As Stark (2010) noted, “Our healthcare delivery system resisted the digital revolution that . . . occurred everywhere else” (p. 24). However, the U.S. Federal Government wants to see the same innovations in healthcare that technology brought to banking and shopping (Ackerson & Viswanath, 2009). That desire, potentially, is problematic, because many recent studies have identified some barriers that stymie EMR adoption; namely, EMRs are expensive, difficult to use, time-consuming, interfere with the physician–patient relationship, and disrupt workflow (Ajami & Bagheri-Tadi, 2013; Nambisan, Kreps, & Polit, 2013; Pipersburgh, 2011; Tomes, 2010). As Fontenot (2013) noted, “Evidence that (EMRs) will be essential and effective in enabling the improvement of healthcare quality is neither conclusive nor straightforward [and] the medical community doubt whether digital information benefits the quality of care at all” (p. 72). Nonetheless, the HITECH Act requires EMRs in hospitals and emergency rooms.

The HITECH Act is both promising and problematic; its Meaningful Use (MU) program, as described below, is divisive and widely contested. HITECH’s major goals include reducing healthcare costs by improving healthcare quality and coordination, reducing medical errors, improving HIT infrastructure through incentives and grant programs, and creating a national electronic health information exchange (Pipersburgh, 2011). Before HITECH was passed, only 10% of hospitals used EMRs (Pipersburgh,

2011); by 2012, 27% of hospitals used some form of electronic charting (Berger, 2013). The increase in EMR use was attributed to the MU program, which provides financial incentives for hospitals and clinics adopting EMRs. By May 2013, 80% of hospitals had received some incentive pay (DesRoches, Audet, Painter, & Donelan, 2013), but, overall, EMR adoption was slower than expected following the MU rollout (Diana, Kazley, Ford, & Menachemi, 2012). As of 2013, only 10% of physicians reported meeting the MU requirements (DesRoches et al., 2013). Noor et al. (2012) noted that the “complexity of the Meaningful Use measures” (p. 16) actually was an adoption deterrent for many physicians. However, the goal of MU “is not simply adoption, but true meaningful use” (Callahan, 2013, p. 56), resulting in improved coordination of patient care, reduced disparities, and improved public health.

To begin receiving MU incentive payments, hospitals and physicians must show that they are meeting at least 19 of 24 Stage 1 objectives for 90 days in the first year of EMR adoption and a full year thereafter (Colpas, 2013). Stage 1 focuses on collecting health information in a standardized format, tracking select clinical conditions, better coordinating patient care, and implementing clinical decision support systems that include warnings about drug interactions or contraindications (Eastaugh, 2013; Pipersburgh, 2011). Stage 2 requirements, which include using computerized provider order entry and electronic laboratory reporting, must be met for a full 2 years. Stage 3 will involve improving quality, safety, and efficiency, as well as expanding clinical decision support tool use and providing patients access to their health information (Colpas, 2013; Piperburgh, 2011). As of 2015, the U.S. Federal Government imposes

financial penalties for hospitals and physicians failing to meet MU objectives by withholding a percentage of Medicare and Medicaid payments (Nambisan et al., 2013).

Despite promises of financial incentives and threats of withheld payments, MU is not working because the requirements are difficult to meet, costly to implement, and have affected physician productivity negatively (Noor et al., 2012). Nearly 20% of 2013 Stage 1 participants did not continue the program after 90 days, “despite 5 figure financial incentives” (Koriwchak, 2014 para. 6). Verdon (2013), surveying nearly 1,000 physicians using EMRs who had participated in MU, found that 70% believed that EMRs were not worth the cost, did not improve patient care, and did not improve coordination of care. Forty-five percent believed that EMRs actually made patient care worse, and two thirds reported significant financial losses following EMR adoption (Verdon, 2013). Interestingly, as Koriwchak (2014) noted, satisfaction among EMR users has fallen considerably following MU, “from over 90% to about 30%” (para. 6). Forced adoption, mandated by the HITECH Act,

destroyed the base of satisfied EMR customers from 2008, replacing it with a much larger base of unhappy, resentful customers . . . forced to spend huge amounts of money on unproven, underdeveloped EMR products that they did not want and were not prepared to properly use. (Koriwchak, 2014 para. 10)

Although early adopters made deliberate and calculated purchasing decisions in a market-driven economy, “MU-driven EMR purchasers” (Koriwchak, 2014, para. 9) grappled with vendors churning out untested products to meet legislated demand. As noted above, most of those systems were designed with billing departments in mind, not end users. According to P. Viccellio, a physician, “EMRs are not user friendly or medically oriented at all but pushed on us as a way to increase billing Instead of looking at a medical chart, it’s like I’m looking at a spreadsheet” (personal

communication, February 10, 2014). As Noor et al. (2012) noted, EMRs “won’t be functional and physician-friendly until or unless physicians themselves have more input into their design” (p. 17).

Apart from design and usability issues, there are more pressing problems with EMRs. Vendors rushing to meet forced demand produced software packages that “literally did not talk to one another” (Fontenot, 2013, p. 72), which is especially problematic given that HITECH’s goals include standardized and interoperable EMRs, meaning that “multiple clinics and hospitals should be able to access and update [records] as patients seek treatment at multiple locations” (Eastaugh, 2013, p. 42). Most systems, however, are *not* interoperable (Berger, 2013; Colpas, 2013; Eastaugh, 2013; Likourezos et al., 2004; Rouf, Whittle, Lu, & Schwartz, 2006; Stark, 2010; Venkatraman, Bala, Venkayesh, & Bates, 2008). DesRoches et al. (2013) found that the most difficult MU objective to meet was data exchange among providers, noting that “more often than not providers who do successfully adopt health IT systems find themselves on an information island where they cannot exchange clinical data with other providers . . . given the differing standards used by various developers” (p. 26).

To correct the interoperability problem, the HITECH Act created the Office of National Coordinator for Health Information Technology (ONCHIT), which oversees EMR standardization and certification (Callahan, 2013). ONCHIT now requires developers to use Health Level 7 international healthcare informatics interoperability standards to ensure the electronic exchange of health information between computer systems. In 2011, six ONCHIT-recognized Authorized Testing and Certification Bodies began testing and certifying EMR systems; that year, only 309 of the nation’s 5,000

hospitals were using *certified* EMRs (Piperburgh, 2011). That statistic means that many early EMR adopters will spend considerable sums to bring their “systems into compliance with the new standards issued by ONCHIT” (Stark, 2010, p. 27). Although the U.S. Federal Government made \$560 million available to state governments for developing health information exchange capabilities, interoperability remains a problem (Blumenthal, 2010).

In a follow up to Hillestad et al.’s (2005) report, Kellermann and Jones (2013) addressed the issue of interoperability. Acknowledging that EMR-induced savings fell short of projections, Kellermann and Jones blamed systems that function “less as ‘ATM cards’ allowing a patient or provider to access needed health information anywhere at any time, than as ‘frequent flyer cards’ intended to enforce brand loyalty to a particular health care system” (p. 64). The authors maintained that the 2005 projections still *were* attainable but would require redesigning EMR systems to ensure interoperability, as well as usability. Hard-to-use systems have stymied adoption, but, curiously “vendors [still] have not made usability a priority” (Kellermann & Jones, p. 65). Rather than hinder providers, as Kellerman and Jones explained: EMRs should make documenting clinical care easier:

User interfaces should be similar enough that a clinician working in one health system can intuitively discern how to use another without extensive retraining. For example, car makers offer a wide variety of makes and models, but important controls are consistent enough to enable a customer to drive any vehicle off a rental lot without instruction. Health IT should be no different. (p. 66)

Kellerman and Jones also noted that, contrary to predictions, EMRs “could be associated with boosting charges” (p. 65).

In addition to EMRs increasing healthcare costs, as Kellerman and Jones (2013) acknowledged, there have been other unintended consequences. As described previously, EMRs have affected both interpersonal relationships and communication patterns between providers and patients. Although EMRs in emergency rooms are somewhat new, as reviewed below, several important studies, all published since 2012, have examined effects of EMRs in that setting.

Emergency Room-based Electronic Medical Records System Research

Several emergency room-based EMR studies have focused on quantifiable changes in the frequency of certain processes or tasks, and time needed to complete those tasks, after an EMR has been installed. Hill et al. (2013), for instance, observed 16 attending physicians, residents, and mid-level providers (e.g., nurse practitioners or physician assistants) in an academic medical center for 30 hours, and recorded the time that providers spent entering data into an EMR, interacting with patients, talking with other providers, and viewing test results. Hill et al. found that providers, on average, spent 44% of their time using the EMR and only 28% of their time engaged with patients, whereas before EMRs, providers, especially physicians, spent more time on direct patient care. This shift, as Bukata (2013) noted, “is the opposite of what should be happening . . . It is truly embarrassing to go to modern EDs and see 25 computer terminals with the majority of staff pecking and staring into flat panel monitors” (para. 3).

Hill et al. (2013) found that face-to-face interactions with other providers accounted for only 13% of a typical shift, mirroring what Person et al. (2013) found in their emergency room-based ethnography: EMRs “impeded human-to-human communication and contact” (p. 225), especially between physicians and nurses. Park et

al. (2012) also found decreased contact between physicians and nurses in their 6-month long naturalistic study of an academic medical center, observing physicians, residents, and nurses before, during, and after an EMR was installed. Before the EMR, all of the providers shared a common chart for each patient, and, as Park et al. explained:

Whenever ED doctors documented charts or put in orders, they had to go to the nursing station to pick up the paper charts. As a result, the doctors naturally interacted with nurses and spoke about the progress of their patients whenever the charts were picked up. (p. 208)

After the EMR, physicians spent more time “in the charting room” where the computer was installed and, consequently, “as the doctors’ work became more stationary, less time was spent in the nursing stations and the patients’ rooms” (Park et al., p. 211).

Both Hill et al. (2013) and Park et al. (2012) found that EMRs reduced the time that physicians spent interacting with nurses *and* with patients, but Park et al. also noted an interesting paradox: Physicians relied on nurses for updates about patients rather than attending to patients themselves. This outcome occurred because physicians who were busy documenting patients’ medical cases on the EMR were “less likely to check patient situations” (Park et al., p. 212) and, instead, they took cues from nurses regarding patients’ conditions, but that required nurses coming to the charting room. Despite fewer face-to-face interactions between physicians and nurses, patient updates were conveyed during nurse-initiated discussions. Park et al. did not address, specifically, the frequency or number of nurse-initiated updates but other studies, as noted earlier, have found that nurses are hesitant to approach physicians with concerns (see Atwal & Caldwell, 2005; Eggertson, 2012; Haddad, 2003; Johnson & Kring, 2012; Robinson et al. 2010; Tschannen et al., 2011). Ultimately, as Park et al. suggested, the absence of bedside talk

with physicians means that patients suffer because “the subtle psycho-social aspects of patient experiences during emergency visits” are not attended to (p. 212).

Park et al.’s (2012) study is important for several other reasons as well; namely, it is the only observational “before, during, and after” study published to date about EMR effects in an emergency room setting. Key findings from the study, in addition to those discussed above, include a four- to fivefold increase in documentation time, an increased number of incomplete patient charts, duplication of charting efforts, and increased cognitive burdens for physicians tasked with remembering multiple patients’ data. In using paper charts, Park et al. observed that physicians could complete their charting at each patient’s bedside in 2–3 minutes before moving on to see the next patient, but after EMRs were installed, documenting took up to 10 minutes per chart and had to be completed in the charting room *after* several patients had been seen. The shift in charting location, from the bedside to the charting room, introduced several unintended consequences that affected adversely workflow. Park et al. described those changes and the resulting workarounds:

When doctors—especially residents who collected information initially—had to take care of multiple unfinished records at the same time, memorizing and transferring all the information often became a challenge. To deal with this situation, ED doctors developed a habit of using personal hand-written notes as memory aids to carry bedside information back to the charting room for later documentation. (p. 210)

This workaround, however, meant a duplication of effort: physicians first recorded histories and findings by hand, and, later, they had to type the same information into the EMR.

When compared with “quick, free hand-writing on paper charts,” Park et al. (2012) found that data entry was tedious, because physicians had to “switch back and

forth from clicking through many checkboxes and radio buttons, to typing in text boxes” (p. 212). Given the time that data entry took, up to 10 minutes per chart, most physicians delayed completing charts until after their shifts had ended, usually staying an hour or more to finish documenting. Hence, another unintended consequence brought by the EMR is unfinished patient charts. Sometimes, as Park et al. observed, charts would not be completed until hours or even days *after* patients had been discharged, which could “affect other nurses or attendings whose work was reliant on accessing timely information documented in the EMR system” (p. 211). Furthermore, as Park et al. observed, the particular EMR installed at the research site “does not specify which part of the [medical] note is documented by whom” (p. 214), which made it difficult for providers to address questions to the appropriate person. For these reasons, Park et al. concluded that despite the EMR improving “legibility, readability, and searchability of the medical record,” the EMR restrained “the inherent, collaborative, and social nature of clinical work” (p. 215).

An important emergency room-based study that focused on emergency medicine performance metrics “before” and “after” an EMR implementation was conducted by Ward et al. (2013). The authors collected data over a 6-month period at an academic medical center about five primary variables: length of patients’ stay, number of diagnostic tests ordered, number of imaging tests conducted, medication administration, and patients’ satisfaction. They established baseline measurements for these variables over a 4-week period and then tracked changes after an EMR was installed. Ward et al. found that “median length of stay increased for admitted and discharged patients, a change that lasted approximately 8 weeks . . . [but] the interval from clinician to

disposition showed a sustained increase and never returned to baseline” (p. 323).

“Clinician to disposition” refers to the time that it takes a physician to diagnose a patient after an examination is conducted and tests results are evaluated. Although the number of radiological studies (e.g., X-rays or CT scans) did not increase significantly during the study period, other tests did increase; for example, as Ward et al. noted, “the number of ECGs performed increased from 23.7 to 35.7 per 100 patients and laboratory testing with results available increased from 225.4 to 374.5 tests per 100 patients” (p. 323). The amount of medication administered also increased, as “medication administration per 100 patients nearly doubled after implementation, and this difference was sustained through the entire study period” (Ward et al., p. 323). Patient satisfaction, presumably, because of the increased length of stay, decreased during the first 2 months after the EMR was installed, and although patient satisfaction rates improved over the subsequent 24 weeks, they did not return to the baseline (Ward et al.). Ward et al. concluded that, for some variables, postimplementation disruption ranged from 4 to 16 weeks, whereas other variables (i.e., number of tests ordered and medications administered), never returned to baseline.

The most pertinent finding from Ward et al.’s (2013) study was that “the observed increases in laboratory testing, radiologic imaging, and ECG rates appeared to persist throughout the follow-up period” (p. 326). This additional testing affects adversely workflow, in that nurses and technicians assume more work with respect to administering more tests, further slowing patients’ throughput times and adding to length of stay. Increased testing also affects patients, whose hospital bills increase with each added test,

procedure, or medication (Bukata, 2011; Kellermann & Jones, 2013). This unintended consequence (i.e., more tests), according to Ward et al. is attributed to “order sets”:

Order sets are used by physician groups to increase adherence to local practice patterns and to speed the ordering of complex sets of orders, and when formalized as part of the electronic health record implementation they may also have increased the use of radiologic tests, medications, and laboratory tests that would not have been ordered in a paper-based system. Also, the electronic health record may have enhanced the ability to order tests by simply clicking a button or through the use of order sets. Although paper order sets were in use before the electronic health record implementation at this particular facility, adoption of electronic order entry has been shown to increase ordering of tests and medications through order sets. (p. 326)

Ultimately, the EMR, as Ward et al. concluded, was associated with “diminished patient experience,” “transient operational deficiencies,” and “sustained increases” (p. 327) in tests.

An additional finding from Ward et al.’s (2013) study, which, although not discussed in detail, merits mentioning: “Unit clerk hours had decreased by 33% from baseline by the end of the study period, which was a planned decrease because of the increased administrative work that would be performed in the electronic health record by clinicians” (p. 323). This finding means that a class of employees, unit clerks, who, previously, had typed or processed orders for physicians, were being scaled back, whereas “highly trained clinicians,” for whom “clerical activity” is “a waste of time and expertise” (Foppe, 2014, p. 23), were tasked with data entry, in addition to seeing and treating patients. Shifting data entry responsibilities to physicians has had unintended and negative consequences. As discussed previously, Ventres, Kooienga, Vuckovic et al. (2006) identified typing (necessary for data entry) as a main factor fueling physicians’ dissatisfaction with EMRs, and the result was that “quick-text features,” templates, and shortcuts meant that patients’ charts “all started looking the same” (p. 129). These quick-

text shortcuts led study participants to bemoan “cookbook medicine,” whereby patients’ charts became almost indistinguishable (Ventres, Kooienga, Vuckovic et al., 2006, p. 129).

Callen et al. (2013) also noted that introducing an EMR into an emergency room shifted the data entry workload from clerks to physicians, and that the results, largely, were negative, as users “reported difficulty with assimilating the use of the technology with their work, particularly in relation to the significant data entry demands required and the time taken” (Callen et al., p. 136). More time spent on data entry, consequently, meant that physicians spent less time engaged with patients. EMR-users also complained that the system “was not user friendly or intuitive” and that the “electronic process entailed more steps in the completion of previously simpler tasks and generally created more work” (Callen et al., p. 138).

Callen et al.’s (2013) study, despite the aforementioned negative findings, did report some advantages associated with the EMR. Their ethnographic study, conducted in four Australian academic emergency departments, included observations, focus groups, and interviews conducted with 97 physicians and nurses. Participants’ perceptions were recorded following introductions of an “ED information system” (akin to an EMR) into their emergency departments. The system enabled almost immediate access to patient data and, thereby, allowed all providers, including specialists and consulting physicians, to see test results and findings, irrespective of who placed orders. Study participants reported that the quick access “contributed to improved care coordination, communication, clinical documentation, and the consultation process” (Callen et al., p. 131). Prior to the EMR, requests for patients’ past medical histories

often meant a 4-hour wait for the records department to find and deliver paper-based charts. Faster access was valued because “past clinical information was considered crucial, especially for those with extensive medical histories who are unable to communicate their clinical history” (Callen et al., p. 136). The electronic records also were advantageous over paper charts because the issue of illegible handwriting became moot. Despite the advantages, however, Callen et al. cautioned that although EMRs can “improve patient care delivery,” they also can “facilitate new kinds of clinical errors and introduce additional costs” (p. 132). Ultimately, the ED information system led to “increased task complexity, duplicate documentation, and computer issues related to system usability” (Callen et al., p. 131).

In summary, research on EMRs in emergency rooms has revealed mixed results. EMRs have shifted work patterns, increased documentation time, prolonged length of stay, and upped the number of tests and medications ordered, but, in some instance, EMRs also have improved access to patients’ medical records and led to better coordination of care between multiple providers. Although the literature is inconclusive, the risks *seem* to outweigh the benefits—even studies with positive findings cautioned that EMRs introduced problems and unforeseen consequences (Callen et al., 2013; Ward et al., 2013). As such, hospital administrators and emergency department directors have been slow to adopt EMRs, with, as noted above, fewer than 2% of U.S. emergency rooms having fully functioning EMRs in 2010 (Landman et al., 2010). Several factors that contribute to that abysmal adoption rate are discussed in the following section.

Factors Inhibiting Electronic Medical Records System Adoption and Implementation in Emergency Rooms

Medicine never has been a rapid adopter of innovation (T. Cook, 2014). T. Cook (2014), a physician and *Emergency Medicine News* reporter, noted that physicians “take years to agree on anything, and older physicians seemingly do not want to change anything” (p. 25). Although physicians often are cited for “not being comfortable with new technology” (Noor et al., 2012, p. 17), resisting change is not unique to medical professionals; in fact, most “people have a general tendency to stay with their current circumstances . . . going with a new alternative is cognitively difficult, whereas a status quo choice is mentally less laborious” (Nesterkin, 2013 p. 576). According to Lewin’s (1947) tenets of change theory, inherently, people resist change unless they believe that the way things are being done is problematic *and* that an improvement is available. Even then, lasting change happens only if people are willing to learn the new process, feel safe in the learning environment, and regard the change as compatible with their other tasks and behaviors. Similarly, diffusion of innovations theory suggests that, for a diffusion to be successful, people must be aware of an innovation, convinced that adoption of it is beneficial, and then use it (see Rogers, 2003). Feedback is crucial to communicate that an innovation is an improvement, especially if it is to be adopted permanently. EMRs, however, seem doomed, according to both change theory and diffusion of innovation theory, as few medical providers find the old way of charting problematic, few find EMRs to be an improvement, EMR training programs are flawed, and feedback about EMR use, largely, is negative (see sections below). As a physician blogged, “So, we have replaced a very clear and simple ordering system which functioned well for years with this complex mess that few can navigate and no one understands and no one can

explain *why*” (cited in Armstrong, 2014, para. 14). In most organizational change research, according to Nesterkin (2013, change is perceived as a loss that generates “negative emotions and dispositions” (p. 576).

Innovations commonly are rejected when “talk” and “use” are at odds, according to Leonardi (2009). Studying employee users of a new software program, Leonardi noted that “they did not resist organizational change because it was forced on them by management . . . but because misalignments existed between the information they received about it in their social and material interactions” (p. 435). Simply put, the software was rejected because it did not perform as employees expected; hence, what they were told and what they experienced firsthand were at odds. Similarly, Huryk (2010) found that nurses viewed EMRs more negatively when preadoption accolades about their timesaving abilities did not materialize. In a related study, Vishwanath (2009) found that positively framed messages about an innovation, especially messages emphasizing performance and usability, created higher expectations among would-be users who later rejected the innovation. Thus, when a product’s attributes are *overstated*, users are disappointed more easily.

According to Vishwanath, Brodsky, and Shala (2009), ease of use, ultimately, predicts sustained engagement with any innovation; moreover, Ilie, van Slyke, Parikh, and Courney (2009) found that usability, more than any other variable, influenced physicians’ decisions *not* to use an EMR. When given the choice, overwhelmingly, hospital-based physicians chose paper charts to document patient care, because paper charts were more accessible; EMRs impeded quick access to patients’ medical files with

multiple log-on screens and drop-down menus. Even if the EMR had more up-to-date patient information than paper charts, using it required too much effort (Ilie et al., 2009).

Regardless of physician specialty or practice environment, it appears that EMRs have long been thought to affect negatively the physician–patient relationship (Ajami & Bagheri-Tadi, 2013; Likourezos et al., 2004; Nambisan et al., 2013; Pipersburgh, 2011; Tomes, 2010). As noted above, EMR use has decreased the amount of interpersonal contact between providers and patients (Montague & Asan, 2013; Rouf et al., 2007), and physicians’ examination room use of diagnostic support tools, a common EMR feature, erodes patients’ confidence (Arkes et al., 2007; Hall, 2014). Citing an AMA report, Hall (2014) urged physicians to “do as much data entry *outside* the exam room as possible” (para. 9). Huryk (2010) found that many nurses, even when computers-on-wheels were available for use, opted to leave them outside patients’ rooms because of perceptions that the technology interfered with the nurse–patient relationship. Taken together, these studies paint an abysmal picture of EMRs. Although there are *some* positive studies supporting EMR use, largely, they are lost amid negatively framed reports that decry the effects EMRs.

Studies, such as those just described, frame EMRs’ benefits and drawbacks in terms of workflow changes and provider–patient relationships, but studies also have examined EMRs with respect to how end users (i.e., physicians and nurses) communicate about them, which is important, because how providers talk about EMRs influence how EMRs are received, utilized, and evaluated. The following sections explore research on message framing, including both physician- and nurse-focused studies, and highlight the implications of that research for EMR adoption and implementation.

Framing physicians' discourse about electronic medical records systems. As noted above, research has shown that *how* people talk about an innovation influences its adoption (Leonardi, 2009; Vishwanath, 2009). In particular, message framing, whether within the confines of conversation or appearing in mediated form, is an important variable with respect to physicians' adoption of and satisfaction with EMRs. Message frames influence perceptions about an innovation by becoming "the lens through which the innovation is *evaluated* (and) *experienced*" (Vishwanath, 2009, p. 197). Thus, when the results from EMR studies published in medical journals are framed negatively (see Fernando, Georgiou, Holdgate, & Westbrook, 2009; Feufel, Robinson, & Shalin, 2011; Francis, 2013; Georgiou et al., 2013; Lee, Kuo, & Goodwin, 2013; Makam et al., 2013; Ward et al., 2013), readers/users also are more likely to rate their experiences with EMRs as negative. Moreover, in their literature review, Nambisan et al. (2013) found an "extreme culture of apprehension," "distrust," and "negativity" (p. 6) surrounding EMRs. Thus, both negatively framed journal articles and physicians' negative communication about EMRs fuel this culture of apprehension and distrust of EMRs. For example, a leading emergency medicine scholar described EMRs succinctly as "inventions of the devil" (R. Bukata, personal communication, February 3, 2014). Furthermore, physicians' blogs routinely recount tales of "doctors around the nation resigning over being forced to use EMRs" (Armstrong, 2014 para. 4). In a blog post titled "My EMR/CPOE Rant/Tantrum," Armstrong (2014) relayed the following story that was told to him:

Started a job I was happy with. 4 months into the job, the hospital changed to EMR. Within hours, the waiting times went from 45 minutes on average to 4 hours on average. We spent 80% of our time doing computer entry I handed in my resignation that afternoon. (para. 5)

Merriman (2014) posted similar sentiments, saying, “The degradation of our profession started with the advent of EMR” (para. 1). These messages, which circulate in journals, on message boards, and throughout emergency rooms, perpetuate physicians’ apprehension and dissatisfaction with EMRs.

EMR condemnations also have appeared in the popular press. Columnist Charles Krauthammer (2014) wrote that EMRs “are so absurdly complex, detailed, tiresome, and wasteful that if the doctor is to fill them out, he can barely talk to and examine the patient, let alone make eye contact” (para. 13). Krauthammer concluded that physicians-turned-clerks were “ridiculously wasting” (para. 14) their skills. Taken together with the negatively framed medical literature and physician blogs, such popular press musings contribute to the negative perceptions of EMRs.

Noor et al. (2012) conceded that the most “important step towards implementing adoption is to change the psyche of a user from ‘reluctant’ to ‘willing’” (p. 19). Leonardi (2009) suggested that changing how people talk about new technology will change their opinions about adoption, and, therefore, administrators/managers should encourage positive discourse. Peer support and organizational culture also have been shown to affect EMR satisfaction positively (Top & Gider, 2011). For example, as Huryk (2010) noted, “If nurses work in a computer positive atmosphere, then the nurses were more positive about technology” (p. 610). However, as the brief review of nurse-focused EMR studies below reveals, nurses’ and physicians’ discourse about EMRs has been quite different.

Framing nurses' discourse about electronic medical records systems.

Compared to physicians, nurses, generally, have been more accepting of and enthusiastic about EMRs (Lærum, Karlsen, & Faxvagg, 2004; Likourezos et al., 2004, Otieno, Toyama, Asonuma, Kanai-Pak, & Naitoh, 2007; Weiner et al., 1999). Studies have found that more nurses than physicians describe EMRs as easy to use (Lærum, Karleson, & Faxvaag, 2004), and that EMRs help them to complete documentation tasks more quickly (Likourezos et al., 2004). Nurses also have reported that EMRs made their jobs easier (Huryk 2010; Top & Gider, 2011), whereas most physician-focused studies have found otherwise (see above). In her meta-analysis of nurse-focused EMR studies, Huryk (2010) reported that, overwhelmingly, nurses' attitudes toward EMRs were positive. Negative attitudes, although few, were associated with poor or slow EMR performance, lack of computer experience, and age (with older nurses being less satisfied with EMRs).

Despite concerns that EMRs can dehumanize healthcare, perceptions of enhanced patient safety have strongly influenced positive attitudes toward EMRs (Huryk, 2010). Top and Gider (2011) found that such positive attitudes were driven by perceptions of enhanced communication with physicians and improved legibility of patient information, both of which are tied closely to patients' safety. Considering that nurses' misreading of physicians' handwriting is a reason that is cited commonly for medication errors (Hewitt, 2010), improving legibility, clearly, is an EMR attribute that nurses value.

In addition to negatively framed messages and discourse, there are two other factors inhibiting both EMR adoption and implementation processes in emergency rooms: reactance stemming from forced adoptions and training-induced cognitive dissonance. The following sections examine these issues more closely.

Forced adoption and reactance. User participation in the EMR adoption process merits discussion, as several studies have noted the importance of physicians' involvement in the decision-making process (Brooks & Grotz, 2010; Farley et al., 2013; Francis, 2013). Too often, however, management adopts a particular system without consulting end users; as Tomes (2010) found, "clinicians are not brought into the selection process until it's too late" (p. 97). Nambisan et al. (2013) also noted that physicians' involvement is "crucial for the success of EMR adoption" (p. 4). Nurses also are much more likely to embrace an EMR system if they had some role in selecting or modifying it (Estrada & Dunn, 2012; Huryk, 2010). However, as Nambisan et al. noted, "'Adoption by fiat' has been found to be quite effective" (p. 5). Recounting the U.S. Department of Veterans Affairs EMR adoption process, Nambisan et al. described "top leadership" implementing a system in which "physicians and other staff members were required to comply as system employees" (p. 5). That example notwithstanding, "emboldened resistance" (Nambisan et al., p. 8) usually is the response to top-down decrees.

Forced organizational change (e.g., EMR adoption) undermines employees' freedom, arouses negative affective states, and activates their reactance (Nesterkin, 2013). *Reactance* is the motivational state following a threat to or elimination of freedom that aims to restore that freedom and/or to subvert and resist the endorsed behavior (Brehm, 1966; Brehm & Brehm, 1981). Reactance, typically, triggers hostile and aggressive feelings (Brehm, 1966), and it is based on the premise that individuals value choice, as evidenced by the need for autonomy (e.g., self-determination), and that threats to autonomy invite resistance (Nesterkin, 2013). Psychological reactance theory (Brehm,

1966), therefore, proposes relationships among freedoms, threats, reactance, and (attempted) restoration of freedoms. Although direct restoration involves performing the forbidden act, freedom may be restored, symbolically, by increasing liking for the forbidden choice, by disparaging the source of the threat, or by exercising other freedoms to maximize feelings of control (Quick, Shen, & Dillard, 2013). Studies have reported similar reactions to EMRs, with Lærum et al. (2005) noting that “many physicians find order entry is a task better performed by others, reducing their motivation for learning (or engaging with) the new system” (p. 9).

Ongoing or frequent organizational change can evoke what Nesterkin (2013) described as “multiplicative reactance.” Lærum et al. (2005) noted that most EMR adoptions involve multistage processes, occurring over extended periods of time and involving hybrid electronic-paper systems that are error prone and that heighten users’ dissatisfaction. Although EMR adoptions involve multiple phases, modifications, and updates, users face ongoing change that, according to Nesterkin, can leave employees with layers of negative emotions and cognitions. Individuals’ dissatisfaction, multiplied amid ongoing cycles of change, can have ramifications for the organization as a whole. As Nesterkin explained:

The lingering layer of pervasive negative affect accumulated after each freedom-infringing change, is, via reactance, likely to affect an organization negatively in various ways . . . by increasing employee turnover, increasing deviant and organization undermining behaviors, decreasing job dissatisfaction and job commitment, increasing job stress, and weakening work climate and organizational identity. (p. 586)

Reducing reactance is desirable, but difficult. As Quick et al. (2013) noted, the presence of choice can diminish reactance. As explained previously, however, few physicians and nurses have input in EMR selection and adoption, which led Nesterkin

(2013 to recommend “implementing and sustaining a socially supportive (i.e., interpersonally just) organizational environment, led by an emotionally intelligent management staff” (p. 589). There is no research to date, however, about whether or how reactance can be reduced in an emergency room setting.

There is another affective state that affects perceptions of EMRs by providers and, especially, physicians: dissonance. As described next, dissonance often occurs during EMR training; mainly, when trainers are nurses and trainees are physicians. Because this hierarchical role reversal is typical of most EMR training sessions, it warrants further review.

Training, role reversal/conflict, and dissonance. Key factors impeding successful EMR implementation include poor or inadequate training, and training-induced role reversal or conflict. Organizational change, inevitably, requires learning new behaviors, and EMR adoption marks a major shift in how emergency care is delivered, and, thus, requires providers to learn a radically different approach to documenting care. Inasmuch as many EMR adoptions are forced, the requisite learning that follows also is forced. Nesterkin (2013) wrote that forced learning amid change invites reactance, because “learning requires a certain degree of deviation from one’s existing preconceived ideas which is often seen as inherently undermining one’s autonomy” (p. 573). As noted previously, the organizational environment can ameliorate members’ reactance to change, and Top and Gider (2011) attributed positive learning environments and peer support to nurses’ ready adoption of EMRs, but they also noted that half of users received no training whatsoever.

Several studies have found that training programs are inadequate, particularly those provided by EMR vendors (Brooks & Grotz, 2010; Granlien & Hertzum, 2012); however, peer-to-peer training also is problematic. Brooks and Grotz (2010) found that because physicians “do not want to spend time learning new computer systems” (p. 81), nurses and technicians are trained and then tasked with training physicians. However, as T. Cook (2014) noted, “Watching an older surgeon yell at the poor guy trying to teach him how to use the EMR is not pretty” (p. 25). Physicians’ lack of knowledge about how to use an EMR often leads them “to view themselves as novices . . . [and] the juxtaposition between concurrent roles of (medical) ‘expert’ and ‘novice’ creates a high degree of cognitive dissonance” (Nambisan et al., 2013, p. 4). Reversing the hierarchical structure of the physician–nurse or physician–technician relationship during training also increases physicians’ cognitive dissonance; Nambisan et al. (2013) noted role-reversal induced dissonance with respect to “physician resistance toward learning and sharing knowledge” (p. 5). Barley (1986) also noted reversal tensions between physicians and technicians who were tasked with training them to use new equipment. Robinson, Purves, and Wilson (2003) cautioned that this type of cognitive dissonance can “lead to emotional tension and avoidance of learning” (p. 432) as physicians grapple with new technology.

The concept of “cognitive dissonance,” as noted above, features prominently in many EMR studies and warrants further consideration. Festinger (1957), in proposing cognitive dissonance theory, defined *dissonance* as “the existence of nonfitting relations among cognitions,” with *cognitions* understood as “any knowledge, opinion, or belief about the environment, about oneself, or about one’s behavior” (p. 3). According to

dissonance theory, there is pressure to achieve or maintain consonance (i.e., balance), such that people's thoughts are in agreement (e.g., "I'm concerned about my health" and "I quit smoking" are consonant, whereas "I'm concerned about my health" and "I smoke two packs of cigarettes a day" are dissonant; Festinger, 1957; Trenholm, 1989).

Changing either cognitions or actions reduces dissonance, but attitudes are changed more easily than are behaviors. Adding consonant elements also can reduce the magnitude of dissonance, because "their addition functions to reduce the proportion of dissonant relations among the perceiver's cognitions" (Eagly & Chaiken, 1993, p. 473).

Dissonance is "undoubtedly an everyday condition" (Festinger, 1957, p. 5), but it is experienced, especially, in three major circumstances: where a choice must be made between alternatives, in forced compliance situations that require persons to act in ways that contradict their existing beliefs, and in certain information-processing situations (Trenholm, 1989). With regard to the last situation, exposure to counterattitudinal information triggers dissonance that can be alleviated by selective avoidance. Because choice seldom is the source of dissonance for EMR users (see above), forced compliance is of greater interest, because dissonance is "an inevitable consequence of forced compliance" (Festinger, 1957, p. 89). To reduce that type of dissonance, "either the attitude must be changed or the behavior denied or rationalized" (Trenholm, 1989, p. 101). Indeed, people offered large incentives for performing counterattitudinal behavior actually experience *less* dissonance and attitude change, because acting to receive an award justifies people's counterattitudinal behavior; in contrast, people with minimal incentive or justification for engaging in counterattitudinal behavior, typically, reduce dissonance by believing in their actions (Trenholm, 1989).

Physicians who are forced to use EMRs in spite of their beliefs that EMRs undermine patient care and/or who submit to training that elicits role conflict/reversal may deal with the resulting cognitive dissonance in several ways. Looking more broadly at primary care physicians and learning-related dissonance, Robinson et al. (2003) suggested that physicians respond to dissonance by dismissing the issue/message as being unimportant or wrong, by dismissing the messenger as unimportant, by seeking corroboration from others in support of the new information, by negotiating with the messenger, and/or by accepting the message and changing their beliefs. As Festinger (1957) noted, however, “There is no guarantee that the person will be able to reduce or remove the dissonance” (p. 6).

To review, several factors inhibit EMR adoption and implementation. Resisting change, especially change having to do with new technologies, is common. New technologies—specifically, those offering no or few perceptible advantages in terms of how things already are done—commonly are rejected. Many healthcare providers do not regard EMRs as an improvement over paper charts; thus, their utility is questioned. Misalignments between “talk” and “use” also mar providers’ perceptions: typically, healthcare administrators “oversell” EMRs and, thereby, create false expectations, and, later, disappointment for users who are underwhelmed by the performance of EMRs. Resulting discourse impacts the climate surrounding EMRs. As described previously, that discourse, largely, is negative. Forced adoption leads to reactance, which emboldens providers’ resistance to EMRs. Role-reversal during training also triggers a negative affective state, dissonance, which further impedes providers’ acceptance of EMRs in their emergency rooms. However, given that legislation requires hospitals and emergency

rooms begin using EMRs in 2015 or face fines, it is important to examine ramifications of not only the adoption and implementation process but also consequences of EMR use, with the next section reviewing research on those known consequences.

Consequences of Using Electronic Medical Records Systems

The culture of negativity surrounding EMRs is fueled by studies identifying their postimplementation shortcomings; regarding EMR use in emergency rooms, predictably, there are few positive findings. Likourezos et al. (2004) reported that both emergency room nurses and physicians believed that EMRs would not improve quality of care and would not decrease costs, waiting times, or emergency room overcrowding, and these claims have been substantiated in recent studies (Fernando et al., 2009; Feufel et al., 2011; Georgiou et al., 2013; Ward et al., 2013). Emergency medicine scholars have long predicted that EMRs would contribute to overcrowding (Flomenbaum, 2014), and increasing numbers of emergency room visits will compound that problem, with the Centers for Disease Control and Prevention (2015a) reporting that emergency room visits increased from 117 million in 2007 to more than 136 million in 2011, and that trend is continuing. Although one of the aims of the Affordable Care Act is decreasing emergency room use, its Medicaid expansion actually *increased* visits in Oregon by 40% (Flomenbaum, 2014).

Emergency rooms now account for 68% of all hospital admissions, and EMRs make processing those patients an inefficient and time-consuming chore, which contributes to overcrowding (Augustine & Holstein, 2014). Physicians using EMRs also have bemoaned decreases in their productivity (Likourezos et al., 2004), but more recent studies reveal mixed results. Brunk (2013) cited a 30% postimplementation decrease, but

Henning, Horng, and Sanchez (2013) found no evidence that EMRs reduced productivity permanently. Additional studies have shown that EMR use increases the amount of time that physicians spend at the computer (Hill et al. 2013), the number of laboratory and imaging tests ordered, and overall healthcare costs (Georgiou et al., 2013; Ward et al., 2013). Although EMR use is correlated with shortened hospital stays (.11 days or 2.6 hours), 30-day rehospitalization has increased by less than .19% (Lee et al., 2013).

Results also are mixed for EMRs' effects on medical errors: Georgiou et al. (2013) found that EMRs decreased medication errors and adverse drug events, but Ward et al. (2013) found that EMRs increased errors. Other studies also have linked EMRs with increases in medication errors (Koppel et al., 2005), causing one in five medication errors in children (Walsh et al., 2006), and worsening patient outcomes, including contributing to higher mortality rates (Han et al., 2005). However, in ambulatory care settings, EMRs have had no measurable impact on quality of care (Linder, Ma, Bates, Middleton, & Stafford, 2007) and a minimal effect on medication-error interception rates, but no overall effect on injuries caused by errors (Walsh et al., 2008).

EMR use, thus, has not led to highly anticipated improvements in patient care. Expected decreases in medication errors, for example, are not substantiated by EMR studies, nor are projected healthcare savings being realized. In fact, healthcare costs actually are *increasing*, as are the economic consequences of EMR use, as discussed next.

Economic consequences. EMRs are expensive to buy, install, and maintain; consequently, EMRs diminish profits for hospitals and, simultaneously, increase costs for patients. According to Bukata (2011), the average hospital's IT expenses increased 80% during EMR installation, and higher costs are sustained for years afterward, with most of

those costs, eventually, passed on to patients and their insurance providers. Increased laboratory and radiology tests, which are a function of predetermined order sets (see Ward et al., 2013), also mean increased costs for patients (Bukata, 2011). In fact, hospitals using EMRs between 2006 and 2010 reported a 47% increase in Medicare billing (Bukata, 2014). That increase, in part, likely occurred because of both increased testing *and* better *charge capture* associated with EMRs, the recording, and later billing, of the full range of medical services that are performed by providers, medical supplies used, and medications administered during patients' examinations (Bukata, 2014). EMRs improve charge capture in many ways; for example, scanners are used to track barcoded supplies, such as bandages and cotton swabs, which are tallied and notated in CPT codes that hospital billers use when filing insurance claims. By comparison, most paper-charting systems do not require that providers record each bandage or cotton swab used, and the resulting "lost charges," therefore, contribute to hospitals' overhead. Increased charge capture, however, does not offset the high cost of maintaining and updating EMRs (Bukata, 2011). Across the board, studies have found that the most common economic consequences linked with EMRs are higher healthcare costs and increased documentation time (Fernando et al., 2009; Georgiou et al., 2013; Hoffmann, 2009; Kellermann & Jones, 2013; Ward et al., 2013).

Increased documentation time merits discussion because it has economic consequences for both hospitals and individual physicians. Makam et al. (2013) found that EMRs, unquestionably, are associated with longer documentation times, and Hill et al. (2013), as noted previously, reported that the average emergency medicine physician spent nearly half of a typical shift documenting care and only 28% in direct contact with

patients. Hill et al. counted an average of 4,000 mouse clicks per physician per shift, which accounted for 66 minutes of unbillable time; had that time been spent with patients, an estimated \$153,000 in revenue could have been generated for the hospital in a single year. Bukata (2009) noted that every minute a physician spends documenting rather than seeing new patients represents \$18 lost in opportunity costs for the hospital.

From physicians' perspectives, increased documentation time often means unpaid time spent documenting care *after* physicians' shifts have ended (most emergency medicine physicians are independent contractors who are paid hourly, and few hospitals pay physician-contractors overtime). Because hospital "metrics" (time-based measurements of providers' activity) require fast care and short lengths of stay, physicians, for whom violating metrics is a fireable offense ("Metric Madness," 2014), often delay documentation until their shifts are over and they no longer are seeing new patients (Leep, 2014; Park et al., 2012). As noted above, delayed documentation inhibits access to health information for providers who have assumed care for admitted patients (Park et al., 2012). Furthermore, although hospitals and nonhospital-based physicians who demonstrate meaningful use of an EMR qualify for tens of thousands of dollars in HITECH-mandated incentive pay, emergency medicine physicians, along with radiologists, anesthesiologists, and pathologists, are *exempt* from incentive pay (Bukata, 2011). Thus, individual emergency medicine physicians using EMRs assume more work, for which they are not paid, whereas hospitals receive financial incentives for adopting EMRs. These financial incentives, however, do not offset costs that hospitals assume when it comes to installing and maintaining EMRs.

Some hospitals have attempted to regain “lost revenue” by hiring scribes, who, according to a physician-scholar, are “a work around for systems that fundamentally do not value physician time” (R. Bukata, personal communication, February 3, 2014). In theory, scribes follow physicians and document patient care, and, thereby, leave physicians more time to spend with patients. The practice, however, has been criticized; as Krauthammer (2014) noted, scribes are “a whole new category of previously unnecessary health workers” (para. 11) that has been created by EMR mandates. However, physicians-turned-clerks are not efficient either, as Krauthammer admitted (see above).

Scribes have the potential to alleviate 80% of the documentation burden that falls currently to emergency medicine physicians, inasmuch as they can document patients’ medical histories and findings (Foppe, 2014), but who should pay for scribes is a contentious issue (Bukata, 2009). Scribes make between \$10 and \$20 an hour, and although most emergency medicine physicians believe that hospitals should pay for scribes, the cost usually is split evenly between hospitals and physicians (Bukata, 2009). An equitable arrangement, as proposed by Bukata (2009), has physicians paying 20% of scribes’ salaries, but a fair “splitting of costs rarely occurs” (para. 16). Regardless, increasingly, scribes are a common solution for physicians seeking to circumvent inefficient EMRs.

Despite the economic consequences associated with EMRs, the HITECH Act means that EMRs will become even more commonplace, and, as such, there are other consequences to consider; namely, the emotional toll that they extract from both providers and patients. As Genes (2014) pointed out, “Hospital administration doesn’t

care too much about doctors' . . . frustrations. They care about the bottom line: are patients happy?" (p. 47). As discussed below, however, recent studies (including Ward et al., 2013) have suggested that patients are not satisfied and that EMRs are partly to blame.

Growing patient dissatisfaction. Patients' satisfaction scores are affected negatively by EMRs, albeit indirectly. As noted above, EMRs decrease providers' productivity and, thereby, increase patients' wait times and lengths of stay—two factors that are tied directly to patients' satisfaction (Ward et al., 2013). Hospital administrators are fixated on patients' satisfaction, "despite the fact that high patient scores are correlated with worse outcomes and higher costs" (Drake, 2014, para. 4). Many hospitals have instituted "throughput times" to reduce long waits, with administrators monitoring carefully how long it takes to get from "door to doc," and penalizing slow physicians ("Metric Madness," 2014; Rosenstein, 2012; Vance, 2010). That practice, however, fails to account for overcrowding and bottlenecks that begin in triage (Eisenberg et al., 2006). Matters are further compounded by EMRs that have doubled the average length of stay ("Electronic Health Record Blamed," 2012). Long before patients see emergency medicine physicians, slow triage and registration processes violate patients' expectations of timely service; when they finally do see a physician, "they're angry and hungry after waiting for hours" (Eisenberg et al., 2006, p. 202). Primary care physicians add to overcrowding by dumping their patients after hours and on weekends; rather than taking call, these physicians tell their patients to go the emergency room, but they seldom explain that patients will have long waits in unpleasant and crowded conditions (Eisenberg et al., 2006). Unfortunately, EMRs, which are supposed to make accessing

patients' histories easier, are slow or incompatible, rendering those EMRs largely inept (Likourezos et al., 2004; Rouf et al., 2006).

In addition to increased wait times and lengths of stay, EMRs have affected how information is solicited from patients in such a way as to almost eliminate their illness stories altogether. For patients, "Stories are a way of making sense of an uncertain or chaotic set of circumstances and . . . enable control in the face of disorder" (Sharf et al., 2011, p. 38). As described previously, patients who tell their stories have better health outcomes (Pennebaker, 2000), but most patients' stories are interrupted by providers (Thompson et al., 2011). Truncated storytelling increases patients' uncertainty and feelings of helplessness, thwarting their identity and arousal management goals. As noted previously, Eisenberg et al. (2005) found that most interrupted stories were reduced to "actionable lists" (p. 390) that prioritized physicians' goals. Technical lists "fail to capture the whole meaning" (Real & Poole, 2011, p. 110), but EMRs limit the amount of free text that is available for generating *either* lists *or* stories. As a physician explained, "The nurses can type some limited narratives, but the doctors usually just check boxes" (P. Viccellio, personal communication, February 10, 2014). Resulting medical records, largely, lack context, and are comprised of "a bunch of numbers, lab results, and tests, but there's no story" (L. Garranger, personal communication, January 10, 2014). A Canadian physician whose government does not mandate EMR use commented, "We don't have EMRs because patients are not check boxes; they're people with stories, and I have to tell those stories to the consultings and admissions during handoff of care" (K. Milne, personal communication, February 10, 2014).

Although patients are affected negatively by EMRs, so, too, are providers, as has been well documented in the sections above, but beyond the frustrations associated with hard-to-use EMRs and economic penalties that they bring (namely, uncompensated after-hours work), EMRs contribute to providers feeling dissatisfied with their careers. As discussed in the next section, career dissatisfaction can lead to burnout, which has important consequences for both providers and patients.

Providers' dissatisfaction and burnout. Many of the studies noted above posit that physicians are dissatisfied with EMRs, but that dissatisfaction also can extend beyond EMRs and affect physicians' overall career satisfaction. During a typical 12-hour shift, emergency medicine physicians manage interactions with dozens of patients, their respective family members, nurses, and consulting specialists, along with EMRs, laboratory, and radiology reports. Moreover, physicians are “under the proverbial gun to deliver faster and faster care and earn a score of 5 on Press-Ganey patient satisfaction surveys, in the face of staff cuts and dwindling resources” (Vance, 2010, p. 144). During a routine shift, emergency room physicians are interrupted up to 42 times an hour, whereas other specialists are interrupted only four times (Burley, 2011). Hence, compared to other providers, emergency medicine physicians experience higher dissatisfaction and communication overload (Spencer, Coiera, & Logan, 2004).

Irrespective of EMRs' contributions, career dissatisfaction among physicians is well documented. Analyzing cross-sectional data from a national survey of 6,590 physicians, Leigh, Kravitz, Schembri, Samuals, and Mobley (2002) found that only two in five physicians were highly satisfied with their work, whereas 18% were very dissatisfied; 13% of emergency medicine physicians reported being dissatisfied. Leigh,

Tancredi, and Kravitz (2009) ranked emergency medicine 31st of 42 specialties with respect to providers' overall career satisfaction. Although 44% had been very satisfied with their jobs in 2002, that number had fallen to 31% just 7 years later (Leigh et al., 2009). In the wake of costly EMR implementations and declining Medicaid/Medicare reimbursements, hospitals' cost-cutting measures often include reduced physician staffing and increased reliance on midlevel providers. Physicians oversee the work of those midlevel providers and, simultaneously, care for their patients, which increase physicians' workload and malpractice risk. Along with documentation encumbered by EMRs, these factors contribute to physicians' dissatisfaction with their careers (Vance, 2010). As Kuhn, Goldberg, and Compton (2009) noted, overcrowding and increasing numbers of chronically ill patients compound physicians' dissatisfaction; in emergency rooms, "high volumes, high acuity, and high complexity of disease are combined and that results in the need for rapid decision making in a highly ambiguous environment" (p. 107), which is associated with high anxiety and concern for bad outcomes (e.g., fear that a patient may die or that a malpractice lawsuit may be filed), both of which are predictors of burnout.

Maslach and Jackson (1981) defined *burnout* as "a syndrome of emotional exhaustion and cynicism" (p. 99), coupled with the tendency to evaluate oneself negatively, particularly with regard to work. Burnout affects the quality of job performance and is a factor in job turnover, absenteeism, and low morale; burnout also is correlated with self-reported personal distress, physical exhaustion, insomnia, drug and alcohol use, and marital and family problems (Maslach & Jackson). *Physician burnout* is "a pervasive health care problem characterized by a loss of emotional, mental, and

physical energy due to continued job-related stress” (Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013, p. 417). About half of all physicians suffer burnout, with emergency medicine and primary care providers having the highest rates (Gregoire, 2013). In fact, burnout is more common among physicians than any other professional (Fortney et al., 2013).

Physician burnout usually is measured along two dimensions: emotional exhaustion and depersonalization (i.e., feeling callous toward others, especially patients). Several studies have identified emotional exhaustion in large numbers of physicians who are dissatisfied with the percentage of night shifts that they are required to work (Rehder, Cheifetz, Markovitz, & Turner, 2014); lack of resources, compensation, and workload (Opoku & Apenteng, 2014); and a lack of “clinical autonomy, combined with the challenges of emergency medicine practice and life stress” (Kuhn et al., 2008, p. 110). Keller and Koenig (1989) found that 60% of emergency medicine physicians scored high in emotional exhaustion, 79% scored moderate to high in depersonalization, and 84% had a low sense of personal accomplishment.

Similar findings were reported by Goldberg et al. (1996), but Kuhn et al. (2008) found that only 32% of emergency medicine physicians exhibited emotional exhaustion. According to Fortney et al. (2013), up to 60% of physicians experience burnout at some point during their careers, and 30–40% experience burnout at any given time. Burnout also has even been reported in 34% of medical students (A. F. Cook, Arora, Rasinki, Curlin, & Yoon, 2014).

Both providers and patients suffer when physicians experience burnout. Mood disorder and suicide are “considerable occupational hazards for physicians” (Fortney et

al., 213, p. 417), with 300 physicians estimated to commit suicide each year, making it the nation's second most suicidal occupation (Drake, 2014). Fortney et al. (2013) noted that the problem of burnout is compounded by physicians' tendency to give suboptimal attention to self-wellness, as well as affected by a medical culture that "places little emphasis on clinician well-being" (p. 419). Burnout also affects many aspects of patient care, resulting in increased medical errors, decreased quality of healthcare, lower patient satisfaction, and poor treatment adherence (Fortney et al., 2013). Moreover, burnout is associated with reduced provider empathy (West, Drybye, Sloan, & Shanafelt, 2009). The connections among patient dissatisfaction, poor treatment compliance, and lack of provider empathy also have been linked to physicians' communication skills (Smith-Dupre & Beck, 1996; Cegala et al., 1996; O'Hair, 1989), with several studies showing that patient dissatisfaction stemming from inadequate communication by physicians is correlated with poor medical outcomes and higher malpractice claims (Coran et al., 2010; Roberts & Aruguete, 1999; Roter & Hall, 2011).

Patients are more satisfied when they believe that their physicians care about them and communicate accordingly (Ruiz-Moral, 2009), and burnout makes caring communication less likely between physicians and their patients. Fortney et al. (2013) cautioned that burnout is poised to become an even bigger problem, as the Affordable Care Act means that more people will be seeking care in a market with fewer and fewer providers, and that increased workload, coupled with diminishing reimbursement, may increase alienation and/or depersonalization among physicians (Fortney et al., p. 412).

In summary, numerous studies have linked EMRs with negative outcomes, ranging from emergency room overcrowding to decreased provider productivity. EMRs

have been shown to increase the number of tests ordered, which, in turn, increase healthcare costs. Several studies have found that providers spend more time using EMRs than engaging with patients; providers also spend more time completing electronic documentation, often after their shifts are over. Documentation, in these instances, amounts to uncompensated work, and, furthermore, incomplete medical charts can impact negatively patient care. Hospitals looking to boost productivity during postimplementation slowdowns have turned to scribes to offset providers' inefficient charting, but paying scribes is a contentious subject. The well-documented productivity slump that follows EMR rollout contributes to patients' wait times and lengths of stay, and, consequently, patients are less satisfied with their emergency room experiences. Moreover, EMRs shape the information-gathering portion of the medical examination by constraining patients' sharing of their stories, with providers ticking off checkboxes with little space available for free text that might, otherwise, be used to record patients' stories. EMRs also contribute to providers feeling dissatisfied with their jobs, which can lead to burnout.

Conclusion

As demonstrated in this review of literature, provider–patient relationships and interactions are affected substantially by technology, and those effects are especially problematic in emergency room settings, where time constraints, limited resources, and a lack of established provider–patient relationships compound efforts in an already difficult communication environment. Electronic medical records systems, which were instituted to improve healthcare delivery, have been associated, instead with increases in medical errors and spiraling healthcare costs. Patients and providers alike suffer important

consequences when these systems are installed, which, in addition to higher costs, include longer wait times and lengths of stay for patients, and, for providers, increased workload, uncompensated work, and burnout. A significant amount of research about electronic medical records systems, as demonstrated, has focused on quantifiable changes—the number of tests ordered, patients’ wait times, the time that it takes to complete medical charts, and how much time providers spend with computers versus with patients. These studies have yielded important findings and, thereby, contribute to better understanding of workflow and communication patterns in emergency rooms. This study extends that work by investigating how electronic medical records systems affect providers’ day-to-day experiences, how their interactions with coworkers and patients are altered, and how emergency room culture, itself, is changed by the presence of this technology. This study also focuses on unintended consequences that electronic medical records bring to emergency medicine practice; some consequences have been identified, as this review of literature documents, but there may be additional unintended consequences that have yet to be documented. Preliminary research, as explained in the next chapter, helped to hone my focus, the theoretical perspective that was employed to better understand those unintended consequences, and the resulting research questions that were posed for this study.

CHAPTER THREE: PRELIMINARY RESEARCH, THEORETICAL FRAMEWORKS, AND RESEARCH QUESTIONS

This chapter presents the preliminary research that inspired both this study and the selection of theoretical frameworks that shaped the research agenda. This chapter begins with a description of an ethnographic research project about emergency room culture that I undertook when I was enrolled in a qualitative research methods seminar, because the iterative process of that observational fieldwork, subsequent reflection, and analysis gave rise to the suppositions, deductions, and questions that were advanced in this study. A review of theoretical concepts follows, starting with a description of conceptual linkages that were drawn from Goffman's (1959) notions of "facework" and "performance," which shaped the preliminary research and, ultimately, led to the theoretical frameworks that were employed for this study. Those selected frameworks, including structuration theory and its derivatives, then are explained. Finally, the research questions addressed in this study are presented.

Preliminary Research

In 2013, I studied emergency room culture as part of the assignments for an ethnography seminar in which I was enrolled, with some of the findings from that study becoming the foundation for this dissertation. *Ethnography* is a "written representation of a culture" that is derived from *fieldwork*, which is the "investment of a researcher over a lengthy period of time (typically unspecified) and consists mostly of ongoing interaction with the human targets of study on their home ground" (Van Maanen, 2011, p. 1, 2). Before my fieldwork could commence, however, the seminar instructor cautioned that I would need several things: access to a research site and the site's inhabitants, a reliable gatekeeper with whom I could coordinate my research efforts, and approval from

the University's institutional review board (IRB). With these considerations in mind, I chose to study emergency room culture because, in addition to a number of other reasons, my husband, an emergency medicine physician, could arrange access to a research site. Furthermore, he could facilitate introductions to key informants, including other physicians, nurses, midlevel providers, and technicians.

My husband (hereafter, "Dr. C"²) has been practicing emergency medicine for the entirety of our relationship—nearly 20 years. During those 2 decades, I spent a lot of time in the emergency rooms in which he worked, and I became an astute observer of emergency room customs and interactions, which proved invaluable as I completed the seminar assignment. I studied emergency room culture for another reason as well: Long before embarking on a doctorate in health communication, I trained to be an emergency medical technician, volunteered on an ambulance crew, and, for a while, majored in premedicine as an undergraduate student. Although, certainly, Dr. C shaped both my experience with and perspective of emergency medicine practice, I was interested in emergency room dynamics long before we met. Thus, with the prodding of my instructor, and with Dr. C's assistance, I began my ethnographic fieldwork in September 2013.

Fieldwork commenced after receiving an IRB exemption, which was granted, in part, because I proposed limiting my observations to emergency room workers. Focusing on providers and excluding patients from the study was done for several reasons. First, an emergency room's "culture" is constructed by occupants who inhabit that space every day insofar as *culture* is "understood as residing largely within a sphere of social

²The names and/or initials of all emergency room workers used in this report are pseudonyms.

relationships . . . [and] refers to the meanings and practices produced, sustained, and altered through interaction” (Van Maanen, 2011, p. 155). Furthermore, culture is “expressed (or constituted) only by the actions and words of its *members* [emphasis added]” (Van Maanen, 2011, p. 3). Patients, for whom emergency room visits largely are atypical or infrequent, certainly engage with and may, at times, impact an emergency room’s culture, but that culture is crafted and reproduced by regular and daily interactions of healthcare providers. Second, as noted in chapter two, health communication research often has privileged the patient’s perspective. By studying up (Nader, 1972), and, thereby, focusing on providers, a more complete understanding is possible of social, cultural, and communication processes that characterize medical practice (Chapman & Berggren, 2005). Lastly, the Health Insurance Portability and Accountability Act (HIPAA) restricts nonessential access to “individually identifiable health information” (U.S. Department of Health and Human Services, 2015, para. 1), and, thereby, protects patients’ privacy.

Because I was studying the culture of providers working in emergency rooms, I had little reason to interact with patients, for whom my presence during a medical interview or examination, arguably, may have constituted a violation of HIPAA-mandated patient privacy. Additionally, patients’ medical information is protected data, and access to those data, even tangentially, may have required full institutional oversight of my research. As such, eliminating patients’ perspectives meant that IRB approval was obtained more quickly and easily (see Appendix A). Nonetheless, because, almost certainly, I would overhear or witness portions of provider–patient interactions during the

course of my fieldwork, I signed HIPAA agreements attesting to my willingness to uphold patient confidentiality (see Appendix B).

Three hours a week for 14 weeks, I observed and interviewed physicians, nurses, midlevel providers, unit secretaries, and technicians in three emergency rooms (see chapter four about research methods that were employed, both in the preliminary research and in the dissertation study). One of the emergency rooms that I studied was in rural Mississippi (hereafter “Hospital M”³), and the remaining emergency rooms were in southern Louisiana: one was in a major metropolitan area (hereafter, “Hospital T”) and the other was near several densely populated suburbs (hereafter, “Hospital H”).

I studied three emergency rooms for several reasons. First, I was curious about regional differences that might manifest in the everyday practices of emergency room workers in rural, suburban, and urban hospitals. Second, Dr. C, my gatekeeper, worked in several emergency rooms and, therefore, could facilitate my access to multiple research sites, which allowed me to observe differences in three practice environments (in addition to locale, each site varied in terms of annual patient volume; daily patient census; average patient acuity, as gauged by either admission or discharge from the emergency room; and how its providers documented patient care). Additionally, I took inspiration from Wolcott (2010), who conducted a similarly structured multisite analysis of beer garden culture in Africa. Reflecting on that research, Wolcott commented:

I could not make one particular beer garden the center of my attention. That would have been impossible under the circumstances. (I did not speak either of the local indigenous languages, and my repeated presence would have raised

³The names of the hospitals described in this study are withheld to further protect the identities of informants whose working affiliations, if known, could compromise their confidentiality.

untoward suspicions among people already superstitious) I felt I should look at the whole set of practices surrounding the beer gardens. (p. 73)

Although I could have studied just one emergency room without raising suspicions, I chose to look “at the whole set of practices surrounding” (Wolcott, p. 73) emergency rooms. This tactic allowed me to draw comparisons between emergency rooms that, eventually, would lead to the issues addressed in this dissertation study (see the discussion later about research questions).

During the completion of the preliminary fieldwork in 2013, I found that there were many shared behaviors, customs, and interactions across the three research sites, but I also observed one stark difference: the presence of an electronic medical records system (EMR) appeared to change the type, duration, and frequency of talk among providers. Because EMRs, subsequently, became the focus of this dissertation study, I limit my discussion here to pertinent observations about EMRs that I detailed in my fieldnotes and described in the seminar assignment.

To that end, my fieldwork began on September 8, 2013 at Hospital M in Mississippi, which still was using paper charts to document patient care but was prepping for an eventual adoption of an EMR. I showed up, wearing surgical scrubs, and hoped that I would blend into the scene. Dr. C escorted me to a small desk near the nurses’ station, and then he grabbed a patient chart and headed into an examination room. The head nurse introduced me to the staff as “Dr. C’s wife,” and for those who had not been told beforehand about my research, I explained that I was studying emergency room culture. I sat there, alone, scribbling in my notebook and craning to hear the nurses conversing at the far end of the counter. I interpreted their hushed tones and physical distance as conveying suspicion of me; after all, I was a stranger in their space. After

about 30 minutes, most of the nurses resumed what, eventually, I would categorize as “normal chitchat.” I often heard such chitchat in the ensuing weeks and it revolved, more or less, around five topics: what they had eaten, or were going to eat, for lunch; whose spouse had behaved poorly; whose children were mischievous, gifted, or ungrateful; who had seen a good movie recently; and who had weekend plans. Regularly, the talk centered on food. On my first day at Hospital M, I recorded conversations about who had eaten breakfast, who brought the cookies that were in the breakroom, who ate the last of the potato chips, which brand of smoked almonds was best, whether the cafeteria’s tilapia was “too fishy,” and how much they liked that Dr. C brought them Goldfish crackers every day (the Goldfish crackers were my idea).

The frequency of talk at Hospital M did not strike me as unusual or excessive, until I visited Hospital H’s emergency room the following week. The nurses working in Hospital H were different from those at Hospital M in that they said very little; indeed, the emergency room at Hospital H was comparatively *quiet*. On my first day at Hospital H, I observed nurses sitting at computers, clicking checkboxes, and, occasionally, cursing to themselves. Other nurses pushed portable EMRs from room to room. At times, I could hear alarm bells ding, phones ringing, and fluorescent lights buzzing. The “silence” was punctuated with occasional mumbles by nurses about “damned computers.” I did not, however, hear much in the way of conversation. There were utterances from several nurses along the lines of “I need a wheelchair for 6⁴” or “We got a knee lac [laceration] in 2,” but there was no chitchat. In fact, there was no indication that the people working side-by-side even knew each other. Information exchange, at

⁴Patients, typically, are referred to by their chief complaints and/or room numbers instead of by their names.

least as it seemed to me on that day, was the primary focus of any and all discussion. Later, after reviewing several sets of fieldnotes taken at Hospital M in Mississippi, I surmised that the nurses there talked *a lot* and that most of their conversations were marked by an intimate knowledge of one another—their talk revolved around relational growth with each other just as much as it involved information exchange about patients. The only thing different between the emergency rooms at Hospital M and Hospital H was the presence of an EMR.

I learned that Hospital H had begun the first phase of its EMR adoption process earlier that year. On April 1, nurses began using EMRs to document both the care that they provided and medications that they administered to patients. A nurse, J, commented, “The irony of introducing EMRs on April Fool’s Day was not lost on us.” I discovered that the physicians still used paper charts for documenting their findings, but they had just begun learning how to use a computerized physician order entry system (CPOE) the month before, with full conversion to computer-based charting scheduled to take place that November. The sheer number of computers in the space, was, as I wrote in my notebook, “overwhelming, with just one half of the emergency room boasting eight computers along an L-shaped counter with several mobile computers-on-wheels (COWs).” Six more computers lined the trauma bay, and each designated physician workstation had at least two computers. Dozens of paper notices were hung all over the emergency room noting temporary workarounds for the various EMR glitches that the information technology (IT) department was trying to resolve. I noted within minutes of arriving that “the hum of the computers is very loud.” Their humming, as well as the nurses’ grumbings about them, seemed constant. Over the course of 3 hours, I logged 14

specific events or conversations about the computers: approximately a third of my handwritten notes were about the EMR.

During my first visit to Hospital H, I had two conversations with providers about the new EMR. A physician assistant, N, told me that he believed the EMR meant that all of the providers (nurses, midlevel providers, and physicians) spent less time engaging with patients at their bedside. Interestingly, before our conversation, I had written in my fieldnotes that “the physician assistant, N, has been at the computer the whole time I’ve been here, 45 minutes and he doesn’t appear to be seeing patients; he’s just manning the computer.” N also complained that the system was slow, difficult to use, and had affected negatively both patient length of stay and satisfaction. As he remarked:

We spend most of our time with the damn COWs, not with the patients. The programs aren’t very good and they are not user-friendly, plus patients don’t like them. They see us sitting here playing with computers when we *should* be in the exam room, doing our jobs. I just want to throw the damn thing through the wall.

Later, following a shift change, I recorded in my journal that “a nurse just spent over 10 minutes trying to get her COW up and running.” The COW crashed and she began again. The nurse, J, told me that the EMR often kept her “chained” to a desk—even when using the COW, its bulky configuration made maneuvering it into examination rooms difficult. J further explained that because the new EMR was “hard to use,” it was responsible for “gumming up the works when the ER [was] busy,” by reducing drastically “patient throughput” (the time that a patient spends in the emergency room from initial presentation to diagnosis and discharge). As J elaborated:

They force us to code everything as we go, which slows things *way* down. On paper charts, we could write the meds down and go back and chart everything else later. Especially if we were busy, we might have 20 or 30 patients; that way, we could see them, treat them, and get them out. Now, we have to chart everything right as it happens, and things just get backed up.

Another nurse, A, chimed in, “Especially during codes, administration wants you to scan medicines right then and there. We should be focused on patients during codes, not trying to get a scanner and computer to work! It takes up way too much time.” One of my final observations that day, as written in my journal, was, “So far, this nurse [J] has been here an hour and she has been engaged with the computer the whole time, save for 2 minutes to administer some meds.” J repeatedly “bitched about the EMR,” as I noted, although she did “fix her hair in the monitor’s reflection.”

I visited Hospital H in suburban Louisiana several more times in the coming weeks and recorded similar observations each time. Later, reflecting on those early notes, I saw that the computer’s presence dictated not just how work was done but also *where* it was done. Paper charts, like those used at Hospital M, freed providers to sit anywhere while documenting, even at the patient’s bedside, but the EMRs used at Hospital H assigned specific, inflexible spaces where tasks had to be performed. As I wrote in my journal, “Nurses cluster along the counter at eight stations, midlevels have a designated space on the other side of the counter, whereas physicians are housed in a small workstation with two computers (one for charts and another for viewing X-rays).” Even the mobile COWs, largely, were stationary, because many nurses found them to be too heavy and cumbersome to push around. Each charting task and its dedicated EMR physically isolated workers, making face-to-face communication either less frequent or more difficult to initiate (particularly for nurses and physicians, who were not within visual sight of each other).

My first visit to Hospital T took place on October 5, 2103. Hospital T had installed its EMR 3 years earlier; consequently, providers, more or less, were accustomed

to using it. Nonetheless, on that afternoon, several nurses were struggling to update a chart for a patient who had left against medical advice and whose departure was unseen by the emergency room staff. The chart could not be closed without a “discharge time”; however, because the patient had not been discharged officially, and no time was recorded, the EMR registered the chart as “incomplete.” Incomplete charts invite sanctions from administrators, leading providers to be keen to complete charts for all of their patients. At 5:10 p.m., a nurse sitting at the EMR complained, “We still don’t know what time 2 left, do we?” At 5:15 p.m., she beckoned, again, “Does anyone know what time 2 left earlier?” When no reply was forthcoming, she asked, “Am I the *only* one here concerned about getting this right?” Someone suggested that she make up a time, “Just type in 4:00 p.m.,” to which she responded, “It won’t let me type any new text and I can’t get it to go to the discharge page.” Several nurses then argued about how to resolve the issue. They took turns at the EMR, clicking various tabs and boxes as they attempted to access the appropriate page. An hour later, they still had not resolved the problem and IT had not returned their phone calls. These nurses did not engage in patient care whilst the incomplete chart issue lingered.

Dr. C, and several of the other nurses, did see patients, but as I recorded in my fieldnotes, “despite seeing patients, they mostly sit at the computer typing up orders or test results.” For instance, I noted that Dr. C went into a patient room at 4:55 p.m., and 2 minutes later, he was back at the EMR. He commented, “The cases aren’t medically difficult, just challenging to document with the computer system and how long it takes everything [tests and medication orders] to get put in.” “Putting in orders” often created “logjams,” as a nurse, MJ, explained, “We have to wait for the doc to put in the orders.

We're not allowed to put in orders for them, so we have to sit here and wait. If they type slow, or can't find the order set, well, we wait some more."

Whereas paper charts, like those used at Hospital M, guaranteed some face-to-face communication between physicians and nurses regarding patients' vital signs, diagnoses, and treatment plans, I noticed that the EMR at Hospital T reduced such interactions to a series of one-way instant messages. As described by MJ, nurses sit at computer terminals "waiting for orders to pop up on the screen" and then they "go do what the computer says, such as 'Give room 6 some pain meds' or 'Discharge room 8.'" Most of the orders, as I noted on that day, were carried out without any discussion between nurses and the attending physician. MJ conceded that the lack of discussion, sometimes, could be problematic, but she emphasized that if nurses had questions or concerns, they "usually" approached the physician. "All in all," she concluded, "I still prefer the computers to the paper charts. It was hard learning to use them though, but it's better than the old way. We don't have to figure out the doc's handwriting."

When I went back to Hospital M a few weeks later, I asked nurses about some of the potential benefits that EMRs might bring to their emergency room, such as not having to decipher physicians' handwriting. A few nurses conceded that EMRs *might* be advantageous in that respect, but a nurse practitioner, D, who worked both at Hospital M and another hospital that already was using EMRs said, "Yeah, maybe, but the computers destroy personal communication. I've been at this other emergency room about 6 months, and I don't know if any of the other nurses have children. We just don't talk." The other nurses appeared to mull this statement over, and one of the younger nurses asked if the EMRs increased the workload. D responded, "Well, everything takes so

much longer, so, yeah, it is more work, plus it impacts the patients, too. We don't make eye contact because we're looking at a computer screen."

Over the next few weeks, I rotated among the three hospitals and saw several scenes unfold consistently. At Hospital M, nurses and physicians shared a common paper chart and frequently discussed, face-to-face, patients' treatment plans and diagnoses. When they were not busy with patients, nurses talked and joked a lot. At Hospitals H and T, however, nurses waited for physicians to enter orders into the EMR and then carried out whatever appeared in the electronic record, from administering medications to taking vital signs to prepping patients for examinations. In comparison to Hospital M, physicians at Hospitals H and T, routinely, were isolated physically in separate spaces (in offices or workstations that were away from nurses' stations), and, accordingly, there appeared to be fewer face-to-face discussions between them and the nurses. By this point in time, I had begun observing physicians other than Dr. C; hence, I was certain that the practice habits that I recorded in my fieldnotes were not idiosyncratic of just one physician or one group of nurses. When not engaged in direct patient care, nurses at Hospitals H and T talked, but not nearly as much as did nurses at Hospital M, and the type of talk differed as well. Providers at Hospitals H and T complained a lot about the EMRs, asked one another for help using certain EMR features, and expressed profound dissatisfaction with both the EMRs and their working environments. Their "non-EMR talk," such as the chitchat that I recorded at Hospital M, eventually, turned to spouses, children, and food, but those topics were discussed with less frequency than their talk about the EMR.

In late October 2013, I developed a questionnaire (see Appendix C), which, I hoped, would document statistically significant correlations among EMR use, communication patterns, and providers' career satisfaction at each of the three hospitals. I believed that the questionnaire, in addition to observations and interviews, would further validate what I suspected: that the EMRs caused lasting changes to the type and frequency of interactions among providers. I posted the questionnaire online and distributed paper copies at each of the three hospitals, but the response rate was abysmal, as only 11 providers completed the questionnaire. I also posted the questionnaire to an online physician-only message board to look for similar trends in other hospitals (but only nine physicians completed the questionnaire). Overall, although the findings lacked statistical significance, nonetheless, they were interesting, as there was evidence that I had intuited the situation, more or less, astutely. Across the board, respondents reported a preference for paper charts, and for those using EMRs, they reported that they were dissatisfied with the EMRs and talked less with coworkers about everyday topics (e.g., movies, current events, and family). Most of the respondents who reported using EMRs also reported feeling less satisfied with their careers, and many had considered quitting, retiring, or changing careers. Again, the questionnaire findings were not statistically significant given the small sample sizes and lack of statistical power but the results confirmed my hunch—in some instances and in certain practice environments, EMRs appeared to erode aspects of face-to-face communication and contributed to providers' dissatisfaction with their working environments and with their careers.

I completed the seminar assignment in December 2013, and that report was recognized as a Top Student Paper by the Ethnography Division at the 2014 National

Communication Association convention. I subsequently decided to continue my fieldwork at Hospital H and to document its ongoing EMR adoption process for my dissertation. As I conducted research on EMRs for what would become my literature review (see chapter 2), I realized that there had been no long-term observational studies conducted about an EMR adoption that were set in a community hospital-based emergency room, such as the project that I was proposing. The study that was most similar to the one that I was planning was conducted by Park et al. (2012), which documented changes in workflow patterns before, during, and after an EMR adoption, but that study was set in an academic medical center. Furthermore, all of the emergency room-specific EMR studies that I reviewed, largely, were numerical, researcher-driven studies, and virtually all of them also were set in academic medical centers. As noted in chapter one, although there are more than 5,000 community hospitals in the United States, less than 10% (approximately 400) are designated academic medical centers (Dunn & Becker, 2013), yet few studies had been conducted in community hospitals, limiting the generalizability of their findings to a minority of U.S. hospital settings. The study that I was proposing, therefore, could address a clear gap in the scholarly literature by documenting EMR-induced changes over time in a community hospital's emergency room, with the findings, potentially, being applicable to a greater number of emergency room settings instead of being limited to a small subset of emergency rooms in academic medical centers.

To review, I began preliminary research for this study as an academic exercise in ethnographic research methods. In observing interactions among providers in three emergency room settings, I deduced that EMRs affected communication among and

between nurses, midlevel providers, and physicians; specifically, EMRs reduced face-to-face interactions, influenced the nature of interactions (i.e., restricted opportunities for chitchat and, consequently, some aspects of relational development among providers), and narrowed the range of topics discussed. Moreover, EMRs seemed to contribute to providers feeling dissatisfied with their careers and with their working environments. Results from the questionnaire that I created and distributed, albeit of limited statistical significance, suggested that my deductions were, more or less, astute. Taken together with fieldnotes collected over a 3-month period and information that was gleaned from multiple interviews that I conducted with providers, the questionnaire's findings were significant enough to justify additional inquiry into EMR-induced changes in emergency room communication patterns. Given that Hospital H was partway through an adoption process and that its physicians just were beginning to use components of an EMR, I saw an opportunity to document EMR-induced changes over time. Additionally, I could conduct research in a community hospital-based emergency room, which is a setting that, largely, has been underrepresented in both medical and communication literature. I needed, however, a theoretical lens to frame my continuing research.

In writing the initial ethnography on emergency room culture, many of my findings were framed using Goffman's (1959) conceptions of "facework" and "performance." These concepts are described here because they shaped both early and ongoing research at Hospital H, and because Goffman's work influenced Giddens (1984), whose structuration theory frames much of this study (see the discussion later about theoretical frameworks).

Facework, according to Goffman (1959), is a specific kind of social performance that is designed to engineer or maintain a certain impression during an interaction. Goffman (1959) proposed that all people are social performers who “act [when in] one another’s immediate physical presence” (p. 254). For example, a physician is expected to be sympathetic and, similarly, a patient should be ill, such that each person performs accordingly during the medical examination. These types of performances are infused with participants’ assessments about the interaction, one another, and themselves (Goffman, 1967). *Face*, then, becomes “the positive social value a person effectively claims for himself by the line others assume he has taken during a particular [social] contact” (Goffman, 1967, p. 5). Put more simply, face is the conception of “self” as seen by one’s self and by others; hence, face, essentially, is identity, and people are “concerned with maintaining the impression that they are living up to the many standards by which they . . . are judged” (Goffman, 1959, p. 251).

Face concerns play out, largely, in frontstage scenarios, when social performers are engaged in expected, and role-appropriate, performances. Frontstage demands can set the stage for “profane” performances, which Goffman (1961) attributed to “the obligatory world of social roles” (p. 152) requiring an actor to continually monitor and alter his or her performance to fit the “understanding and expectations of the society in which it is presented” (Goffman, 1959, p. 35). Too many frontstage or profane performances, often, can “set the stage for a kind of information game—a potentially infinite cycle of concealment, discovery, false revelation, and rediscovery” (Goffman, 1959, p. 8).

In contrast, when backstage, an actor may slip into a “sacred” performance, which, largely, unfolds in an unseen way by any frontstage audience; stripped of social

obligations, an individual can be “warm, spontaneous, and touched by humor” (Goffman, 1961, p. 152). Backstage, the performer no longer is preoccupied “with the amoral issue of engineering a convincing impression” (Goffman, 1959, p. 251). Members of “performance” teams, such as physicians and nurses, who stage performances for their patients, can express and enjoy familiarity with one another “only when the audience [patient] is not present,” (Goffman, 1959, p. 128). Goffman (1959) described the distinction further:

Since back regions are typically out of bounds to members of the audience, it is here that we may expect reciprocal familiarity to determine the tone of social intercourse. Similarly, it is the front region that we may expect a tone of formality to prevail. (p. 128)

Backstage, team members’ interactions, typically, are marked by reciprocal name-calling, jokes, profanity, and “elaborate griping” (Goffman, 1959, p. 128). During my fieldwork, I witnessed many frontstage and backstage performances, both profane and sacred; hence, Goffman’s work gave me a useful vocabulary for describing social interactions that I saw play out in those emergency rooms.

Goffman’s (1959, 1961) work was invaluable when analyzing the cultural practices that I observed in emergency rooms, especially those having to do with frontstage and backstage performances, but many of his theoretical propositions addressed individuals’ social roles and performances as opposed to the organizations in which those performances were carried out. A system-wide study of Hospital H’s emergency room practices during and after its EMR adoption, in my estimation, required a theoretical lens that could encompass the organization, as well as its individual performers. Although Goffman (1959, 1961) did address performance teams, his work did not dwell on the social institutions or structures that housed performance teams.

Accordingly, a member of my dissertation committee suggested that, instead, I consider using structuration theory to frame my study. Proposed by Giddens (1984), structuration theory extended many of Goffman's propositions, thus making it, from my perspective, both familiar and accessible. Structuration theory and its offshoots, all of which inform this study, are detailed in the next section.

Theoretical Frameworks Used to Analyze Effects of Electronic Medical Records Systems in Emergency Rooms

Theory ensures that health communication research is “founded in established principles generated by systematic and cumulative knowledge,” but health communication research “often lacks theoretical underpinnings” (Nazione, Pace, Russell, & Silk, 2013, p. 225). For example, only 38% of studies published in the *Journal of Health Communication* between 2000 and 2009 were theory-driven (Nazione et al. 2013). According to Nazione et al. (2013), most of the studies published in that journal described situations, interventions, and outcomes, but few studies explained or predicted phenomena. The present study, therefore, is grounded in theory such that it may not only describe but also explain and, potentially, predict ramifications of EMR adoptions in community hospital-based emergency room settings. Moreover, the study's theoretical frameworks extend its usefulness by contributing to cumulative knowledge about EMR adoptions, technology-induced structural changes, and structurational divergence in healthcare contexts. Because several concepts central to structuration theory were extensions of Goffman's (1959) work, and because structuration theory explained system-wide social reproduction, I chose it to frame my analysis. Described next are the central tenets of structuration theory, followed by a review of three derivatives that also

shaped the study: adaptive structuration theory, the modified adaptive structuration model, and structurational divergence theory.

Structuration Theory

Structuration theory is an ontological theory of social organization (Jones, Orlikowski, & Munir, 2004) that has been employed to explain many social contexts but has not been used often in empirical health communication research (Heracleous, 2013). Giddens (1984) developed structuration theory to explain how social systems are both produced and reproduced during social interaction. “The basic domain of study,” according to Giddens, “is neither the experience of the individual actor, nor the existence of any form of societal totality, but social practices ordered across space and time” (p. 2).

Social practices, according to Giddens (1984), are carried out by actors whose performances are “positioned” (p. 83). With respect to social practices and performances, Giddens shared many of Goffman’s (1959) views, although the two scholars often used different terms. For example, rather than using “role,” as had Goffman (1959, 1961, 1967), Giddens (1984) used “position” to describe expectations and limits that are imposed on social actors. As Giddens wrote:

Social positions are constructed structurally as specific intersections of signification, domination and legitimation which relates to the typification of agents [actors]. A social position involves the specification of a definite “identity” within a network of social relations, that identity, however, being a “category” to which a particular range of normative sanctions is relevant. (p. 83)

In other words, social positions allow and, in many instances, require actors to “assign every act/utterance a signification, judge its appropriateness, and ascertain [their] place in a domination hierarchy” (Nicotera & Mahon, 2013, p. 95). Nicotera, Mahon, and Zhao

(2010) described ways in which social positions and the signification/legitimation/ domination process can affect providers' communication in a medical setting:

The physician writes a medication order. The nurse looks at the prescription and questions, "50 mg?" setting off a too-familiar conflicted interaction. Imagine that the nurse's meaning system centers on safety checks and the physician's on an authority/compliance nurse-physician relationship. For the nurse, that simple act ("50 mg?") signifies a safety check, is *legitimate* because nurses must be constantly vigilant for medication errors, and presumes an egalitarian relationship in which all caregivers are equally responsible for safety (*nondominant*). For the physician, the act signifies disrespect for authority, is *not legitimate* because a nurse must simply comply with physician orders, and presumes a *dominant/submissive* relationship. (p. 365)

The dramaturgical metaphors that Goffman and Giddens used to describe social actors, positions, and interactions are similar, but in terms of frontstage and backstage performances, Giddens (1984) deviated from Goffman (1959).

Both theorists acknowledged that there were frontstage and backstage regions that constrained social practices, but Giddens (1984) took exception to Goffman's (1959) treatment of the backstage. Giddens wrote that Goffman's (1959) stance suggested that the "frontal aspects of [performance] are inherently inauthentic, and that whatever is real or substantial is hidden behind" (Giddens, p. 124). Furthermore, as Giddens wrote:

If agents [social actors] are only players on a stage, hiding their true selves behind the masks they assume for the occasion, the social world would indeed be largely empty of substance. . . . The sustaining of ontological security could not be achieved if front regions were no more than façades. (p. 125)

Rather, as Giddens proposed:

The backstage may very well be "on stage" so far as the ordinary routines of social life, and the ordinary proprieties, go. For these sorts of occasion do involve fixed performances for audiences, though there is no necessary implication that those in the back regions are able to relax the usual courtesies of tact or "repair." (pp. 127–128)

Instead of housing “reciprocal familiarity” (Goffman, 1959, p. 128), such as joking and name-calling, Giddens’s notion of backstage does not involve necessarily “a ‘private sphere’,” especially when subordinates “move among their inferiors” (p. 127). In some social settings, backstages can be “zones within which agents recover forms of autonomy which are compromised or treated in frontal contexts” (Giddens, p. 127), but most “front/back differentiations [occur ordinarily] in circumstances of marked imbalances of power” (p. 128).

Giddens’s (1984) theoretical propositions extend beyond the dramaturgical model that he and Goffman (1959) used frequently to explain social interaction; structuration theory, as proposed by Giddens, encompasses much more than social practices, positioned performances, and frontstage/backstage region differentiations. The theory describes social organization in terms of structure, agency, rules, resources, systems, routines, and unintended consequences.

Structuration theory hinges on two key concepts, structure and agency, which should be understood as a mutually constitutive duality (Giddens, 1984). *Structure* is defined as both the medium *and* outcome of social reproduction, and it consists of the “rules and resources, recursively implicated in the reproduction of social systems [and] exists only as memory traces, the organic basis of human knowledgeability, and is instantiated in action” (Giddens, 1984, p. 377). *Agency* is defined as human activity. Structure has primacy over agency because structure, simultaneously, enables and constrains action (Giddens). Structures can be thought of as being similar to organizations or institutions that, themselves, simultaneously, are produced and reproduced by human conduct. For example, a hospital may house and constrain

interactions among physicians, nurses, patients, and tools; at the same time, the very presence of these people and things in the hospital give it purpose, and, thereby, simultaneously, maintain and reproduce it.

Some of the terminology and concepts of structuration theory warrant further elaboration. Structure, in addition to being the medium and outcome of social reproduction, assumes primacy over action because it encompasses “rules and resources [that are] implicated in the production and reproduction of social systems” (Giddens, 1984, p. 169). *Rules* are norms that govern social life. *Resources* are either *allocative*, material goods or objects with which agents work, such as stethoscopes, tongue depressors, and EMRs, or *authoritative*, intangible abilities and skills that agents use when they exhibit transformative power over people through either persuasion or coercion. Many factors, such as gender, age, and/or group affiliation, can influence authoritative resources; for example, I observed that male physicians working at Hospital H influenced the behavior of female nurses far more than female nurses influenced male physicians. Things and power, according to Giddens (1984), however, only become allocative and authoritative resources through human agency.

Systems are the observable, reproduced relations between agents (i.e., people or social actors), and they are organized as regular social practices or behaviors. *Social interaction* refers to “encounters in which individuals engage in situations of co-presence, and hence to social integration as a level of the ‘building blocks’ whereby the institutions of social systems are articulated” (Giddens, 1984, p. 89). Giddens (1984) defined *structuration* as the “structuring of social relations across time and space” (p. 376). Studying day-to-day life, situated in specific interactions and routines that are time–space

dependent, is integral for analyzing reproduced practices. Settings and chronology allow agents “to sustain meaning in communicative acts,” and daily routines are “essential for curbing sources of unconscious tension” and they influence “the contours of institutional reproduction” (Giddens, p. xxv).

Routines, however, can be disrupted during *critical situations*, “circumstances of radical disjuncture of unpredictable kind which affects substantial numbers of individuals (or) situations that threaten or destroy the certitudes of institutionalized routines” (Giddens, 1984, p. 61). Hospital H, as I observed during my preliminary research, was experiencing a “critical situation” during its EMR implementation, which is an additional factor that makes structuration theory an attractive lens for viewing and analyzing that change.

Agent, agency, and power also are important concepts to consider in relation to the current study. People are knowledgeable agents who understand a lot when it comes to conditions and consequences of their social interactions. They also do what they do for particular reasons, although, as Giddens (1984) cautioned, “we have to separate out the question of what an agent does from what is intended” (p. 14). Agency, as defined previously, is action, but it also hinges on an agent’s capability “to ‘make a difference’ to a preexisting state of affairs or course of events” (Giddens, p. 14). Agency and autonomy are intertwined, for without some measure of power, agency is not possible. Power has two facets: it can be understood as the ability of agents to carry out decisions that they favor and as the capacity to resist those that they dislike. Although subordinates may appear to be without power, Giddens suggested that “all forms of dependence offer some resources whereby those who are subordinate can influence the activities of their

superiors” (p. 16). Giddens referred to subordinates’ ability to influence their superiors’ actions as the “dialectic of control” (p. 16). However, identifying and utilizing sources of power amid organizational change often can be an insurmountable challenge for subordinates.

Critics of structuration theory have claimed that structures limit agents’ choices far more than Giddens (1984) allowed (see, e.g., Jones et al., 2004); for example, workers without resources have only one option—to sell their labor. The constraints of material resources “mean that at any moment not everything is possible” (Jones et al., 2004, p. 311). Stones (2005) decried this aspect of structuration theory as well, arguing that

depending upon where the emphasis was placed, structure or agency, it could be presented as either an overly voluntaristic theory—one that overestimates the knowledge and power of agents and the consequent ability to “make a difference”—or an overly fatalistic and deterministic theory, where the structures make all the running. (p. 7)

Giddens’s (1984) elucidation on bureaucracy addressed some of the issues raised by critics of structuration theory. Bureaucracy and its disciplinary power are structural factors that impinge on agency, but the constraint is limited to prescribed periods of time and occurs usually with agents’ consent, such as when agents “go to work.” Giddens wrote that “the journey to work probably indicates as much about the institutional character of modern societies as do carceral organizations” (p. 154). The time–space separation of work and social life makes submitting to administrative discipline tolerable. “Work” is only part of an agent’s day, and although the agent must adhere to “a criteria of conduct not in accord with the enactment of activities in other spheres of life” (Giddens, p. 154), eventually, the workday ends and the agent reclaims lost agency. Emergency room workers, however, enjoy less time–space separation than do other

workers. A typical emergency room shift is at least 12 hours, and, at work, agency or autonomy almost wholly is restricted. As a physician at Hospital H commented, “We don’t get lunch breaks; you can’t just *leave* the ER and go the cafeteria. What if someone has a heart attack while you’re eating a sandwich?” Bathroom breaks also are governed largely by patient volume. “We can go if it’s not too busy,” a nurse remarked, “but you better not be in the loo if a code or trauma rolls in.” These descriptions of the emergency room make the hospital appear to be a “total institution,” in that “there is no exterior nor gap, it cannot be interrupted except when the task is totally complete” (Giddens, p. 153). Agents endure this type of discipline, according to Giddens, because “submitting is a trade-off for rewards that derive from being freed from such disciplines at other times” (p. 154).

Another aspect of structuration theory that informs this study has to do with “unintended consequences” of EMR adoption. As Giddens (1984) wrote, “Some of the most important tasks of social science are to be found in the investigation of . . . the significance of unintended consequences for system reproduction” (p. 282). Unintended consequences are a regular feature of institutionalized practice in that “the flow of [human] action continually produces consequences which are unintended by actors” (Giddens, p. 27). An *unintended consequence*, as Giddens explained (1984), is “the ‘composition effect’ or an outcome of an aggregate of acts . . . each of which is intentionally carried out. But the eventual outcome is neither intended nor desired by anyone. It is, as it were, everyone’s doing and no one’s” (p. 10). Unintended consequences also can “systemically feed back to be the unacknowledged conditions of further acts” (Giddens, p. 8), potentially creating an infinite cycle of unintended

consequences. With respect to this study, there are many well-documented, unintended consequences that are associated with EMR adoption: increased waiting times, longer lengths of stays, decreased physician productivity, lower patient satisfaction scores, and employees' reactance (see chapter two).

A related concept is *perverse consequences*, which are consequences of intended but contradictory acts that "are perverse in such a way that the very activity of pursuing an objective diminishes the possibility of reaching it" (Giddens, 1984, p. 313). As Giddens (1984) elaborated:

Contradictory consequences ensue when every individual in an aggregate of individuals acts in a way which, while producing the intended effect if done in isolation, creates a perverse effect if done by everyone. If all the audience in a lecture hall got to their feet to obtain a better view of the speaker, no one will in fact do so. . . . These are outcomes not only that no one intends but also that run counter to what everyone in the situation wants; none the less, they derive from conduct that is intended to satisfy wants, and could do so for individuals, were it not for the fact that the conduct in question becomes generalized. (p. 311)

Perverse outcomes are likely in "circumstances of structural contradiction" (Giddens, p. 317), where agents feel at odds and/or are immobilized (see the discussion later about structurational divergence theory).

Although structuration theory, generally, is underutilized in health communication research (Heracleous, 2013), it has guided research on technology adoption in medical contexts. Barley (1986) used structuration theory for framing an analysis of effects that a new technology, a CT scanner, had on a radiology practice, and how that technology "altered the organizational and occupational structure of radiological work," as well as ways in which "institutional roles and patterns of interaction changed" (p. 78). Barley noted that engrained patterns of interaction and interpretation are subject to change when social systems encounter "exogenous shocks, such as the acquisition of new members or

the arrival of new technology” (p. 80). With respect to studying technology and structure, Barley proposed three axioms:

First, since structuring implies process, its temporal nature enjoins researchers to adopt longitudinal as well as cross-sectional perspectives on technological change. Second, since the social context of actions and interpretations is important, it becomes unsound practice to lump together organizations with radically different institutional histories and ecological milieux. Finally, since technologies exist as objects in the realm of action, one cannot hope to understand the technology’s implications for structuring without investigating how the technology is incorporated into the everyday life of an organization’s members. (p. 81)

Barley posited that new technologies in organizations should be regarded as occasions that trigger social dynamics, which, in turn, modify or maintain an organization’s contours. Because these dynamics are likely to be multifaceted, to “vary with time, and to reflect the situational context, it is quite likely that identical technologies used in similar contexts can occasion different structures in an orderly fashion” (Barley, p. 81). With these considerations established, Barley recommended that researchers “document traditional patterns of behavior, interaction, and interpretation before, during, and after the technology arrives” by relying on “participant observation to record who interacts with whom in what ways at what times and to elicit actor’s immediate interpretations of events” (p. 83).

Although structuration theory is a useful theoretical lens for analyzing technology-induced system changes, as Barley (1986) demonstrated, Giddens (1984) did not address, specifically, technology and its role in system reproduction. Other scholars, however, have extended Giddens’s work and adapted his theoretical axioms to better describe what happens when technology impacts structuration (i.e., the structuring of interactions across time and space). As described in the next section, adaptive

structuration theory and the modified adaptive structuration model are useful extensions of Giddens's original work, especially for studying how EMRs change emergency room structures.

Adaptive Structuration Theory

Although Giddens's (1984) original formulation paid little attention to technology, structuration theory, clearly, is applicable when studying interactions between people and technology (Barley, 1986). The effects of technology adoption on social systems have less to do with the actual technology itself and more to do with how people use it: people may adapt technology to suit their needs, resist it, or reject it altogether (DeSanctis & Poole, 1994). DeSanctis and Poole (1994), subsequently, proposed adaptive structuration theory (AST) to study "the role of advanced information technologies in organization change . . . [and to consider] the mutual influence of technology and social processes" (pp. 121, 125). In AST, structures (i.e., rules or resources that are entwined in system reproduction and that enable and constrain action) and structural change are examined from two vantage points: structures that technologies provide and structures that actually emerge as people interact with technologies (DeSanctis & Poole). Two central concepts, "structuration" (i.e., structuring relations across time and space) and "appropriation" (i.e., ways that people use technology structures), highlight the interplay between technology and action; as these structures "are brought into interaction, they are instantiated in social life . . . there is a recursive relationship between technology and action, each iteratively shaping the other" (DeSanctis & Poole, p. 125).

Social structures that emerge from technology can be assessed according to structural features and spirit. For instance, an EMR's *structural features*, by definition, would consist of its inherent rules, resources, or capabilities; simply put, structural features establish what the EMR can do and its effects on human agency. For example, an EMR may allow providers to access patients' pharmacy records, but not their medical files from other hospitals. The first feature enables providers' agency, whereas the second feature constrains it. With respect to *spirit*, DeSanctis and Poole (1994) defined it as the intention behind a technology. DeSanctis and Poole likened spirit to what Giddens called "legitimation," because spirit, similar to legitimation, "provides a normative frame with regard to behaviors that are appropriate in the context of the technology" (p. 126). With regard to EMRs, spirit can be analyzed by examining EMRs' design metaphor (i.e., whether their interface resembles a paper medical chart or an accounting spreadsheet), the presentation and labeling of their features, training or support materials that accompany them, and their usability. Well-designed technologies have a coherent spirit; an incoherent spirit exerts weaker influence over people and "may send contradictory signals, making use of the system more difficult" (DeSanctis & Poole, p. 127). Structural features and spirit, taken together, make up a technology's structural potential.

Appropriation, the other central concept of AST, is defined as "the immediate, visible actions that evidence deeper structuration processes" (DeSanctis & Poole, 1994, p. 128). Examining the appropriation process allows researchers to uncover how rules and/or resources are brought into social action. Consider the following explanation ("EMRs" can be substituted for "GDSS"):

Appropriation of a GDSS's [group decision support system] structures is evidenced as a group makes judgments about whether or not to use certain

structures, directly uses (reproduces) a GDSS structure, relates or blends a GDSS structure with another structure, or interprets the operation or meaning of an GDSS structure. GDSS structures become stabilized in group interaction if the group appropriates them in a consistent way, reproducing them in similar form over time. (DeSanctis & Poole, 1994, p. 129)

Adoption processes vary across groups and time, but how individual agents use a technology, if at all, can be assessed by examining their appropriation moves. AST identifies four appropriation moves: agents may choose to (a) directly use the technology, (b) relate the technology's structure to other structures in the environment (e.g., make conceptual linkages between the EMR and other tasks), (c) constrain or interpret the technology as it is in use, and/or (d) make judgments about the technology (e.g., praising or condemning its performance). Appropriation moves can be either faithful, using the structure in accordance with its spirit, or unfaithful. Unfaithful use is not inherently negative because it can speak to the ingenuity and attitudes of users. Hence, an EMR's structures may be appropriated differently across groups as a function of users' attitude: users may be confident in the technology's abilities, they may doubt its usefulness, or they may perceive themselves as lacking the necessary skills to use it effectively. DeSanctis and Poole (1994) cautioned that "if group interaction processes are inconsistent with the structural potential of the technology, then the outcomes of group use of the structures will be less predictable and, on the whole, less favorable" (p. 131).

DeSanctis and Poole (1994) adapted Giddens's (1984) theory to analyze technology adoption in any context, but others have modified AST to study new technologies in healthcare settings (e.g., Schwieger, Melcher, Ranganathan, & Wen 2004). The modified adaptive structuration model, described next, has been used to explain adoption processes that are associated with medical billing systems. This

extension of Giddens's work, as well as the work done by DeSanctis and Poole, sheds light on some of the EMR adoption issues facing Hospital H.

Modified adaptive structuration model. Combining AST with aspects of diffusion of innovation, Schwieger, Melcher, Ranganathan, and Wen (2006) framed an analysis of a newly introduced medical billing system in a family practice clinic. The modified AST model (Schwieger et al., 2004, 2006) identifies three sources of structure; as with AST, there are structures embedded in technology and the environment, but the modified model divides the environment into external and internal sources of structure. *External structures* are outside influences, such as government policies and interorganizational relationships (e.g., vendors or insurance companies), that may influence if and how a technology is adopted and then used (Schwieger et al., 2006). According to Schwieger et al. (2006), *internal structures* include the diversity of workers inside an organization (e.g., their specific skill sets), the decision-making activity among groups, and cultural resources (e.g., agents' education, experience, and interaction styles). Schwieger et al. (2006) concluded that communication to employees, "both implicit and explicit, plays a significant role" (p. 90) in the adoption and diffusion process.

The most important aspect of the modified AST model, as it pertains to the present study, is the division of environmental structures into external and internal structures, and, in particular, the role that external structures play in Hospital H's EMR adoption. As discussed in chapter two, the Health Information Technology for Economic and Clinical Health (HITECH) Act requires nationwide EMR adoption; thus, the single greatest external structure affecting Hospital H is government policy. Moreover, providers working at Hospital H had little say in which EMR was adopted, inasmuch

as external structures—namely, corporate policy makers working at Hospital H and for its parent company—made the decision.

Although the modified AST model is a useful tool for examining certain aspects of the technology adoption process, there is an additional extension of Giddens's (1984) original work that is helpful for examining agents and agency amid conflicting structures: structurational divergence theory. Described next, that theory has been used frequently to explain discordant communication patterns among hospital-based nurses.

Structurational Divergence Theory

I discovered the work done on structurational divergence (SD) theory about 6 months after beginning the second phase of my research at Hospital H. SD theory extends and elaborates many of Giddens's (1984) concepts, but more important, from my perspective, the theory addresses “what happens to agency under contradictory structures” (Nicotera & Mahon, 2013, p. 94), which Giddens did not address in his seminal work. Giddens acknowledged that structural contradictions existed “between different groupings or categories of people” (p. 198), and that structural constraints limited “the range of options open to an actor, or plurality of actors, in a given circumstance” (p. 177), but such attestations did not explain adequately the phenomena that I was observing at Hospital H. In inquiring about the EMR adoption process and how it affected healthcare delivery at Hospital H, providers used phrases, such as “I’m stuck between a rock and a hard place,” to explain the contradictory situations and obligations that they experienced, as using the EMR helped hospital administrators to meet certain Meaningful Use objectives (as described in chapter two), but using the EMR also delayed frequently timely healthcare delivery and increased costs, which was not in

patients' best interests. Providers struggled to meet the oftentimes-conflicting demands of administrators and patients. Although I struggled to explain this contradiction as something other than just another unintended consequence, a member of my dissertation committee shared an article with me, entitled "Between Rocks and Hard Places: Exploring the Impact of Structural Divergence in the Nursing Workplace" (Nicotera & Mahon, 2013), that, in combination with subsequent discussions with that article's lead author, led me to apply SD theory to my study.

SD theory is an extension of structuration theory, and, consequently, it describes social organization in terms of structure, agency, rules, resources, and systems, but SD theory introduces two additional components: the SD-nexus and the SD-cycle (Nicotera, Mahon, & Zhao, 2010). According to the theory, the copresence of an SD-nexus with one or more SD-cycles creates SD, which "is an *organizational* phenomenon that manifests, in interaction, at the *individual* level" (Nicotera & Clinkscales, 2010, p. 34). The *SD-nexus* is the "intersection of incompatible rule systems," and results in "unresolvable conflict" (Nicotera & Clinkscales, 2010, p. 32). Agents caught at a nexus are compelled to "simultaneously fulfill obligations from multiple rule systems" (Nicotera & Clinkscales, 2010, p. 32); hence, they often report feeling stuck between a rock and a hard place. Nonetheless, agents usually are compelled to act, especially in healthcare settings, where inaction could jeopardize patients' health and safety; consequently, agents must choose "which structure to violate—setting off the normative sanctions of that structure" (Nicotera & Clinkscales, 2010, p. 34).

The *SD-cycle* is a downward spiral of negative, ineffective, aggressive, or argumentative communication that self-perpetuates (Nicotera & Mahon, 2013; Nicotera

et al., 2010). Nicotera and Mahon (2013) described an SD-cycle between nurses working in a geriatric care unit (GC) and nurses working in the emergency department (ED):

ED staff complained GC staff was uncooperative with inpatient admissions. GC staff complained that ED patients who should be admitted to intensive care (ICU) were transported to GC to await admission. When these patients became unstable, requiring immediate care, GC staff provided it, acting from a patient-centered ethic. These patients were subsequently admitted to ICU. Records reflected admission to ICU from ED with no way to document care given by GC. When performance reviews, cost calculations, and other such management reviews were conducted, GC care for those patients was credited to ED, but its negative impact (e.g., cost, time, and delayed care for other patients) resulted in poor performance sanctions for GC. This deepened GC resentment for ED and perpetuated the conflict. GC nurses became hesitant to provide care because of bureaucratic consequences—a severely immobilizing ethical dilemma. (p. 91)

Immobilization is the hallmark of SD. The unresolved conflict that the SD-cycle perpetuates, according to Nicotera and Clinkscales (2010), causes the immobilization:

Unresolved conflict immobilizes the individual as he or she is unable to locate, in his or her repository of skills, actions that satisfy both (or more) interpenetrating structures. Immobilization prevents the individual from attaining goals or achieving positive progress, eroding organizational and individual development. Inability to develop spirals into more intractable conflict, and the cycle continues. (p. 32)

Recurring cycles of conflict and immobilization stymy both individual and organizational development.

SD manifests, primarily, as unresolved conflict, immobilization, and erosion of development (Nicotera & Clinkscales, 2010), but there are many surface-level manifestations and consequences that warrant discussion. *Role conflict*, defined as incompatible role expectations, for instance, is a surface-level manifestation of SD that is associated with stress and burnout (Nicotera & Clinkscales, 2010). Role conflict, according to Nicotera and Clinkscales (2010), is present in an SD-nexus and is part of the SD-cycle. In conjunction with burnout and workplace bullying, SD-induced role conflict

is a predictor of job dissatisfaction among nurses (Nicotera et al., 2014). Additionally, the role conflict, burnout, emotional exhaustion, and bullying that are present in SD-rich nursing environments have been linked positively with nurses' intentions to quit their jobs (Nicotera & Mahon, 2013).

SD, which takes "a deep emotional toll on people" (Nicotera et al. 2010, p. 369), also can manifest in actual (vs. intended) turnover, as well as in "verbal abuse, horizontal violence [bullying], adverse events, costs, and other professional and patient outcomes" (p. 381). In healthcare settings, according to Nicotera et al. (2010), the SD-cycle can contribute to medical malpractice:

The SD-cycle creates tenuous conditions for patient care wherein the potential for mistakes and missteps is quite high. Staffing issues and difficult workplace environments increase the likelihood of adverse events, including compromised patient safety, medication errors and others. SD seriously compromises the workplace environment, thereby increasing the likelihood of these adverse events. These include challenges within and between patient care units, as well as between staff nurses, managers, and administrators. (p. 369)

Healthcare settings, according to Nicotera et al. are "especially susceptible to SD because of the intersection of multiple institutional, professional, community, and other cultural meaning systems" (p. 364).

When SD is present in an organization, individual agency is limited. According to Nicotera and Mahon (2013), "In a structurally divergent interaction system, action cannot coherently re/produce or transform structure because the actor does not control resources . . . and agency lacks force" (p. 94). Although agency is "never zero," it becomes "nonfunctional" in an SD-nexus:

We always have action choices, but in SD none satisfy all structural constraints in place. This positioning is mystifying because the opposition is invisible or stultifying because the opposition is unsolvable. If to avoid a kick from the mule, I must choose being run over by the cart, I may just not move. I

have agency to decide *not* to act but no efficacy to impact either structure transformatively. Acting on one structure subverts another, negating agency for the whole. (Nicotera & Mahon, 2013, p. 94)

Nicotera and Mahon (2013) theorized that surface-level manifestations of SD, such as role conflict and burnout, actually represent loss of agency. SD-entrenched systems foster what Nicotera and Mahon dubbed *impotent agency*, which is the inability to meet goals effectively because of conflicting structures in environments where performance and productivity are monitored closely. Impotent agency feeds unhealthy communication patterns, and, in addition to immobilization, it can lead to developmental regression (Nicotera & Mahon, 2013). The only way to reduce SD, according to Nicotera, Mahon, and Wright (2014), is for individual agents to regard those with whom they are engaged in an SD-cycle not as enemies but as colleagues with a common problem.

In summary, structuration theory and three of its offshoots (AST, the modified adaptive structuration model, and SD theory) provide theoretical frameworks for this study. Structuration theory explains how social systems (i.e., social interactions) are reproduced across time and space. The theory assumes that people are knowledgeable agents who act with purpose and whose interactions are shaped by their social positions or roles. Agents' positions dictate the signification and legitimization that they assign to their interactions, and those positions allow them to ascertain their place in a domination hierarchy. Structuration theory hinges on two main concepts: structures, which consist of unseen rules and resources shaping human action that, simultaneously, enable and constrain that action; and agency, which is both action and the ability of an agent to act, which is intertwined with the concept of autonomy. Agency requires power, or the

capacity to act on and change structures. Routines are an essential element of institutional reproduction, but change can introduce exogenous shocks and create critical situations that threaten social systems. Actions have unintended consequences and are a regular feature of institutional practice, but not all unintended consequences are negative. Perverse consequences, however, are negative inasmuch as the very act of pursuing a goal diminishes the likelihood of reaching it; perverse consequences often are present in conditions of structural contradiction. AST was developed to explain how technology changes social systems and focuses on appropriation (i.e., how agents use or reject technology). Structures that emerge as agents use a technology can be analyzed according to structural features (i.e., how that technology affects human agency) and spirit (i.e., the intention behind that technology). The modified model combines elements of AST with diffusion of innovation theory. In addition to structures that emanate from the technology and those that are agent/user-initiated, the modified model takes into account internal and external environmental structures. Lastly, SD theory posits that in an environment ripe with contradictory structures, agents find themselves at a nexus of incompatible rule systems that lead to a cycle of ineffective communication and unresolved conflict. The cycle immobilizes agents and, effectively, robs them of agency. SD also manifests in role conflict, burnout, emotional exhaustion, bullying, and turnover. Moreover, SD in healthcare settings threatens patients' safety by increasing the likelihood of medical errors. Collectively, these theoretical frameworks shaped this study, leading to the following research questions that were posed.

Research Questions

This study extends previous work on EMR adoption by investigating how EMRs affect emergency medical providers' day-to-day experiences; how their interactions with coworkers and patients are altered; how emergency room culture, itself, is changed by the presence of this technology; and unintended consequences that EMRs bring to emergency medicine practice. Thus, my preliminary research, as described in this chapter, and my reading of structuration theory and its derivatives, led to the following research questions. First, how do EMRs influence social interactions among providers working in the emergency room at Hospital H? Second, how does the EMR affect structures, agents, and systems in the emergency room at Hospital H? Third, what, if any, unintended consequences emerge during and after EMR adoption at Hospital H? Lastly, do providers working in the emergency room at Hospital H experience SD? To answer these questions, as explained in the next chapter about research methods employed, I observed and documented providers' interactions at Hospital H's emergency room and conducted numerous interviews with them.

CHAPTER FOUR: METHODOLOGY

This chapter begins with an overview of emergency room-based observational research, addressing, specifically, issues of rigor in those studies. This brief review of that research informs an understanding of methodological concerns that are evidenced in the emergency room literature. This study addresses a clear gap in that literature, not only because it is a long-term observational study about the adoption of an electronic medical records system (EMR) in a community hospital-based emergency room but also because it utilizes rigorous ethnographic techniques. Following a brief discussion of ethnographic methods, the research sites, participants, and data-collection methods are described. The methods that were employed in this study included (a) participant observation of emergency room operations and EMR training sessions; (b) interviews conducted with administrators and providers; (c) a questionnaire to assess providers' perceptions of EMRs; and (d) document analysis of memoranda, patient satisfaction surveys, physicians' metrics reports, and EMR training materials. A discussion then follows of the subjectivity of my participation as a researcher and ethical concerns that I confronted. Lastly, data-analytic procedures are described.

Methodological Issues in Observational Emergency Room Studies

Instead of simply describing emergency medical care, according to Paltved and Musaeus (2012), observational or naturalistic research can “help to unpack the processes surrounding emergency medical care and explain ‘how, why, and what’ is going on,” and, thereby, produce “a deeper understanding of emergency medicine as a social practice” (pp. 772, 773). Paltved and Musaeus outlined three key reasons why more naturalistic research is needed about emergency medicine. First, naturalistic methods

illuminate processes pertaining to staff members' thinking, feeling, and acting as emergency medicine providers. Second, naturalistic research captures organizational and team processes amid medical and social practices. Third, naturalistic work may lead to theory development that has important clinical and/or organizational implications (see, e.g., Eisenberg et al., 2006).

Too often, however, emergency room-based naturalistic studies lack methodological rigor. Cooper and Endacott (2007) analyzed studies published in *Emergency Medicine Journal* between 2001 and 2006: 462 were conducted using researcher-drive methods (e.g., questionnaires), 8 were naturalistic studies, and 6 used mixed methods. All of the naturalistic studies took “a generic approach and rarely conformed to established [so called] qualitative approaches such as phenomenology, ethnography, and grounded theory” (Cooper & Endacott, p. 816). Cooper and Endacott found that these generic approaches often failed to incorporate procedures to increase the accuracy of the qualitative findings, such as triangulation (i.e., examining data from different sources to build sound justification for themes) and obtaining respondents' feedback about written reports.

More recently, however, Paltved and Musaeus (2012) conducted an extensive review of emergency room-based naturalistic studies published between 1971 and 2012. Using electronic databases and searching volumes of *Academic Emergency Medicine* and *Emergency Medicine Journal*, they identified 46 studies that employed observational methods, many of which did not use an amalgam of generic approaches but, instead, employed proven methods, such as ethnography, action research, grounded theory, phenomenology, discourse analysis, and critical incident analysis. The authors concluded

that, despite having used valid and reliable methods, even more rigorous designs were needed in naturalistic research. Ethnography, in particular, was identified as an important method for “developing understanding about complex social interactions because it allows the researchers through participant observation to study medical work *in situ*” (Paltved & Musaeus, p. 773). Nugus and Forero (2011) also noted that because the main focus of ethnography is on language and social realities that languages construct, ethnography is especially “important in EDs [emergency departments] because of the unique patient management tasks that emergency doctors and nurses perform [through language]” (p. 69).

This study addresses a clear gap in the literature, by conducting a long-term ethnographic study about an EMR adoption. As explained next, ethnography encompasses several data-collection practices, including participant observation and interviews.

Ethnographic Methods

Ethnography, as defined in chapter three, is a “written representation of a culture” that is derived from *fieldwork*, which is the “investment of a researcher over a lengthy period of time . . . and consists mostly of ongoing interaction with the human targets of study on their home ground” (Van Maanen, 2011, pp. 1, 2). According to Frey et al. (2000), “Ethnographers want to understand the explicit and implicit tacit assumptions that exist in particular cultural groups that simultaneously enable and constrain interaction among members” (p. 259). In this study, ethnography was used to address ways in which EMRs enable and constrain structures that affect healthcare providers at Hospital H. The

specific ethnographic techniques—participant observation and in-depth interviews—that were employed to address the goals of this study are explained below.

Participant Observation

“Observation is the central data collection method in ethnography” and is especially valuable because “observation overcomes the discrepancy between what people say they do and what they actually do” (Cooper & Endacott, 2007, pp. 816, 817). Observation in ethnography most often is accomplished through *participant observation*, which is the “craft of observing and recording events in social settings” (Lindlof & Taylor, 2011, p. 135). Methodological practices associated with participant observation involve “one’s being in the presence of others on an ongoing basis . . . [as] a co-participant in a significant part of their lives” (Lindlof & Taylor, 2011, p. 135). By combining participant observation with other data-collection methods (e.g., interviews and/or document analysis), researchers can “discern how a social work appears to its participants—principally, by eliciting schema they use to construct and associate meaningful phenomena” (Lindlof & Taylor, 2011, p. 136).

Observations are recorded in *fieldnotes*, which are “intended to capture and represent the lived experiences of *others*” (Goodall, 2000, p. 90). According to Lindlof and Taylor (2011), fieldnotes are “concerned with describing and interpreting (i.e., textual) qualities of communication in social action,” allowing researchers to “develop two important forms of intersubjectivity: (1) empathetic understanding of their participants’ experience and (2) successful representation of that understanding for others” (p. 159). Moreover, fieldnotes should “contain extensive (if not exhaustive) descriptions of appearances and activities”; provide “rich, specific detail” about what was

observed; and “record participants’ remarks and conversations as close to verbatim as possible” (Lindlof & Taylor, p. 159). Goodall (2000) prioritized capturing verbal interactions in fieldnotes because “verbal exchanges are the *organizing focus* of everyday experience” (p. 98).

In-depth Interviewing

In addition to participant observation, in-depth interviewing is an important ethnographic methodological technique (Lindlof & Taylor, 2011). In-depth interviews are useful, among other things, for understanding social actors’ experiences and perspectives; gathering information about things, people, and processes that cannot be observed directly; inquiring about past events; verifying information that was obtained from other sources; clarifying processes or procedures; and eliciting language forms that are used by social actors in situ (Lindlof & Taylor, 2011).

Lindlof and Taylor (2011) identified five types of in-depth interviews: ethnographic, informant, respondent, narrative, and focus group. *Ethnographic interviews* are informal, spontaneous interviews that, usually, occur “in a cultural scene, while the investigator is busy hanging out with the people being studied” (Lindlof & Taylor, p. 176), and they are particularly useful for soliciting participants’ immediate reactions to events or conversations. *Informant interviews* solicit insiders’ perspectives on cultural or group practices. Interviewees in this interview form are “called *informants* because they inform the researcher about the scene—the scene’s history, customs, and rituals; the local ‘lingo’; the identities and actions of key players; and so forth” (Lindlof & Taylor, p. 177). *Respondent interviews* elicit open-ended responses from cultural members and are used to clarify interviewees’ meanings; elucidate their opinions, beliefs,

and attitudes; identify sources of influence that are tied to certain beliefs and behaviors of interviewees; classify complex attitude patterns; and understand people's attributions about what motivates their beliefs and behaviors (Lindlof & Taylor). Unlike informants who speak about the scene, respondents "speak only for, and about, themselves" (Lindlof & Taylor, p. 179). Respondent interviews are "stand-alone procedures" (Lindlof & Taylor, p. 180); in the case of the present study, they would be conducted outside of the emergency room in a controlled setting and not combined with other methods of field study. *Narrative interviews* seek entire stories from interviewees, which become the basis for analysis. Finally, *focus groups* are interviews conducted with several people at once.

As described below, I combined the techniques of participant observation and in-depth ethnographic, informant, respondent, and focus group interviews with a questionnaire and document analysis to address the goals of this study. A discussion of the research sites and study participants precedes an account of the data-collection procedures employed. Discussions of the validity of the findings, subjectivity of the researcher, ethical concerns confronted in the study, and procedures that were used to analyze the collected data then follow.

Research Sites

Although Hospital H was described briefly in chapter three, a more comprehensive description of the site is warranted. Below, I describe some of the external structural constraints that affect Hospital H's emergency room and explain its patient documentation systems. This information was gleaned from several online

sources,⁵ including Hospital H's website and the website of its parent company. Several informants, including nurses and hospital administrators, provided additional information. That information is followed by a description of an additional site, Hospital W, where I observed and interviewed scribes who were employed, primarily, to alleviate some of the EMR-induced documentation burdens that plagued Hospital W's providers. In studying that additional site, I also talked with physicians and a nurse about their perceptions of scribes' contributions.

My decision to incorporate a second research site into this study merits an explanation. According to Wolcott (2010), "Ethnography is comparative [because] everything we do is based on comparison" (p. 90). Studying three emergency rooms in the first phase of my research allowed me to draw important comparisons among rural, suburban, and urban emergency rooms. Similarly, visiting Hospital W allowed me to compare an emergency room without scribes (Hospital H) with an emergency room that employed them (Hospital W). Visiting Hospital W was necessary, in part, because providers at Hospital H discussed, at length, the possibility of scribe support, yet none of those providers had ever worked with a scribe nor knew anyone who had. Moreover, my key informant, Dr. C., accepted a position at Hospital W and, for the first time, would work with scribes. I accompanied him on his first few shifts and observed the process. I returned to Hospital H with a newfound understanding of the role that scribes can play in a busy emergency room, which shaped both how I viewed documentation processes at Hospital H and how providers navigated those chores (see the findings in chapter five).

⁵These sources are not identified to protect the confidentiality of the research site and its employees.

Although ethnography, potentially, is comparative, Wolcott (2010) cautioned that comparison sometimes can be a shortcoming, especially if it becomes a preoccupation, as comparison can “draw one’s attention away from what is being observed” (p. 97). In line with that position, although Hospital W was a rich site with numerous structural influences at work, I focused my observations on provider–scribe interactions and the EMR.

Hospital H

Hospital H is a for-profit, short-term, acute care facility in southern Louisiana that is certified by the Centers for Medicare and Medicaid Services and is accredited by the Joint Commission on Accreditation of Healthcare. It has approximately 140 in-patient beds and 20 emergency room beds. A few years ago, Hospital H was sold to a corporation, G⁶, that specializes in small but growing healthcare markets. Despite millions of dollars invested in infrastructure, technology, and advertising, the hospital has operated at a deficit for several years. Since the change in ownership, Hospital H has undergone changes to its leadership structure: in the past few years, Hospital H has had two new chief operating officers, a new chief financial officer, a new vice president, and a new medical director. Turnover in the information technology (IT) department has been high—in 2014, the staff was replaced en masse. Turnover among nurses has been high as well; when nurses’ pay was cut to save the hospital money, many nurses found employment elsewhere.

⁶The name of the corporation is withheld to protect the confidentiality of Hospital H and its employees.

The emergency room also was affected by the change in ownership. Prior to the sale, Hospital H retained a company, S⁷, to manage emergency room operations. Company S hired emergency medicine trained and board certified physicians to staff Hospital H's emergency room. Company S also billed patients for the emergency medical care that they received, paid physicians' salaries with the funds collected, and shared a portion of the remaining profits with Hospital H. The average annual emergency room profit retained by Company S was more than \$1 million. After Hospital H was sold, the new administrators severed ties with Company S, with emergency room operations and billing handled in-house. The physicians who stayed on after Company S lost the management contract became either full-time employees of Hospital H or part-time independent contractors. Since that change, revenue has fallen and the emergency room has operated at a loss, despite increases in patient volume; specifically, Hospital H's emergency room sees more than 40 patients a day, an increase of about 50%, but revenue is approximately half to two-thirds of what it was when billing was managed by Company S.

Before Hospital H was sold, physicians documented the care that patients received in the emergency room using a proprietary paper-based system, called "TSheets." There were more than 120 individually tailored TSheets that were customized for chief complaints that range from chest pain, to lower back pain, to trauma. TSheets were two-sided forms with multiple boxes in which physicians documented the following for a patient: the patient's history and physical examination, chief complaint, review of systems (neurological capacity, vision, hearing, respiration,

⁷The name of the company is withheld to protect the confidentiality of Hospital H and its employees.

circulation, etc.), results of laboratory and radiological studies, progress notes, clinical impressions, and diagnosis (see Appendix D). Physicians wrote instructions for patient care on separate paper order sets, checked boxes next to the desired laboratory and imaging tests, and then handed the forms to either nurses or technicians, who entered the orders into a computer that was connected to the hospital's laboratory and radiology departments (see Appendix E). Medication orders and in-patient admission instructions were carried out in similar fashion. All of the completed paper forms for each patient were kept in a numbered folder that corresponded to the patient's room number. Both physicians and nurses shared this folder, adding to it as needed (e.g., inserting new order sets or test results).

Nurses also documented patient care on paper forms before Hospital H was sold, but, unlike physicians, they used a documenting system that was designed in-house. The nursing note was a 6-page, trifold form that was kept with the physician's TSheets and order sets in the common patient folder. The nurse's note was similar to the TSheet, but it included additional space for documenting more detailed patient histories and physical examination findings, tasks and procedures performed, and medications administered (see Appendix F).

Because Hospital H's new administrators wanted to take advantage of the federal government's Meaningful Use program, which provides financial incentives for hospitals and clinics that install EMRs (see chapter two), they were quick to adopt an EMR. Administrators chose an EMR that was made by McKesson Corporation, in part, because Corporation G had purchased McKesson EMRs for another of its hospitals. Although McKesson is an inexpensive EMR by industry standards (it costs about \$2 million,

according to one of Hospital H's vice presidents, whereas similarly designed systems cost \$7 million or more), it is "one of the worst-ranked ED information systems [and] scored at or near the bottom for many fields, including provider satisfaction, perceived workflow integration, and speed of charting" (Genes, 2014, p. 17).

All of the nurses' documentation chores were shifted from paper to the McKesson Paragon system on April 1, 2013. Physicians continued documenting patient care using TSheets, but paper order sets were augmented by a McKesson computerized physician order entry system (CPOE) in August 2013, and the paper order sets were replaced altogether by the CPOE in October 2013. At that juncture, physicians and nurses no longer shared a common chart; in fact, their respective computer programs, despite both being part of the same McKesson EMR, were not fully interoperable, meaning that nurses could not see everything that physicians typed into the CPOE, and physicians could not see nurses' electronic notes. Although nurses still had access to physicians' paper TSheets, eventually, TSheets would be replaced by an electronic version. Rather than purchasing the proprietary electronic TSheet system, which could have been integrated into the McKesson CPOE and EMR systems, for approximately \$35,000, Hospital H's administrators tasked the IT department with designing and building a generic version in-house. The first iteration of the generic, electronic TSheet was supposed to launch in November 2013, but that launch was rescheduled for June 2014, then August, and then December; as of May 2015, physicians still were using paper TSheets.

Hospital W

Unlike the hybrid paper–electronic system that Hospital H was using, Hospital W had been using a fully operational EMR for several years. Hospital W is an acute care

center with 760 beds in Kansas, and it has a network of three emergency rooms with an annual patient volume of 65,000 (by comparison, Hospital H's emergency room sees approximately 14,000 patients a year). Hospital W is a major trauma center that is staffed by both emergency medicine physicians and trauma surgeons. Because Hospital W also is an academic medical center, medical residents see and treat patients as well. The same large, national corporation that owns Hospital T (described in chapter three) also owns Hospital W, and both hospitals use the same EMR system, which is made by Medical Information Technology, Inc. (MEDITECH). The MEDITECH system, although problematic in some respects, is ranked higher than the McKesson system (Genes, 2014).

A company called Scribe America trains and supplies the scribes who work at Hospital W, most of whom are college students who are planning careers in healthcare. Hospital W contributes \$10 an hour to cover a portion of scribes' salary, and physicians who elect to have a scribe accompany them on their shifts have \$10 an hour deducted from their salaries, which offsets the cost that Hospital W pays Scribe America.

According to the Scribe America (2014) website:

A Medical Scribe is a revolutionary concept in modern medicine. Traditionally, a physician's job has been focusing solely on direct patient contact and care. However, the advent of the Electronic Health Record (EHR) created an overload of documentation and clerical responsibilities that slows physicians down and pulls them away from actual patient care. To relieve the documentation overload, physicians across the country are turning to Medical Scribe services. A Medical Scribe is essentially a personal assistant to the physician; performing documentation in the EHR, gathering information for the patient's visit, and partnering with the physician to deliver the pinnacle of efficient patient care. (para. 1, 2)

Typically, scribes at Hospital W are available 18 hours each day, but that schedule leaves many of the night shift providers at a disadvantage. During gaps in scribe coverage,

providers input healthcare data into the EMR, often after their shifts are over and they no longer are seeing new patients.

Although Hospitals H and W are very different (e.g., in size, academic affiliation, patient volume, and availability of scribe services), their patient throughput processes, essentially, are the same. Furthermore, the EMRs enable and constrain providers' agency in similar ways (see findings in chapter five). These similarities, thus, made the comparison between Hospital H and W worthwhile. Below, I explain how I gained entry to both of these research sites.

Navigating Access to Sites

I gained access initially to both of the research sites through Dr. C. My arrangement with Hospital H was formal, marked by an affiliation agreement between it and Louisiana State University (LSU; see Appendix G). The agreement gave me unlimited access to all emergency room common and private areas, barring patients' rooms, and it allowed me to observe and interact with emergency room staff for the duration of this study. In exchange, I agreed to follow the hospital's rules and to observe patient privacy mandates. After the agreement was signed, the emergency room nurse manager became my *sponsor*, which, according to Lindlof and Taylor (2011), is "someone who goes around and personally introduces you, vouches for your study, and helps you gain access" (p. 101). The nurse manager, Q, asked that I let her know in advance when I planned to visit the emergency room, so that she could notify staff members and remind them of my study's parameters. She advocated on my behalf and facilitated arranging interviews with several administrators and physicians.

I did not have a formal sponsor at Hospital W; however, Dr. C facilitated my access in several ways. Specifically, he approached the emergency room director and explained my study. After providing the director with a copy of my Institutional Review Board (IRB) exemption, she granted me access to Hospital W's main emergency room, but she requested that I limit my interactions to Dr. C and his scribe, although I was free to speak with other providers if they initiated conversation with me. Next, I describe the participants who I interviewed and/or observed throughout the study.

Participants

The participants recruited for this study represented a purposive sample because I made “informed judgments about . . . who to interview” (Lindlof & Taylor, 2011, p. 110). Over the course of this study, I observed and/or interviewed 2 scribes, 4 technicians, 15 nurses, 3 midlevel providers, 9 physicians, 2 hospital administrators, and 2 EMR trainers. Most of these people worked at Hospital H, some were affiliated with Hospital W (two scribes, one nurse, and one physician), and one of the participants, Dr. C, had worked at both hospitals. The majority of the participants were male and White. Female participants included the technicians, half of the nurses, two physicians, a hospital administrator, and the EMR trainers. Three African American physicians represented the only nonWhite participants. The nurses and physicians, who comprised the bulk of the sample, ranged in age from early 30s to mid-60s.

Sampling of participants proceeded “in a serial fashion” (Lindlof & Taylor, 2011, p. 117), with new participants added based on what I learned and as I learned it; that iterative process supported the analysis, reflection, and theorizing about the principal site (Hospital H) and its agents. Hospital H's emergency room regularly employs 4 to 5

technicians, 26 nurses, 3 midlevel providers, and 10 physicians. I observed and/or interviewed all of the technicians, almost half of the nurses, all of the midlevel providers, and all but one of the physicians. Thus, the sample size reflected sufficiently the types of providers working in Hospital H's emergency room. Moreover, the sampling process, according to Lindlof and Taylor (2011), usually ends "when new data no longer add much of significance to the concepts that have been developed" (p. 117). Therefore, having achieved saturation with this sample (i.e., no new information was seen or heard), I stopped enlisting new participants.

In addition to participants recruited from Hospitals H and W, I interviewed leading emergency medicine physician-scholars. I did so when attending medical conferences, to tap into broader trends surrounding EMRs and emergency medicine practice. Dr. Ken Milne, Chief of Staff at South Huron Hospital, and Dr. Peter Viccellio, Clinical Professor and Vice Chair of Emergency Medicine at Stony Brook School of Medicine, described their experiences with EMRs and drew comparisons between forced and free EMR adoption scenarios (see the findings in chapter five). At one medical conference, I spoke with numerous physicians and midlevel providers whose experiences and expertise informed my understanding of EMR adoption processes. I also exchanged e-mails with Dr. Rick Bukata, editor and founder of *Emergency Medical Abstracts*, on the subject of EMRs. Lastly, I consulted with Dr. Anne Nicotera (George Mason University), whose structurational divergence (SD) theory framed this study.

In presenting the data, participants' names are withheld and pseudonym initials are used to protect their confidentiality; the only exceptions are those scholars named above who are not affiliated with either Hospital H or W, and who consented to having

their names appear in this study. Additional considerations with respect to participants' confidentiality and data security, as required by the LSU's IRB, are described next.

Institutional Review Board Approval

The first phase of this study (see chapter three) received exemption from full institutional oversight by LSU's IRB on October 7, 2013 (see Appendix A). The study was amended in December 2014 to include a revised questionnaire (see Appendix H), and the modifications were approved by that IRB on January 9, 2015 (see Appendix I). My sponsor distributed copies of the informed consent release (see Appendix A) to employees at Hospital H, and all of the participants agreed verbally to its terms. I provided copies of the consent form to participants I recruited from Hospital W, as well as those I approached at medical conferences. Participants' verbal consent was obtained before interviews commenced.

In accordance with LSU's policy on security of data, handwritten fieldnotes were locked in a safe, and electronic copies were stored on a password-protected computer. Backup versions of electronic data, including fieldnotes, e-mail correspondence, and other documents containing identifying information, were stored on an external hard drive, which was locked in a safe when it was not in use. All of the documents appearing in the appendices that contain identifying information have been redacted.

To review, I observed and interviewed healthcare providers working at Hospital H in southern Louisiana. Hospital H was acquired by Corporation G a few years ago and has undergone numerous changes. In addition to new emergency room management, there were several changes made to the hospital's executive team, and there was high turnover in the IT and nursing departments. The hospital was operating at a deficit, and

adopting EMRs meant that it might recoup some lost revenue—namely, in the form of Meaningful Use incentive payments. Portions of a McKesson EMR system were installed, which nurses began using in April 2013. Physicians began using the McKesson CPOE component in August, but they continued to use paper charts as well. As of May 2015, the last component of the EMR system, the electronic TSheet, had not been installed. Although Hospital H's EMR adoption was delayed, I did observe a fully functioning EMR at Hospital W, an urban academic medical center in Kansas. At Hospital W, I interviewed scribes and spoke with physicians about their perceptions of the scribe program. I also interviewed several physicians attending medical conferences to gain a more complete understanding of EMR adoption processes and implications. Participants' confidentiality was preserved through the use of pseudonyms, and the data were safeguarded in accordance with LSU policies. The methods that I employed to collect data are described in the next section.

Data Collection

To address the goals of this study and to understand how structures and agents were affected by Hospital H's EMR adoption, four methodological practices were used to obtain data: (a) participant observation of Hospital H's emergency room operations and EMR training sessions was conducted, augmented by observation of Hospital W's scribe program; (b) interviews were conducted with Hospital H's administrators and emergency room employees, with Hospital W's scribes and providers, and with leading emergency medicine scholars; (c) a questionnaire was designed and administered to Hospital H's emergency room employees to assess their perceptions of the EMR, diagnose SD, and measure burnout; and (d) analysis of documents, including Hospital H's emergency room

memoranda, patient satisfaction surveys, physicians' metrics reports, and McKesson EMR/CPOE training materials. Each practice is explained below.

Participant Observation

Spending time in Hospital H's emergency room allowed me to observe interactions among providers and to witness how they engaged with and talked about the EMR. My participant observation, which included emergency room operations and two stand-alone EMR training sessions, spanned from December 2013 to May 2015. In addition to the 42 hours of fieldwork that I conducted in Fall 2013 (see the preliminary research study in chapter three), I spent another 145 hours at Hospital H's emergency room and recorded my observations in 162 handwritten pages. Similar to Eisenberg et al. (2006), I followed commonly accepted observational procedures by visiting the hospital at various times of the day, observing on weekdays and on weekends, following numerous individuals who had varied roles, and taking detailed fieldnotes. I also positioned myself in specific places (see, e.g., Nugus et al., 2011) and regularly observed activity near the electronic whiteboard, at the nurses' station, at the physicians' work space, by the midlevel providers' desk, near the triage room, and by the breakroom. As patterns and themes emerged from the collected data, I revisited certain shifts, locations, and providers to confirm or revise them.

"The goal of fieldwork," according to Wolcott (2010), "is to recognize patterns, [which is] the precursor to finding themes"; however, "there is no reason not to be thinking of 'themes' from the beginning of your story and trying to test hunches" (pp. 8, 40). I developed several hunches during the preliminary fieldwork (described in chapter three) and from researching literature about EMRs and emergency medicine. In the

parlance of Tracy and Geist-Martin (2014), these hunches became *sensitizing concepts*, “interpretive devices—almost like magnifying glasses—that offer frameworks through which researchers see, organize, and experience the data” (p. 246). Certain sensitizing concepts, described next, led me to focus on particular behaviors, discussions, and interactions.

Sensitizing concepts that shaped my participant observation. Several sensitizing concepts informed my observations at Hospital H; primarily, concepts that were rooted in structuration theory and its derivatives framed my observations. For instance, I was attentive to how agency was enabled or constrained in certain situations, where structural contradictions seemed apparent, if and how appropriation moves were executed, and if negative communication spirals emerged. Additionally, the literature on EMR adoptions shaped my perceptions. For example, Park et al. (2013) found that physicians-in-training rarely initiated talk with nurses; consequently, I was attentive to who initiated conversation (i.e., physician or nurse) and what was discussed (i.e., patient care, the EMR, or something else). Moreover, because Callen et al. (2013) found that physicians spent less time with patients after, as compared to before, an EMR installation, I noted the amount of time that providers spent at EMR stations and inside patients’ rooms. My preliminary research and literature review also sensitized me to the following concepts: how physicians and nurses framed their talk about EMRs; role, group affiliation, and hierarchical relationships, which, sometimes, manifested in divergent interaction patterns; how providers discussed feeling either satisfied or dissatisfied with the working environment at Hospital H and with their careers; providers’ communication patterns when out of sight of patients (i.e., backstage interactions); the number of mouse

clicks that were required to perform certain operations, such as ordering medications, and the length of time involved; reactance amid forced EMR adoption situations; and dissonance that was caused by role reversal during EMR training episodes. Reactance and dissonance, as described next, shaped many of my observations.

Reactance, as defined in chapter two, is the motivational state following a threat to or elimination of freedom that aims to restore that freedom and/or to subvert and resist the endorsed behavior (Brehm, 1966; Brehm & Brehm, 1981). Because reactance usually triggers hostile and aggressive feelings (Brehm, 1966), I was attentive to situations where I believed that reactance would be expressed, such as when Hospital H's administrators required physicians to use the CPOE exclusively, and when generic, electronic TSheet prototypes were tested in the training sessions. Reactance cannot be measured directly (Quick et al., 2013), and scales devised to detect reactance are "psychometrically unsound with poor reliabilities, unstable factor structures, and poor convergent and discriminant validities" (Nesterkin, 2013, p. 588). Reactance, therefore, is better viewed as a situational outcome with observable characteristics (Nesterkin, 2013). Extending the view articulated by Brehm (1966), that reactance triggers hostile or aggressive feelings, I looked for any hostile or aggressive communication (or other behavior) relating to EMRs/EMR use. Moreover, because subverting the mechanics of power (i.e., resisting constraining structural forces) with disruptive talk or behaviors targeting EMRs is "asserting autonomy of action" (Giddens, 1984, p. 292), when providers disparaged the EMR, refused to use it, or circumvented order-entry processes, I noted that reactance might have been a factor, and I followed up by conducting ethnographic interviews for confirmation (see the discussion of interviews in the next section).

Dissonance is “the existence of nonfitting relations among cognitions” (Festinger 1957, p. 3). For example, physicians’ lack of knowledge about how to use EMRs often leads them “to view themselves as novices . . . [and] the juxtaposition between concurrent roles of (medical) ‘expert’ and ‘novice’ creates a high degree of cognitive dissonance” (Nambisan et al., 2013, p. 4). Although Sweeney, Hausknecht, and Soutar (2000) argued that there is “no well established scale to measure dissonance” (p. 369), they developed a 22-item scale that boasted strong evidence of discriminant validity and reliability. Although the scale was designed to measure consumers’ postpurchase dissonance, several of the scale’s emotional dimension items certainly are applicable to providers in forced EMR compliance situations: resentment, fear, anger, unease, annoyance, and frustration (Sweeney et al.). Nadeem (2007) adapted Sweeney et al.’s model for observational research; instead of administering a questionnaire, Nadeem asked participants about their feelings in accordance with the scale’s emotional dimension items. I adapted Sweeney et al.’s model in a similar way, noting behaviors and conversations that suggested providers might have felt resentment, fear, anger, or unease regarding the EMR. For example, if a provider sighed loudly or mumbled profanities when using an EMR, I attended to the occasion as an example of frustration and, possibly, dissonance. My hunches, then, were either confirmed or denied in ethnographic interviews, with those interview procedures described next.

Interviews

Individual interviews were conducted to ascertain providers’ experiences both practicing emergency medicine and using EMRs at Hospital H. I also questioned participants about their perceptions of EMR adoption processes, EMR training,

communication among providers and between providers and administrators, working conditions, and career satisfaction. Interview questions were derived from the questionnaire that was developed during preliminary research (see Appendix C). Most of the interviews that I conducted in the field were ethnographic and/or informant interviews. Because interviews often took place on the fly and in a busy emergency room, they were not audio recorded; instead, I took copious notes during interviews and shared frequently what I had written with informants to make certain that I had captured conversations accurately.

In addition to ethnographic and informant interviews, I conducted several in-person respondent interviews with three physicians, a nurse manager, and a nurse. Those in-person interviews were audio recorded, producing 5 hours and 46 minutes of material, which I transcribed (giving verbal content only). I conducted telephone interviews with a physician and the head of Hospital H's IT department, recording detailed notes during and immediately following those interviews. I also conducted e-mail interviews with a physician and an administrator that consisted of open-ended questions asking about EMR adoptions, implications, and limitations.

All of the ethnographic and informant interviews were conducted with participants who seemed eager to explain the scene and share their perspectives. Nurses, technicians, and scribes were especially glad that I valued their opinions, but some physicians, initially, seemed hesitant to speak with me. In time, and with prodding from my sponsor, most of the physicians accepted my presence in the emergency room and answered willingly my questions. Hospital H's administrators, however, were more difficult to reach and phone calls requesting interviews were not returned. After multiple

e-mailed requests, one administrator consented to an interview. Rather than meeting in person, as requested, I was instructed to e-mail my questions, and the administrator addressed most of the questions in her e-mail reply. The head of the hospital's IT department called me in response to an e-mailed request and addressed a series of open-ended questions about the adoption process, the in-house TSheet design process, and EMR training. I also conducted ethnographic interviews with two EMR trainers, and although one of the trainers consented to a follow-up respondent interview, she later canceled the interview and did not return my e-mails.

The ethnographic and informant interviews were shaped, largely, by what was happening in the emergency room that I observed. My questions, therefore, were improvised and sought clarifications and/or explanations of behaviors, interactions, phrases, and processes observed. Sensitizing concepts, as described previously, led me to focus on particular occurrences; specific questions that I posed about certain events, such as forced EMR compliance or EMR training episodes, were shaped by the literature on reactance and dissonance, as described next.

Sensitizing concepts that shaped interviews conducted. Reactance often manifests in a preference for the prohibited object or process (Brehm, 1966), and, at Hospital H, providers' reactance was expressed in statements that both praised paper charts and condemned EMRs. When providers disparaged the EMR, refused to use it, or circumvented order-entry processes, I followed up with ethnographic interviews to ascertain why that was the case. For example, because a common occurrence involved physicians asking nurses to enter orders into the CPOE, usually, I asked physicians why they had made the request. Moreover, I was careful not to jump to conclusions, because

context (e.g., whether physicians otherwise were busy with tasks that prohibited entering orders), nonverbal behaviors (including paralinguistic cues, such as tone of voice), and apparent affective state needed to be taken into account when deciding if physicians asking others to enter orders qualified as reactance. Additionally, I considered carefully whether negatively framed talk (e.g., griping) about the EMR might have signaled reactance or was intended to bolster belonging by reinforcing group membership. For example, a nurse who, generally, was enthusiastic about some aspects of the EMR complained frequently alongside other nurses about its many shortcomings. When I asked why she changed her mind about the EMR, she said that she enjoyed “letting off steam” with her coworkers, and that “complaining together,” even though she thought that “the EMR [wasn’t] so bad,” helped her to “feel connected to them.” Asking about speakers’ intentions, thus, was important for validating or refuting initial assumptions that I made about participants’ reactance in many situations (see findings in chapter five).

With respect to dissonance, *thought listing*—which requires people to list their thoughts before, during, and/or after a task; inferences about dissonance then can be made by analyzing data obtained across various occasions or groups (Cacioppo, von Hippel, & Ernst, 1997)—has been used to measure consonant and dissonant cognitions. This approach has been incorporated into questionnaires, with respondents reporting the frequency and intensity of thoughts from among a list of cognitions that they are given (Cacioppo, 1997). Rather than asking providers to write their thoughts, I elicited *think-aloud* statements, which involve participants verbalizing their cognitions and/or emotions during and after completing EMR-related tasks. The think-aloud approach has been found to produce twice as many thoughts as does thought listing (Blackwell, J. Galassi,

M. Galassi, & Watson, 1985). Moreover, given the busy nature of this research site, the think-aloud approach was faster and more practical to administer than was thought listing. I engaged providers in think-aloud exercises during and after EMR *training episodes*, defined as situations where physicians solicited or received help using the EMR from nurses or mid-level providers. I focused on hierarchically imbalanced situations that were more apt to create role reversal and/or dissonance, as opposed to nurse-to-nurse or physician-to-physician training episodes. In addition to think-aloud statements, I asked providers to indicate if they experienced any of the emotions listed in the shortened version of the Sweeney et al. (2000) questionnaire (resentment, fear, anger, unease, annoyance, frustration, and/or discomfort).

Questionnaire

I administered a questionnaire (see Appendix H) that providers completed anonymously about effects of the EMR on their experiences working in Hospital H's emergency room. Questionnaires were completed by 30 of the 42 full and part-time employees (71% response rate); respondents included 4 technicians, 17 nurses, 3 midlevel providers, 5 physicians, and 1 respondent who identified as "other."

The questionnaire was intended to supplement observational and interview data with a numerical account of providers' experiences with and perceptions of the EMR. The questionnaire asked participants about a variety of topics, including their job titles, how long they had worked in emergency rooms, if the administration solicited their opinions about the EMR before it was chosen and installed, how they believed the EMR affected communication between themselves and other providers, if they were satisfied with the EMR, and if they had considered changing jobs or careers. Additionally, the

questionnaire included items to measure structural divergence and burnout, which are described next.

Structuration divergence (SD) was measured via a 17-item scale. Nicotera et al. (2010) constructed the scale items from interview data that they collected, which “were specified to be driven by three first-level factors: immobilization/individual-development, unresolved conflict, and managerial/organizational-development” (p. 376). The scale in Nicotera et al.’s (2010) study displayed a clear factor structure that was validated across several subsamples, and it showed strong internal consistency. According to Nicotera et al. (2010), the model “resulted in the following fit indices: χ^2 (113, $N = 142$) = 179.73, $p < .001$, CFI = .95, RMSEA = .06, 95% CI of RMSEA = .05 to .08 [and] values indicated that the modified model provided reasonable fit to the data” (p. 377). The reliability coefficient was .94 (Nicotera et al., 2010).

Because the original SD self-report instrument was intended for nurses and nurse administrators (Nicotera et al., 2010), I adapted several items to administer it to physicians, midlevel providers, and technicians (see Appendix H, prompt 7). For example, the item “I can’t go to my nurse manager for help resolving conflicts because s/he won’t do anything to help” became “I can’t go to administration for help resolving conflicts because they [sic] won’t do anything to help.” Modifying some of the items was necessary because physicians working in the emergency room do not have managers or supervisors per se. There is an emergency department director at Hospital H, a physician, but he does not provide direct oversight of physicians’ daily work. Physicians, thus, largely, work unobserved, but because many people equate administrators with managers, each occurrence of “manager” or “supervisor” in the original scale was

changed to “administrator” or “administration.” Dr. Nicotera approved these changes, as well as the addition of the following item: “Medical staff and administration view patients differently, and this causes conflict.” The original scale, as well as my modified version, “can be used to diagnose whether SD may be at the root of morale or productivity problems” (Nicotera et al., 2010, p. 381).

Several scales have been used to measure burnout. The Maslach Burnout Inventory (MBI) has been used in 90% of all empirical burnout studies (Kristensen, Borritz, Villadsen, & Christensen, 2005); consequently, according to Kristensen et al. (2005), the questionnaire and the Maslach definition of burnout have “become two sides of the same coin: burnout is what the MBI measures, and the MBI measures what burnout is” (p. 193). There are, however, concerns that the operationalization of burnout in this instrument is unclear, because it is characterized by the simultaneous occurrence of three dimensions, but, according to the MBI, those dimensions should be measured independently because they have been confirmed by factor analyses as three distinct dimensions (Kristensen et al.). Nonetheless, and despite its length (22 items), researchers continue to use the MBI because it has been validated by studies (Fortney et al., 2013; Kuhn et al., 2008).

McManus, Smithers, Partridge, Keeling, and Fleming (2003) proposed an abbreviated 13-item MBI to measure burnout in physicians. The abbreviated scale has been used in several studies (see, e.g., Opoki, 2013; Rehder, Cheifetz, Markovitz, Turner, 2014), and it has demonstrated strong validity and reliability (McManus et al.). West, Drybye, Sloan, and Shanafelt (2009), however, found that two single-item measures exhibited the highest factor loadings within their respective burnout domains. On the

emotional exhaustion item (“I feel burned out from my work”), Spearman correlations between the single item and the full emotional exhaustion domain score minus that question ranged from .76 to .83 across four large samples; the depersonalization item (“I have become more callous”) ranged from .61 to .72 (West et al.). West et al., thus, concluded that “the results of our study indicate that results on these two questions can serve as useful surrogates for the MBI in settings where it is not possible to administer the full 22 item instrument” (p. 1320). Although it is not yet used widely, the two-item scale recently was employed to measure burnout in medical students (A. Cook et al., 2014). To keep the questionnaire short, I also used the two-item scale (see Appendix H, items 11 and 12).

Document Analysis

Finally, I reviewed many of Hospital H’s emergency room memoranda, patient satisfaction surveys, physicians’ metrics reports, and McKesson EMR/CPOE training materials. I also examined notices from the IT department that described several EMR technical glitches and temporary workarounds. Taken together, those documents helped me to understand more the EMR installation process and its ramifications for both providers and patients (see the findings in chapter five). Moreover, as described next, this approach triangulated the findings to enhance their validity.

Validity of Findings

In naturalistic research, conventional notions of validity derived from positivistic and postpositivistic research (e.g., predictive validity) do not hold much relevance (Lindlof & Taylor, 2011), but *descriptive validity*—“the factual accuracy of the reportage of events” (Lindlof & Taylor, 2011, p. 276)—can be assessed by triangulating multiple

sources and methods (Frey et al., 2000; Lindlof & Taylor, 2011). *Triangulation* includes “comparison of two or more forms of evidence [and] if data from two or more methods point toward the same conclusion, then validation is enhanced” (Lindlof & Taylor, 2011, p. 274). For example, self-reports may have little relationship between what people say they do and what they actually do, but employing self-reports with others’ reports and observations create a triangulated measurement. “Triangulation can be done with multiple methods,” as I have done, whereby “the researcher looks for convergent data in fieldnotes, interviews, documents, or other qualitative evidence” (Lindlof & Taylor, 2011, p. 274). Moreover, the questionnaire that I developed and administered was used to further triangulate data obtained from observations, interviews, and documents. Additionally, I conducted regular *member checks*, which involve “taking findings back to the field and determining whether the participants recognize them as true or accurate” (Lindlof & Taylor, 2011, p. 279).

Although I took steps to ensure the descriptive validity of findings (e.g., triangulation), there was a potential threat to this study’s internal validity: the *Hawthorne effect*, whereby people behave differently when they know that they are being observed. As Wolcott (2010) noted, however, “No one can keep up appearances forever so the ethnographer eventually sees things as they are” (p. 92). *How* the ethnographer sees things, though, as explained below, is shaped, largely, by his or her subjectivity.

Researcher Subjectivity

As Wolcott (2010) wrote, “Make no mistake, the observer-researcher always has a perspective, always offers a point of view” (p. 23), and because “facts are *personal* interpretations” (Goodall, 2000, p. 95), researchers need to “carefully consider how their

(and any co-participant's) subjectivity impacts the research and writing" (Tracy & Geist-Martin, 2014, p. 248). Moreover, according to Madison (2012), because "our subjectivity is an inherent part of research," researchers should "contextualize our own positionality, thereby making it accessible, transparent, and vulnerable to judgment and evaluation" (pp. 10, 9). For these reasons, it is important to address my subjectivity, and, specifically, how Dr. C., as my husband and as an informant, influenced me.

Dr. C's perceptions, certainly, shaped my view of physician–nurse relationships and interactions between them. Traditionally, the physician–nurse relationship "has been an unequal one characterized by the dominance of the doctor, with the nurse assuming a position of lower status" (Johnson & Kring, 2012, p. 343). Although some physicians enjoy "a higher standing in the social pecking order of the hospital" (Haddad, 2003, p. 28), many emergency room physicians, including Dr. C., believe that they are near the bottom of the hospital hierarchy; as independent contractors without tenure or union protection, they see themselves as disposable and beholden increasingly to "nurse packs" (i.e., groups consisting of nurses). In conducting preliminary fieldwork (see chapter three), I saw evidence of a hierarchical shift that favored nurses' preferences and working conditions over those of physicians. Here, I describe two such instances and my reactions, but it is important to note that my relationship with Dr. C influenced how I recorded and interpreted those events.

In conducting fieldwork in 2013, I noted that every emergency room shift that I observed involved a single physician and a "nurse pack." A nurse practitioner at Hospital M joked about "nurse packs," saying, "We're like a wolf pack: We can gang up on a doc and drive him out." She also commented, "Twenty years ago, if a doc walked in, you

were expected to give him your seat and say, ‘How would you like your coffee?’ A lot’s changed since then.” In response, a physician replied, “Yeah, now we’re the one’s getting *you* the coffee.” Although he was joking, another physician, most assuredly, was *not* joking about “nurse packs” when he later shared the following story:

I had started working at a small town ER and the nurses just didn’t warm to me. It came to a head when an asymptomatic high blood pressure showed up. Tests came back fine, so I discharged him home with a ‘scrip. The nurses thought I was incompetent. They said they admitted *everybody* with high blood pressure, no matter what. I showed them the Joint National Commission’s recommendations, “send ‘em home with a ‘scrip.” They went behind my back, called an internist, and had the guy admitted. He ended up leaving a few days later with the same \$4 ‘scrip I had given him, and an \$80,000 hospital bill. I tried to talk to administration about it, but those nurses got me fired because I didn’t do things *their* way.

I sympathized with the physician because Dr. C had had similar experiences with hostile nurses, with some nurses even going so far as to hide his medical charts and throw away his order sets. Such petty ploys could have endangered patients, as Dr. C. pointed out. Moreover, the physician who lost his job had difficulty getting credentialed at other hospitals. Without admitting privileges, he would, in effect, have been unemployable, which would have been disastrous, for, like Dr. C, this physician owed more than \$200,000 in student loan debt and he needed a job. I now concede that there probably was more to the story, and that the nurses may have acted out of ignorance (of then current best practices) instead of malice or spite. When I was told the story, however, I blamed hostile nurse packs wholeheartedly for the physician’s predicament.

On October 6, 2013, I observed the following scene at Hospital T that, I believe, alludes to the changing hierarchy of nurse–physician relationships that Dr. C and other physicians described. That day, all of the nurses talked about, negotiated, and, eventually, took lunch breaks, whereas the physician, Dr. C., went without a break. The

six nurses on shift timed and orchestrated carefully the particulars of their lunch breaks, each one taking 30 minutes. It was a busy day, and Dr. C moved quickly from one patient's room to the next. He returned to the counter and sat at the EMR, typing up patient histories, orders, and preliminary findings. As Dr. C typed, he reached into a bag beneath the counter and pulled out a beaten-up, squished-flat Subway sandwich. He said that he had picked it up a few days before but that he had not had time to eat it during his previous two shifts. Even though I already knew the answer, I asked if he, like the nurses, took lunch breaks. I posed the question hoping that the nurses sitting nearby would overhear his reply. As Dr. C said:

Almost never. Well, certainly never on a day shift. Maybe a night shift. If it's not too busy, I *might* have time to eat. I can eat only if I have food right here at the desk in front of me. I can't leave the emergency room and go the cafeteria. Basically, you get to eat only if things are under control, which means that you [physicians] don't generally get a lunch break.

As he unwrapped the soggy sandwich, he elaborated:

What if *you* were the patient? What if *you* saw the doc get up and leave, and take a 1-hour lunch break to eat a sandwich? You can't do that! You would get your butt sued off! Ya know, if ya don't [get sued], then all the patients complain. Ah, geez, you cannot possibly do that!

Dr. C paused his two-fingered typing at 1:05 pm and tore into the sandwich. An impatient nurse sat behind him, rapping her fingers on the countertop. She huffed and rolled her eyes, and, finally, said, "Hey, Doc, did you finish charting on room 2?" "I'm doing it now," Dr. C replied, pecking at the keyboard between mouthfuls. His "tap, tap, tapping" was punctuated by her "rap, rap, rapping." At 1:10 pm, he downed the last of the mangled sandwich. I inquired, again, about lunch-break policies, hoping that the impatient nurse would take notice of the inequities. I asked him, "So, docs don't get

lunch breaks but the nurses do?” He looked at me and shrugged. From around the corner, another nurse announced that she was back from lunch.

Although I was quick to judge the nurses that day (it was, after all, my husband who was hungry), it is worth noting that most nurses are employees who have every reason to expect lunch breaks during their 12-hour shifts. In contrast, emergency medicine physicians usually are “hired guns,” who, like Dr. C., have no benefits, health insurance, sick days, retirement funds, or lunch breaks. A nurse with whom I spoke was quick to point out, “Yeah, but they [physicians] make a pile of money, so it evens out.” Physicians feel differently; as one said, “we make more money, sure, but we carry *all* of the malpractice risk, and we do more work.” When I asked that physician to clarify, he explained that emergency medicine physicians are sued much more often than are nurses, and that physicians see every patient in the emergency room, whereas nurses are responsible only for three or four at a time. These “tit-for-tat” comparisons positioned me between two divergent perspectives; although I often sympathized with nurses, usually, I identified with physicians.

Like the emerging nurse packs, access to food may signal that power dynamics and hierarchical nurse–physician relationships are changing in some emergency rooms, and, certainly, Dr. C thought as much. Hence, these early episodes tainted my view of vindictive and well-fed nurse packs preying on innocent and hungry physicians; namely, my husband, whom I very much wanted to protect. As I shifted my focus away from Dr. C, started observing other physicians, and spent more time with nurses at Hospital H, I started to see nurses in a different light. Nurses at Hospital H were nice to me from the start, whereas the physicians, especially those I had not met previously in social settings,

were slow to warm to me. Although being introduced as “Dr. C’s wife” signaled that I was “okay” (i.e., I could be trusted), many physicians seemed reserved during our interactions. In time, I found that I was more comfortable sitting with the nurses rather than near the physicians’ workstation. I even started wearing blue scrubs, as opposed to the green scrubs that physicians usually wore. The nurses offered their snacks to me and I brought Goldfish crackers along on every visit. When I was practically force-fed birthday cake by one of the nurses who insisted I eat instead of count calories, I knew that I was “one of the gang.”

Although Dr. C arranged my entry into the site, the nurses ensured that my time there was fruitful. My sponsor, Q, was my biggest ally. She responded to all of my e-mails, always in a prompt and courteous manner, and she seemed genuinely enthusiastic about my research. Several nurses became trusted advisors and friends. One of my nurse-informants, B, acted as my “spy” by sending text messages that alerted me to important EMR issues and personnel changes that, otherwise, may have gone undiscovered for weeks. B also e-mailed me regular updates and consented to several respondent interviews that I conducted with him. Without Q and B, my research would have been less productive. They, along with the other nurses, helped me to see that emergency medicine practice is hard for *everyone*—nurses work as hard as do physicians, and, in many ways, nurses’ EMR burdens are more cumbersome (see the findings in chapter five). Although these experiences and insights do not guarantee that this report is “objective,” I tried to approach my research and these participants with an open mind. Moreover, given that my view of nurses changed during the time that I was in the field, I made every effort *not* to favor the perspectives of physicians over nurses when writing

this report. Nonetheless, as Goodall (2000) cautioned, “Every text, every story, privileges someone’s point of view” (p. 160).

Ethical Concerns

According to Frey et al. (2000), there are at least four moral principles that shape the ethical guidelines for how researchers should treat study participants: “(a) provide the people being studied with free choice; (b) protect their right to privacy; (c) benefit, not harm them; and (d) treat people with respect” (p. 148). I obtained permission and/or informed consent from all participants; I used pseudonyms to protect their identities and, thereby, mitigated potential harm; and I treated them with respect. Moreover, my report is true to my experience. There were, however, two ethical issues that I addressed but did not resolve fully: (a) my husband’s role as informant, and, consequently, his free choice in this research; and (b) how I could benefit the study’s participants.

On the matter of intimacy between researchers and participants, Wolcott (2010) wrote that “one wonders whether intimacy itself is ever desirable when the threat of possible discovery or betrayal lurks in every ethnographic report, revealing things told in confidence, or inadvertently reporting something that embarrasses the teller” (p. 117). My husband’s voice was peppered throughout the ethnography that I wrote in Fall 2013 (see chapter three), and when I shared that report with him, he said, “I would have left some things out, but you saw what you saw and heard what you heard.” I do not think that I coerced my husband; he participated freely and signed consent forms attesting as much. He, generally, welcomed my inquiries. He also introduced me to gatekeepers and allowed me to shadow him. I absorbed his ethos and was received better by emergency room personnel for it. He also, however, was defensive at times and did not always like

the mirror that I held up to his profession. We argued about a number of things, but in the end, we made peace, because, as he said, I saw what I saw and I heard what I heard. For this study, however, I limited his participation because it could have affected adversely my subjectivity and threatened his privacy. There were two exceptions when his perspective was invaluable and necessary for this report: submitting to formal EMR training and working with scribes. Apart from these instances, I did not observe him during my fieldwork.

Frey et al. (2000) maintained that, if there is any way possible, research participants should benefit from research, and Goodall (2000) asked, “What should you be expected to give back to those whom you lived with and studied?” (p. 154). After more than a year with the emergency room staff members at Hospital H, I felt obliged to repay their kindness and honesty. That feeling was cemented on October 10, 2014, when I conducted a joint interview with a physician and the nurse manager, Q. They were very forthcoming about their strained interactions with administrators, and they seemed despondent as they pondered the EMR installation. Q paused and said, “I’m telling you all of this because you’re here to help us. You’re like one of us.” Later, I wrote in my journal, “Q’s admission triggered a strong reaction. I *need* to give back. I’m taking for the sake of my dissertation, but other than Goldfish crackers and a sympathetic ear, I’ve not given much.”

I spoke with Dr. Eric Eisenberg (University of South Florida) about what I could or should do for the providers at Hospital H, because he has used his work in emergency rooms to improve communication among providers and between providers and administrators (see, e.g., Eisenberg et al., 2005, 2006). Dr. Eisenberg suggested that I

start by preparing a summary of my findings for Hospital H's administrators, being certain to incorporate providers' concerns and suggestions into that report. I will complete and present that document during Summer 2015.

Lastly, as Van Maanen (2011) noted, "Ethnography irrevocably influences the interests and lives of the people represented in them—individually and collectively, for better or worse" (p. 5). I hope that this ethnography influences people for the better, but "there is no way of seeing, hearing, or representing the world of others that is absolutely, universally valid or correct" (Van Maanen, p. 35). In conclusion, I refer to Wolcott's (2010) sentiments on ethics, which I have taken to heart:

I am not so sure that ours is an ethical line of work—in the course of finding out everything we want to know, we can't help finding out things we do not want, or need, to know. . . . I have told the truth. But I have not told everything, even about my self. I am silent about some things, but what I have told is true. I am guided by an old proverb that reminds us that if you tell the truth you don't have to try to remember what you told them the last time! For me, that is about as close as I can come to defining the real lesson of ethics" (pp. 123, 124).

In summary, I conducted 145 hours of participant observation and numerous ethnographic, informant, and respondent interviews that were shaped by sensitizing concepts that were derived from structuration theory, adaptive structuration theory, and SD theory. Findings from my preliminary research and literature review also guided observations and interviews. I administered a questionnaire, which assessed providers' perceptions of emergency medicine work, EMR adoption, and career satisfaction, as well as measured SD and burnout. I also analyzed several documents, including memoranda and training manuals, to better understand Hospital H's EMR adoption. To address validity concerns, I triangulated findings by comparing information gleaned from participant observation, interviews, and questionnaires. I addressed subjectivity by

acknowledging ways in which my husband and key informant, Dr. C., influenced my perspective and preliminary research. To limit his influence and to treat him ethically (providing free choice and protecting his privacy), I restricted his role in this study. I behaved as ethically as I could by offering participants freedom of choice, protecting their privacy, shielding them from harm, and treating them with respect. Moreover, I have presented the findings honestly. Although my research has not yet benefited participants, I am committed to trying to improve their working conditions and their communication with administrators. I now explain how the collected data were analyzed.

Data Analysis

Analyzing fieldnotes and other textual data involved three steps: data management, data reduction, and conceptual development (Lindlof & Tylor, 2011). *Data management* involves categorizing and sorting, *data reduction* “means that the use value of evidence is prioritized according to emerging schemes of interpretation,” and *conceptual development* involves recognizing the links between themes, which become “more dense and elaborate” (Lindlof & Taylor, 2011, p. 243) throughout the analysis process. I managed the data that I gleaned from participant observations and interviews, first and foremost, by “identifying patterns of behavior,” which are the “precursor to finding themes” (Wolcott, 2010, p. 39).

I began with *open coding* the data, which is “the initial, unrestricted coding” (Lindlof & Taylor, 2011, p. 250) of data to generate categories. During a second round of open coding, I incorporated *in vivo coding*, which involves “coding the terms used by social actors to characterize their own scene” (Lindlof & Taylor, 2011, p. 251). For example, routinely, providers mentioned “gaming the system,” which included

techniques and EMR workarounds for avoiding poor metrics reports. Sensitizing concepts guided the sorting process and determined inclusion or exclusion of categories for further analysis. For example, I recorded many instances of food politics playing out in the emergency room, but those instances were excluded from analysis, because, although food politics are an important aspect of emergency room culture, they bear little relevance on EMR adoption processes. Thus, in sorting data, I also reduced those data to the most salient and applicable categories from which I could derive themes.

I used Owen's (1984) three criteria for identifying and classifying categories and themes. According to Owen, a theme emerges when there are (a) recurring descriptions, phrases, or utterances with the same meaning, irrespective of wording; (b) repeated use of the same wording; and (c) forcefulness of expression, as evidenced in vocal pitch and/or volume. In reviewing my fieldnotes, interview data, and other data-collection procedures, I identified and refined 15 themes that were evident in talk and/or action that was connected to the EMR: (a) assessment, use, and/or rejection of the EMR and its features, including reactance; (b) interactions with or about patients; (c) orders and order entry; (d) chitchat and/or griping about the EMR, which supported relational growth and/or support; (e) EMR workaround strategies; (f) EMR avoidance strategies; (g) communication with or about administrators; (h) personal and/or career satisfaction; (i) role hierarchy in the emergency room; (j) "us" versus "them" language, with "them" being agents outside the emergency room, including administrators, specialists and consulting physicians, nurses from other departments, and IT staff; (k) EMR training issues, including role reversal and dissonance; (l) conflicting structures; (m) metrics and

surveillance; (n) providers' diminished agency; and (o) unintended consequences. Each of these themes are discussed in further detail in chapter five.

During conceptual development, I reexamined the themes, reviewed the data again, and revisited the theoretical frameworks. Some of the themes that I identified (i.e., g, h, k, m, and n) could be grouped together under a single theme of “structural divergence”; still others (i.e., a and c) could be folded into a broader theme that encompassed “appropriation moves.” According to DeSanctis and Poole (1994), an appropriation study should begin with a microlevel analysis of technology structures that emerge in everyday talk, because “it is in specific instances of discourse that the formation of new social structures begin” (p. 133). A global appropriation analysis then follows, which examines whole conversations instead of isolated speech acts (DeSanctis & Poole, 1994). Lastly, institutional-level appropriation involves a longitudinal analysis that identifies persistent patterns across units (e.g., day and night shift) and users (e.g., physicians and nurses). I revisited the concept of “appropriation” by first reviewing my fieldnotes and transcriptions for recurring adjectives that were used to describe EMRs; I, then, looked for whole conversations about EMRs; and, finally, I linked those conversations to day or night shifts, and to specific user types (e.g., physicians or nurses). This conceptual development prompted me to recategorize and to expand the appropriation theme and add several subthemes. I also regrouped, collapsed, and/or expanded several other themes (see Table 4.1).

Analysis of the questionnaire data involved, primarily, tabulating frequencies and percentages. Given the small sample size ($N = 30$), there were too few data points to warrant more advanced statistical analysis (e.g., analysis of variance procedures) because

Table 4.1

Themes and Subthemes for Identifying Structural Changes Amid an Electronic Medical Records System Adoption

1.) Training	<ul style="list-style-type: none"> a.) role reversal b.) dissonance and reactance c.) peer-to-peer (e.g., nurse-to-nurse)
2.) Appropriation Moves	<ul style="list-style-type: none"> a.) direct use (implicit or explicit) b.) relating the EMR to another structure (using and then comparing the EMR with another structure) c.) constraining the EMR (how the EMR is used and interpreted; includes asking questions about it, offering advice, and commenting on its performance) d.) judging the EMR (praising or condemning)
3.) Structural Divergence	<ul style="list-style-type: none"> a.) conflicting structures b.) personal/career satisfaction (includes intention to quit and burnout) c.) “us” versus “them” interactions d.) communication with/about administrators e.) diminished agency/autonomy
4.) Strategies	<ul style="list-style-type: none"> a.) workarounds (includes “order dumping” and using scribes) b.) avoidance
5.) Communication between Providers	<ul style="list-style-type: none"> a.) topics and frequency of talk b.) relational support/growth (includes chitchat and griping)
6.) Patients	<ul style="list-style-type: none"> a.) interactions with patients b.) patients’ perceptions/satisfaction
7.) Unintended Consequences	<ul style="list-style-type: none"> a.) patients’ stories/truncated narratives b.) billing c.) metrics and surveillance (includes “gaming the system”) d.) providers’ ages and EMR use e.) malpractice f.) wage theft

Note: The appropriation moves and subthemes are adapted from DeSanctis and Poole, 1994.

the tests would have lacked statistical power. Responses to the 17 SD items were summed. The responses of “rarely,” “sometimes,” “moderately often,” “usually,” and “very frequently” were coded 1 through 5, respectively, with items 4, 7, and 17, appearing beneath prompt 7, reverse coded (see Appendix H). According to Dr. Nicotera (personal communication, February 4, 2015), “A diagnosis of high SD is a score (or group’s average score) above 51.” Responses to the burnout items (11 and 12) were summed as well. The responses (“never,” “a few times a year or less,” “once a month or less,” “a few times a month,” “once a week,” “a few times a week,” and “daily”) were coded 0–6, with scores above 3 suggesting burnout (McManus et al., 2003).

In conclusion, data analysis was an iterative process that involved sorting, classifying, reducing, and conceptually linking themes. From 15 initial themes, I arrived at 7 major themes and several subthemes that reflected providers’ EMR systems-related actions and talk. Most of the responses to the questionnaire items were tabulated and reported in frequencies or percentages, with responses to SD and burnout items summed. The results of the data analysis are presented in the next chapter.

CHAPTER FIVE: FINDINGS

This chapter presents data derived from fieldwork, in-depth interviews, document analysis, and the questionnaire that indicated providers experienced structural changes in the emergency room at Hospital H during and after portions of an electronic medical records system (EMR) installation. Findings, described next, are grouped into seven major themes: (a) EMR training for providers; (b) providers' appropriation moves, which include direct use, relating, constraining, and judging moves; (c) structural divergence, which include immobilization and negative communication spirals; (d) providers' strategies for coping with the EMR; (e) changes to providers' communication patterns; (f) how the EMR affects provider-patient interactions and patients' experiences; and (g) unintended consequences associated with the EMR.

Electronic Medical Records System Training for Providers

Key factors known to inhibit physicians' learning, in general, include role-reversal tensions arising from hierarchically imbalanced relationships; cognitive dissonance, which often is compounded by role-reversal tensions; and forced learning, which invites reactance. My observations of physicians' formal EMR training sessions and informal EMR training episodes at Hospital H were planned with these factors in mind. I also observed and recorded peer-to-peer EMR training episodes that occurred among nurses and among midlevel providers. The findings from those observations are discussed below. First, I describe role-reversal tensions, dissonance, and reactance that was demonstrated in formal training sessions; next, I explore these considerations in the context of informal training episodes; lastly, I discuss peer-to-peer training episodes and implications for patient care.

Role-reversal Tensions, Dissonance, and Reactance in Electronic Medical Records Formal Training Sessions

As discussed in chapter two, lasting change happens only if people regard a change as compatible with their other tasks and behaviors, are willing to learn a new process, and feel safe in the learning environment (Lewin, 1947). Nesterkin (2013), however, pointed out that forced learning amid change invites *reactance*, defined, in chapter two, as the motivational state following a threat to or elimination of freedom that aims to restore that freedom and/or to resist the endorsed behavior (Brehm, 1966; Brehm & Brehm, 1981). Reactance, typically, triggers hostile and aggressive feelings (Brehm, 1966) and is based on the premise that individuals value choice and that threats to autonomy invite resistance (Nesterkin). Forced learning “requires a certain degree of deviation from one’s existing preconceived ideas which is often seen as inherently undermining one’s autonomy” (Nesterkin, p. 573). Moreover, in the context of EMR adoption in emergency rooms, “many physicians find order entry is a task better performed by others, reducing their motivation for learning” (Lærum et al., 2005, p. 9).

Another factor that inhibits physicians’ willingness to learn, in general, is *dissonance* (Barley, 1985; Nambisan et al., 2013), defined, in chapter two, as “the existence of nonfitting relations among cognitions” (Festinger, 1957, p. 3). Physicians’ lack of knowledge about how to use an EMR often leads them “to view themselves as novices . . . [and] the juxtaposition between concurrent roles of (medical) ‘expert’ and ‘novice’ creates a high degree of cognitive dissonance” (Nambisan et al., 2013, p. 4). Reversing hierarchical structures of physician–nurse or physician–technician relationships during training further increases physicians’ cognitive dissonance, which, in turn, increases “physician resistance toward learning and sharing knowledge” (Nambisan

et al., 2013, p. 5). This type of cognitive dissonance can “lead to emotional tension and avoidance of learning” (Robinson et al., 2003, p. 432), especially as physicians grapple with new technology.

Reactance and dissonance were sensitizing concepts that shaped my observations of two *formal training sessions* at Hospital H, which I defined as planned meetings that occur outside of the emergency room between medical providers and designated trainers for the purpose of EMR and/or computerized physician order entry (CPOE) system education. Early in the EMR adoption process, formal training sessions were mandatory for physicians, which, predictably, triggered reactance. Moreover, physicians were not paid for the many 2–3-hour sessions that they attended, which further exacerbated their frustrations. Even more infuriating, from the perspective of many physicians, were ongoing EMR upgrades, which meant that lessons learned in prior training sessions were not applicable to new and evolving EMR features.

In June 2014, Hospital H’s chief executive officer (CEO) sent an e-mail to all of the physicians that acknowledged their frustrations with the EMR adoption process. Reading the e-mail aloud, Dr. C said, “Administration understands implementation of the McKesson EMR did not go as smoothly as expected, and recent experience has been less than gratifying; however, the administrative team has been working to fix it and we are ready to relaunch.” The relaunch would require additional mandatory training. Dr. C continued reading aloud, “Physicians must complete training prior to June 30 and, while we recognize the burden of another training event, we want to assure you of the necessity and usefulness of this training program.” Two 2-hour sessions, which would be led by a former McKesson Corporation employee, were compulsory for all physicians and

midlevel providers. As Dr. C lamented, “I have 3 days off for the rest of the month and I have to spend two of them at the hospital, *not* getting paid, so I can learn how to use a piece of crap EMR that doesn’t work.” His reaction to the decree suggested that the formal training session would elicit reactance from providers.

I observed the formal EMR training sessions attended by Dr. C the following week. The trainer, PJ, showed up in surgical scrubs despite having no medical background—she had been a computer programmer with McKesson and, later, she joined Hospital H’s information technology (IT) department. Dr. C regarded her attire with suspicion and asked her where she had completed her medical training. PJ did not respond and, instead, opened the session by stating, “McKesson will make changes [to the EMR] if patient safety is impacted, but they [sic] typically don’t prioritize user-friendly suggestions.” Dr. C’s response was curt, “Well, okay then, so you’re saying keep my opinions to myself. My opinions and experience don’t count?”

Later, as Dr. C sat in front of the EMR, he clicked through a series of boxes and commented that the multiple “confirm” screens following each medication order that he entered into the CPOE slowed charting. PJ said, in response to Dr. C’s comment, “It [the confirm screen] helps you make better clinical decisions. It makes you think about what you just ordered and if it was the right decision.” Dr. C’s response was the first example of dissonance that I observed in the session (which I confirmed when he reported, in a think-aloud session that followed the training, feeling both anger and frustration). He turned to PJ and asked, “Did the computer go to medical school? What about the computer programmer who designed it; did that person go to medical school?” PJ did not acknowledge his statements but, instead, redirected the conversation to another topic.

Throughout the 2-hour training session, there were several terse exchanges in which Dr. C verbalized his frustrations with the EMR, with PJ, largely, ignoring or negating his observations. For example, when Dr. C asked if the EMR could be modified to allow more space for free text to type detailed accounts of patients' complaints and symptoms, PJ responded, "We don't like free text because it's hard for the system to recognize it. Try to select from the checkboxes because they've been coded and already are in the database." Dr. C replied, "So stick with check boxes because it's easier for the billing department?" He paused, and then continued, "What about what's easier for the physician?" PJ, who looked exasperated at that point, sighed and retorted, "Look, every part of our documentation system is moving toward electronic. It *will* happen." Dr. C replied, "I hope I'm not working here when it does. These things [EMRs] are not ready for prime time and it impacts patient care."

In addition to dissonance, physicians' reactance also was evident throughout the session. As described in chapter two, psychological reactance theory (Brehm, 1966) proposes relationships among freedoms, threats, reactance, and (attempted) restoration of freedoms. Direct restoration involves performing the forbidden act (in this case, using paper charts), but freedom may be restored, symbolically, by increasing liking for the forbidden choice, by disparaging the source of the threat, or by exercising other freedoms to maximize feelings of control (Quick et al., 2013). Dr. C expressed repeatedly his preference for paper charts with statements such as, "Paper is so much faster," "I can find everything in one chart, instead of clicking through a bunch of screens," and "Paper charts have room to write, not just a bunch of check boxes." Reactance and symbolic

restoration of freedoms are described later in more detail (see the discussion on structural divergence and loss of autonomy).

After the training session came to an uneasy end, I asked Dr. C about his exchanges with PJ. He acknowledged that he was angry at being forced to sit through another training session for which he was not paid. Moreover, he was upset that his concerns were either minimized or ignored. As Dr. C elaborated:

I don't know anything about this woman. She wears scrubs, but she's obviously not a physician. She hasn't practiced medicine. She had no idea what I was talking about in terms of patient care issues. I didn't mean to seem like a jerk but she doesn't understand the repercussions. She just keeps saying, "We're going electronic," but what she showed me today isn't ready. I can't function in a busy emergency room with a system that slows me down and can lead to mistakes. It pisses me off that they make us use these stupid EMRs instead of TSheets. If I was a jerk, then I'm sorry, but no one seems to be listening to us, the end users.

Dr. C's description of the encounter contains allusions to role-reversal tensions, dissonance, and reactance. The trainer's nonmedical background meant that, in Dr. C's estimation, she should have deferred to his acumen on matters pertaining to patients' safety. Instead, as he implied, she directed the exchange and disregarded his status as a medical expert by insisting that "we're going electronic," which triggered Dr. C's anger, annoyance, and frustration (i.e., dissonance). Dr. C's reference to forced adoption was followed by his stated preference for paper charts (which demonstrated a symbolic restoration of freedom).

Because dissonance and reactance can hinder learning, as noted above, I asked Dr. C if he learned anything about the EMR during his training session. He said, "No, not really. It might save me a few clicks, but I don't think I learned anything new today." I asked four other physicians what they learned after their respective training sessions, and all of them said, more or less, "Nothing new." All of them commented that the EMR

training would have been more productive had they been given user manuals or handouts. I asked if they would have preferred handouts in lieu of their mandatory sessions with PJ, to which three responded, “Yeah.” I asked several physicians if they, like Dr. C, found their training sessions with PJ difficult, and the consensus was that their sessions, largely, were unproductive. I scheduled an interview with PJ to discuss her thoughts on the physicians’ training sessions, but she later canceled the interview and did not respond to subsequent e-mailed requests.

A second trainer I later observed, K, did consent to a follow-up EMR training interview in March 2015. During that interview, K confessed that training physicians was difficult, particularly if they regarded her as an outsider; consequently, she made a point of highlighting her past work as a physical and occupational therapist. “I know that’s not the same as being a doctor or nurse,” she explained, “but I’m not a complete outsider either. I’ve done charting, so I know what it’s like.” Nonetheless, she admitted that some of the physicians at Hospital H were difficult to deal with, and she attributed their frustrations to the forced adoption. As K elaborated:

They’re being made to learn something that’s very different. There are different cognitive processes involved [than when using paper charts], and that means it’s going to be a strain for the physicians for a while. We have to honor that, let them complain, and blow off steam. It’s natural, but some trainers take it personally and get nasty right back.

I asked if she was referring to PJ, whose reaction to Dr. C’s criticism of the EMR, in my opinion, bordered on “nasty.” K shrugged and said:

I’m just saying you can’t do that. You can’t disrespect them [physicians]. Give them their space and let them gripe. They need to vent. If I nod and listen to their complaints, they feel like they’ve been heard, and then we can get on with the training.

K's strategy seemed to produce better results than did PJ's approach. Following Dr. C's session with K, I asked him to describe it, and he said, "I liked her. She wrote down some of my suggestions. I have more confidence that it [the EMR] will get improved." I asked if he learned anything new, and he replied, "Yeah, I did learn some new things. I learned some shortcuts that should help save time when I'm charting."

Whereas K was forthcoming, PJ declined to discuss her experiences, but I learned, secondhand, how PJ felt about training physicians. In a phone interview that I conducted in October 2014 with SR, the head of the IT department, he explained that PJ was "beyond frustrated" with the physicians. I asked SR if role-reversal tensions affected the training, and he lamented that the hierarchical imbalance was problematic. He blamed physicians, stating, "Opportunities have been available in a controlled environment, but they've been rebuffed." When I asked him to elaborate, he shared the following story:

PJ has a set curriculum, one-on-one training, but it was optional training and the ED [emergency department] staff was resistant to commit to the additional time needed for training. Trust me, they [sic] *need* the training. For example, some CPOE items are not being signed off by the physicians. They need to acknowledge certain medication orders and click the boxes, but they're not doing it. The physicians think they know it all and they don't want training from an outsider. They wouldn't come to us, so PJ ended up going to the ED, which is not a neutral space, because there are lots of distractions. She tried to do training, but the doc didn't want to engage her. He left and went to the cafeteria. He didn't have the respect to come back and finish the training.

I pointed out that training was mandatory, not optional, as SR indicated, and I noted that I observed two training sessions and interviewed several physicians who had attended one-on-one sessions, to which he replied, "I don't know who has done what and with whom. There's no consistency with the providers." I wrote in my notes, "His reply suggests

there is no consistency among administrators either, certainly not with respect to communication, especially if he doesn't know the CEO mandated training."

I asked the emergency room director, Dr. F, and my sponsor, Q, about SR's story. Dr. F was not aware of the incident that SR described but he shared his experience of an impromptu training session:

I'm here one morning and the place is hopping; we have two chest pains and another on the way. PJ shows up, unannounced, and says, "I'm here for your training." Are you kidding me? I'm treating patients. I don't have time for this. No heads up, nothing.

Q noted that she and Dr. F had twice scheduled formal training sessions for nurses, only to have training canceled at the last minute, without explanation, by IT staff. Additionally, Q was adamant that she would not schedule additional training sessions until all of the remaining EMR components (e.g., the generic, electronic TSheets) were developed fully and ready for launch, saying:

I'm not going to schedule any more training until they bring us *all* of the TSheets; otherwise, it's a waste of time to schedule physicians and nurses to show up, and there's nothing to show them. I scheduled training last December, but we had to cancel because IT [staff members] didn't have anything ready. They didn't have a single TSheet.

Q noted that she and the nursing staff actually had coordinated most of the EMR and CPOE training, informally, for themselves. As she said, "We taught ourselves how to use it. We went over it together, figured out how to use it, and we did it without administration getting involved." Informal training episodes, such as those described by Q, are discussed next.

Role-reversal Tensions, Dissonance, and Reactance in Electronic Medical Records Informal Training Episodes

I defined an *informal EMR training episode* as any situation that occurs in the emergency room when a provider (typically, a physician) solicits or receives help using the EMR or CPOE from another provider; typically, a nurse or mid-level provider (special consideration is given in the next section to training episodes between hierarchically matched providers). As discussed in chapter two, because physicians, generally, “do not want to spend time learning new computer systems” (Brooks & Grotz, 2010, p. 81), nurses, midlevel providers, and/or technicians are trained to use EMRs and then tasked with training physicians. Although this approach reverses the hierarchical structure of providers’ relationships, it is not without problems but, as described above, the tactic remains commonplace. In an e-mail exchange with one of Hospital H’s vice presidents, she explained that Hospital H’s approach to training and support included reliance on *super-users*, defined as designated nurses and midlevel provides with advanced training on EMR and CPOE features who have been appointed to facilitate physicians’ proper utilization of the technology. Super-users are supposed to be available to answer questions, assist with order entry, and troubleshoot.

Nurse B, one of my key informants, explained that the super-user designation at Hospital H was confusing because no two super-users were skilled equally in using the EMR’s various components. For example, nurses’ notes and the CPOE were separate programs, and, eventually, the electronic TSheet would represent a third program, and none of the super-users could navigate expertly all three facets of the EMR. Furthermore, because many physicians had no way of differentiating among the super-users, physicians

tended to direct their inquiries to whoever was closest physically. B, who is not a super-user, recalled being asked repeatedly by a physician for help using the CPOE:

I just kept saying, “I don’t know how to use the CPOE,” but the doc got frustrated because he was having trouble putting in an order. Finally, a midlevel helped him out. It puts us [nurses] in an awkward position, because we don’t have to use the CPOE to do our jobs, so why would we know how to use it?

Recognizing that super-user variability was a problem, an administrator decided that *all* of the nurses should receive special training on how to use the electronic TSheets to facilitate electronic TSheet implementation by assisting physicians during the transition. B complained that although nurses would not use the TSheets to document patient care, they would be required to sit through additional training nonetheless.⁸ Several nurses remarked that they were dreading the additional stress of training physicians. I asked if their reticence was because they anticipated role-reversal tensions, which, as described above, often elicit physicians’ dissonance and reactance. One of the nurses replied, “It’ll be more work for us, but we won’t get paid more to do it. It adds to our job stress.” Another nurse, A, remarked, “I’m not comfortable telling the docs what to do. They’re [physicians] fine; they’ve never been mean about it, but I just don’t want to be in that position.”

Nurse A’s admission prompted me to review my fieldnotes. I had recorded dozens of informal EMR training episodes between physicians and super-users, and I had described repeatedly those episodes as “friendly exchanges between coworkers.” Think-aloud sessions conducted with physicians that followed these episodes had not produced evidence of dissonance (e.g., fear, anger, unease, discomfort, annoyance, or frustration).

⁸The training was delayed several times, and, as of May 2015, training had not been rescheduled.

Most physicians were very forthcoming about their inability to navigate the EMR, and they asked for help gladly. Although many physicians expressed reactance in these episodes—namely, by expressing their preference for the forbidden choice (i.e., paper charts)—their hostility was not directed at the super-users who assisted them; more often than not, physicians and super-users cursed the EMR together. I asked Dr. C why he believed that role-reversal considerations and dissonance did not appear to be factors in informal training episodes, and he explained, “These guys are my coworkers; we all sink or swim together. The trainers, I don’t know them from Adam, and they could care less if I sink.”

I had not considered previously that nurses and midlevel providers would experience role-reversal tensions during EMR training episodes, let alone dissonance, but I began soliciting think-aloud statements from them following such episodes. N, a midlevel provider, said, “I have some angst about being a super-user, whatever that means. I know the system better than they [physicians] do, but, at the same time, I’m not on par with them. It’s awkward.” Another midlevel provider later echoed N’s assertion:

It really changes the dynamic of the relationship, and I’m not sure I’m comfortable with it. I’m not trying to one up the doc but here’s this guy who knows *way* more than me and *I’m* the one telling *him* what to do? I don’t want the doc thinking that I think I’m better or know more than him.

I asked nurses and midlevel providers how they interpreted physicians’ behavior and comments during informal training episodes. With the exception of two physicians, who, as nurses described them, were “hierarchically minded,” most physicians were polite and expressed their appreciation for the help that nurses offered. Nonetheless, no one with whom I spoke welcomed the prospect of being designated a super-user.

Peer-to-peer training issues. Among the designated super-users, several nurses expressed their frustrations at having to engage in *peer-to-peer EMR training episodes*, defined as hierarchically matched informal EMR training episodes that occur in the emergency room among nurses or among midlevel providers. Nurse super-users complained that they often were tasked with training temporary nurses who were called in to cover staffing shortages. Although many of these temporary nurses “worked the floor” at Hospital H (i.e., the intensive care unit), the EMR interface that they were accustomed to using was very different from the version that was used in the emergency room. One of the super-users I observed, M, spent more than 30 minutes helping an “upstairs nurse” to insert a battery into the computer-on-wheels (COW), boot up the system, and then sign onto the EMR. He remarked, “They send these nurses down who have no idea what to do, no training, nothing. It’s up to me. This just takes time away from me being able to see patients.”

Nurses bemoaning time spent training others instead of engaging in direct patient care also was a recurring theme. M explained that new users who arrived in the emergency room did not solve staffing shortages but, instead, intensified them:

Say we’re short a nurse and the floor sends someone down. If that person hasn’t used our EMR before, I have to show her everything. Guess what? That means that instead of an extra nurse, you’re actually down by two. I’m teaching the new nurse and neither one of us is seeing patients. That leaves 2 nurses to cover 20 beds, which is a nightmare. Without that extra help [the floor nurse], we’d at least have three nurses working.

Situations such as the one that M described have far-reaching consequences: patients do not receive medications in a timely fashion; procedures that require nurses’ assistance, such as suturing lacerations or performing pelvic exams, are delayed; and metrics that track patients’ lengths of stay go up, causing providers’ performance reviews to go down.

Group affiliation (i.e., floor nurses vs. emergency room nurses) appeared to influence nurses' perceptions of peer-to-peer EMR training episodes. Compared to emergency room nurses, upstairs or floor nurses enjoy lower nurse–patient ratios and they care for patients who, generally, are more stable medically (Eisenberg et al., 2005). Additionally, floor nurses often grapple with the emergency room staff during patient admissions (Eisenberg et al., 2005; Nicotera et al., 2010). The perceived imbalance in workloads and floor nurses' tendency to resist patient admissions leads many emergency room nurses to regard floor nurses with disdain (Eisenberg et al., 2005). M alluded to this perception that floor nurses are not well liked by emergency room staff when he said, “I don't mind helping *my* crew but the upstairs nurses get on my nerves.” Nurse J echoed M's assertions, saying that floor nurses “just show up and expect us to stop what we're doing and do everything for them. It's ridiculous. Now, if you're new and you're ER, that's different. We take care of our own.” Floor nurses, thus, are cast as “them” in a continual “us” versus “them” divide (see the discussion later on structural divergence).

Peer-to-peer EMR training between midlevel providers, generally, was more pleasant than exchanges that I witnessed between emergency room nurses and floor nurses. Because only midlevel providers work in the emergency room, “us” versus “them” dynamics were not an issue. Along with their nurse coworkers, midlevel providers expressed concern that time spent teaching one another to use the EMR was time taken away from patients. They cited frequent EMR updates for necessitating regular peer-to-peer training. As N explained:

Every time they do an update, all of our templates get wiped out. Someone has to go back in and set them up again, but not everyone knows how to set up a

favorites list or set up shortcuts. I'm happy to help out and teach people, but it takes time and the patients wait longer. In a lot of ways, it's wasted time, because the hospital's not making money if I'm not seeing patients.

I observed N show another midlevel provider how to alphabetize the list of medication orders: N spent 16 minutes completing that task and another 5 minutes explaining how he had done it, 21 minutes that could have been spent providing patient care but, instead, was wasted time (because it was unbillable).

Peer-to-peer training, despite its shortcomings, was necessary because there were not enough trainers to train and support emergency room users adequately on an ongoing basis. Moreover, Hospital H's trainers were not well regarded by the emergency room staff, and forced learning scenarios, likely, would have generated reactance akin to what physicians experienced in their formal training sessions. Nurses bemoaned regularly the mandatory electronic TSheet training, complained that it would prove "a pointless waste of time," and they rejoiced when it was postponed indefinitely.

As described previously, Q praised the emergency room staff members for teaching themselves how to use the EMR "without administration getting involved," but IT staff members found fault with emergency room staff members' approach. The trainer I interviewed, K, informed me that many of the nurses and midlevel providers were not using EMR features correctly:

Bad habits were passed from one person to the next, and, now, no one is using the system the way it was intended. Basically, no one voiced any concerns or issues, no one asked questions. I could have addressed some of the problems they were encountering, which were tied to user error and were not necessarily flaws with the system, but now it's too late. They've already formed habits.

According to K, the staff's maladaptive training strategies complicated ordering procedures, compromised efficient charting, and eroded users' satisfaction with the EMR.

In sum, formal EMR training sessions, as expected, triggered dissonance and reactance in physicians. Hierarchically imbalanced relationships exacerbated role-reversal tensions for physicians during formal training sessions, but not during informal training episodes. Instead, nurses and midlevel providers reported that they experienced feelings associated with dissonance (e.g., unease and discomfort) when they trained physicians in the emergency room. Peer-to-peer training delayed patient care and aggravated tensions between emergency room nurses and floor nurses. Additionally, poor practice habits were passed on in peer-to-peer sessions, which diminished users' satisfaction with many of the EMR's features. Next, I describe findings associated with EMR users' appropriation moves.

Appropriation Moves

According to DeSanctis and Poole (1994), *appropriation moves* describe the interplay between technology structures and action (i.e., how people use technology). As explained in chapter three, adaptive structuration theory (AST) identifies four appropriation moves: agents may choose to (a) directly use the technology, (b) relate the technology's structure to other structures in the environment (e.g., make conceptual linkages between an EMR and other tasks, or compare it with other structures), (c) constrain or interpret the technology while it is in use, and/or (d) make judgments about the technology (e.g., praising or condemning its performance). Appropriation moves can vary across groups as a function of users' attitudes: users may be confident in the technology's abilities, they may doubt its usefulness, or they may believe that they lack the necessary skills to use it effectively (DeSanctis & Poole).

An appropriation study, according to DeSanctis and Poole (1994), should begin with a microlevel analysis of technology structures that emerge in everyday talk (e.g., recurring words or phrases describing the technology), followed by a global appropriation analysis of whole conversations, and conclude with an institutional-level, longitudinal analysis of patterns across units (e.g., day and night shift) and users (e.g., physicians and nurses). As described in chapter four, I reviewed the data for recurring words and phrases that providers used to describe the EMR; I studied whole conversations about the EMR; and, lastly, I linked those conversations to day or night shifts, and to specific user types. Below, I present findings from each phase of analysis. I begin by sharing briefly the microanalysis results, and, then, I focus on the global and institutional analyses for each of the four appropriation moves (i.e., direct use, relating, constraining, and judging).

Microanalysis

DeSanctis and Poole (1994) argued that “written or spoken discussion about the technology is particularly important since this is evidence of people bringing the technology into the social context” (p. 133). Studying the process of technology introduction begins with a *microanalysis*, which “examines the appropriation of technology structures as it occurs in sentences, turns of speech, or other specific speech acts” (DeSanctis & Poole, p. 133). As a participant observer at Hospital H, I produced 162 pages of fieldnotes that contained references to over 500 exchanges about the EMR. During data analysis, I compiled a list of the 12 most common words and phrases that providers used to describe the EMR. “Frustrating” appeared most often, followed by “slow,” “hard to use,” and “difficult.” Using the list of recurring words and phrases (see Table 5.1), and “as a method of showing an innovative way to textually analyze data”

Table 5.1

Microanalysis of Providers' Talk: The 12 Words and Phrases Used Most Frequently to Describe the Electronic Medical Records System

Word or Phrase	No. of Occurrences
Frustrating	450
Slow	307
Hard to use	267
Difficult	250
Confusing	212
Not user-friendly	201
I hate them!	167
Waste of money	80
Patients don't like them	72
Okay	68
They're better than paper charts	52
Have potential	47

(Tracy & Geist-Martin, 2014, p. 255), I developed a word cloud to highlight the comparative dominance of each word or phrase (see Figure 5.1), with the size of the font paralleling the number of times that the word or phrase appeared.

As discussed in chapter two, how people talk about an innovation or new technology influences its adoption (Leonardi, 2009; Vishwanath, 2009). My microanalysis of providers' speech acts at Hospital H revealed that talk about the EMR, largely, was negative. Of the 12 most common words or phrases that were used to describe the EMR, 9 were negative, 2 were neutral ("Okay" and "Have potential"), and

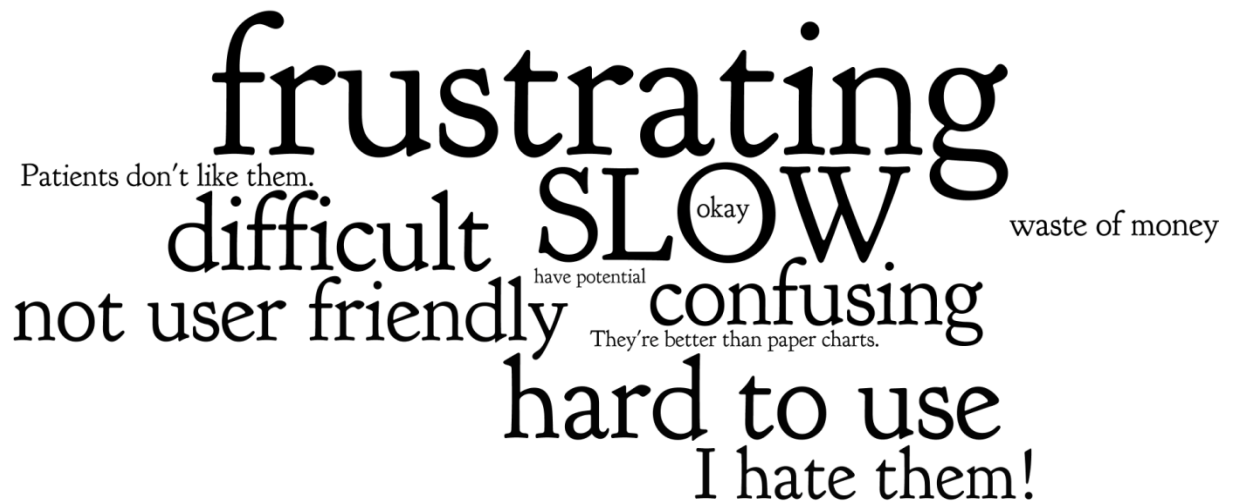


Figure 5.1. Word Cloud Illustrating the Words and Phrases Used Most by Providers to Describe the Electronic Medical Record System

only a single phrase (“They’re better than paper charts”) was positive. Most of the neutral and positive comments were made by nurses, which is in line with research showing that nurses, compared to physicians, generally, have been more accepting of EMRs (Lærum et al., 2004; Likourezos et al., 2004; Otieno et al., 2007; Weiner et al., 1999). Overall, though, providers’ attitudes about the EMR, reflected in the words and phrases that they used to describe it, were negative.

Noor et al. (2012) cautioned that the most “important step towards implementing [technology] adoption is to change the psyche of a user from ‘reluctant’ to ‘willing’” (p. 19); however, the results of my microanalysis suggest that users at Hospital H, generally, were “reluctant” and, thus, not willing to embrace the EMR. Although the microanalysis examined only isolated speech acts, global and institutional analyses explored whole conversations, and over an 18-month period, the results suggest that the majority of providers remained reluctant about the EMR throughout the entirety of the study. Next, I describe the global and institutional analyses of each of the four appropriation moves.

Global and Institutional Analyses of Direct Use

DeSanctis and Poole (1994) described scenarios in which would-be users could choose to interact with or ignore new technologies. Under such conditions, individuals who choose to use a new technology do so through *direct use*, which, according to DeSanctis and Poole, is either *implicit* (i.e., agents use the technology but do not refer to it) or *explicit* (i.e., agents use and refer to the technology). Expanding the definition of *explicit use*, it is technology use accompanied by neutral commentary that references or describes the technology in action (DeSanctis & Poole). Additionally, explicit use does not compare or relate the technology to other structures. Negatively framed talk that disparages the technology and, simultaneously, compares it to another structure (e.g., “Paper charts are better than poorly designed EMRs”) would not be considered explicit use but, instead, would be considered a constraining move, whereas condemnation without comparison (e.g., “EMRs are a waste of money”) would be classified as a judging move.

Given these parameters, and because the EMR adoption at Hospital H was forced (i.e., providers could not ignore the EMR), I did not record instances of freely chosen direct use; nearly all of the appropriation moves that I documented were relating, constraining, or judging moves. Moreover, neutral commentary was rare. Nonetheless, examples of what would be considered implicit use or explicit use in other contexts (i.e., situations where providers could choose to use or ignore an EMR, respectively) merit mention.

What would be considered implicit use in free-choice scenarios was observed during all of my visits to Hospital H. Day shifts (from 7 a.m. to 7 p.m.) produced more

examples of implicit use when compared with night shifts, because patient volumes, generally, peaked during day shift hours, which meant that providers who worked during day shifts often were too occupied with tasks to refer to or discuss the EMR. The EMR's introduction, ironically, compounded providers' workloads, further reducing their available time for discussion or commentary (see the section below on communication between providers). Implicit use, typically, consisted of a provider sitting at an EMR or standing at a COW, clicking a computer mouse, and typing on a keyboard. Nurses used an additional component, a scanner, to scan and record barcoded medication labels and patients' barcoded wristbands.

Examples of what would be considered explicit use in free-choice scenarios were recorded across both day and night shifts; however, it was more common at night. Explicit use was observed among all user types (i.e., physicians, midlevel providers, and nurses). Commentary included phrases such as, "The EMR's flashing; that must mean labs [laboratory test results] are back," "The [electronic] whiteboard just updated the patient list," and "New medication orders are highlighted in red." Despite these examples, explicit use was uncommon. Discussions that compared the EMR with other structures (i.e., relating) or commented on its performance (e.g., constraining or judging) were more common.

To review, examples of what would have been implicit use in free-choice scenarios were commonplace, especially during day shifts when providers were too busy for conversation. Examples of what would have been explicit use in free-choice scenarios occurred frequently at night. Because the EMR adoption was forced, evidence

of direct use was limited compared with examples of relating, constraining, and judging moves, which are described in the following sections.

Global and Institutional Analyses of Relating Moves

Relating a new technology to other structures is a measure of how well that technology has been integrated into the system. Providers at Hospital H related the EMR to other structures in two ways: first, by using the EMR in conjunction with other structures; and, second, by comparing the EMR with other structures and then discussing the comparison. I observed the first mode of relating when providers used the EMR frequently in conjunction with paper charts. During each of my visits, physicians and midlevel providers combined paper TSheets and paper order sets with the EMR and CPOE to complete documentation tasks and to admit or discharge patients. Nurses often reviewed physicians' completed TSheets for information that they then used to augment their electronic notes. Providers also used the EMR in combination with the X-ray display system, the medication-dispensing system, printers, and fax machines. The EMR, as evidenced by these examples of relating, appeared well integrated into Hospital H's emergency room operations; however, the EMR was not well liked, which affected my observations of the second mode of relating.

The second mode of relating involves comparing a new technology with another structure and then discussing the comparison using *neutral phrases* (DeSanctis & Poole, 1994), fact-based phrases that do not convey judgment or attribute value to the EMR. For example, "The EMR produces the same amount of paper as do paper-based charting systems," conveys a fact and does not impart judgment. Given that many of Hospital H's providers disliked the EMR (57% of respondents who completed the questionnaire

reported being dissatisfied with it), and given that my microanalysis of providers' speech acts revealed that the nine most common words used to describe the EMR were negative, neutral phrases about the EMR were infrequent.

Despite providers' negative talk about their EMR, there were enough occurrences of providers comparing the EMR with other structures and then discussing the comparison, in neutral terms, for themes to emerge. Reviewing my fieldnotes for evidence of relating revealed four themes that characterized providers' talk about the EMR: (a) how the EMR changed their workflow patterns (e.g., how much time it took providers to complete charting, duplication of work, and perceived cognitive disruptions to task management), (b) the completeness of (or amount of data in) the medical record, (c) the EMR's spirit (i.e., the EMR's design and features), and (d) the EMR's performance. Findings for each theme are reported below.

Workflow changes. As discussed in chapter two, EMRs change how work is done in emergency rooms. For instance, Park et al. (2012) observed a four- to fivefold increase in documentation time after an EMR installation. Because the transition from paper-based charting to an all-electronic system for the physicians at Hospital H was postponed and, later, stalled, I was unable to measure changes in documentation time with exact precision, but providers' comments suggested that documentation time increased. For instance, the nurses, who had transitioned from paper charts to the EMR in April 2013, often remarked that documentation took longer. As Nurse B explained, "Triage with paper usually took about 5 minutes; with the EMR, it takes 15 minutes." Midlevel providers made similar comments about the EMR's CPOE component; as N observed, "Versus paper order sets, the CPOE takes longer."

In addition to lengthened documentation time, EMRs affected workflow in other ways. For example, Park et al. (2012) observed that prior to an EMR installation, physicians completed their documentation tasks during or immediately after seeing each patient, but after the EMR was installed, physicians began seeing several patients before retreating to the charting room and then entering all of the patients' data into their respective electronic records. Park et al. also found that physicians recorded important information on scraps of paper that they later referred to when they updated patients' electronic health records. This EMR-induced change to workflow patterns resulted in duplication of work, with physicians documenting care twice: first on paper and then later on the EMR.

I observed similar changes at Hospital H. For instance, as Nurse L explained:

Bringing the COW into the patient room isn't feasible because the physician is performing a procedure in the room, or I have to see several patients in a row and pushing the COW around from room to room is a hassle, [so] I take an old nursing note in and write everything down, so I don't have to try and remember things like vitals. I have to put it in the EMR later, so, I suppose, I'm doing the work twice.

Dr. G, an older physician who worked day shifts at Hospital H, approached order-entry tasks by first writing medication orders for several patients at once, and then typing the orders into the CPOE. He conceded that the practice doubled his workload: "I still write orders using the old order sets, because that's how my mind works; then I go to the CPOE. Doing it that way means doing it twice."

Dr. G's comment also referenced perceived disruptions to cognitive processes. K, the EMR trainer, acknowledged the perceived disruption, saying, "There are different cognitive processes involved . . . [because EMR's] do not trigger the same mental processes as paper charts." Several physicians explained that paper TSheets organized

how they approached patient care. As Dr. F, the emergency room medical director, explained:

The paper sheet is laid out with everything visible to you all at once, and so it reminds you to do the ROS [review of systems], for example. With the computer, you don't see the prompt, so, maybe, you're not thinking, "Oh, there's the ROS box; I need to do that." It's a different mental approach. You have to adjust how you think about practicing medicine.

Dr. O, a young physician who recently had completed her residency training, described having experienced a similar shift in her cognitive processes:

I think because the electronic chart is zoomed into small sections, it forces you to think differently. The cues and reminders that you had on paper charts aren't visible. You're not seeing the whole thing on the EMR, so it changes the thought process. I find that I think differently on paper and on the EMR.

In sum, many providers at Hospital H reported that they experienced workflow changes after the EMR was installed. I recorded references to four workflow changes. First, providers believed that documenting healthcare took longer. Second, providers began seeing several patients before documenting the care that each patient had received, whereas before the EMR was installed, most documentation was completed at each patient's bedside. Third, because documentation took place often after—not during—patients' examinations, some providers reported taking notes to facilitate their recall of patients' data, but this practice resulted in additional work. Fourth, some providers believed that the EMR changed how they processed cognitive tasks associated with practicing emergency medicine. Next, I describe providers' beliefs about the contents of electronic health records and ramifications for healthcare delivery.

Perceived completeness of the medical record. The amount of information contained in the electronic health record affected how providers at Hospital H thought about patient care. Many providers acknowledged that there was a difference between

paper charts and the EMR. N, a midlevel provider, said, “There’s less information in the electronic chart.” When I asked him to elaborate, he explained:

It isn’t necessarily better or worse but it changes how I might approach a patient. If I see something in the chart from a past visit, it might make me think differently or consider a different diagnosis. If I don’t have that information, then I might order different tests or more tests. Generally, I find the paper charts have more information.

Other providers noted that, when compared with paper charts, there was more information in the electronic record. As Nurse L commented:

There’s a lot of data in here. The EMR has a good bit, from past labs [laboratory test results] to medication orders. I think there’s more here than in the paper charts, at least on the nursing side. It may be different for the docs. Having more information lets me know what to look out for and how I might approach managing certain patients.

In addition to the perceived volume of data contained in electronic records varying according to user type, the EMR’s spirit, described next, also was a factor that many providers referenced when they discussed the relative completeness of the medical chart.

Spirit. DeSanctis and Poole (1994) defined *spirit* as the intention behind a technology. As discussed in chapter four, well-designed technologies have a coherent spirit; an incoherent spirit exerts weaker influence over people and “may send contradictory signals, making use of the system more difficult” (DeSanctis & Poole, p. 127). An EMR’s spirit can be analyzed by examining its design metaphor (e.g., whether its interface resembles a paper medical chart or an accounting spreadsheet), the presentation and labeling of its features, training or support materials that accompany it, and its usability.

Providers at Hospital H compared regularly the EMR’s spirit (i.e., its design and features) with paper charts. Most comments had to do with checkbox-based charting

versus free-text charting; examples included phrases such as, “There’s more space to write on paper” and “The EMR is more clicking boxes versus writing.” Many providers—namely, physicians and midlevel providers—attributed the perceived shortage of information in the electronic record to the EMR’s checkbox-based design. Other providers compared the EMR’s interface with a spreadsheet. A nurse super-user commented, “It looks like an Excel spreadsheet.” N echoed that assertion, adding, “It has to look like a spreadsheet because it’s designed to go to the billing department. The checkboxes correspond to billing codes.” Comparing paper charts with EMRs also led, inevitably, as described below, to discussions about the EMR’s performance.

Performance. Neutral observations about the EMR’s performance were rare, but among the few that I recorded, providers’ comments had to do with the dependability of technology structures (e.g., the EMR’s performance during power outages or system upgrades), potential threats posed by computer viruses, and the perceived permanence of the medical record. For example, a nurse commented, “The system [EMR] goes down for upgrades about once a month, which didn’t happen with paper charts.” A midlevel provider asked, “I know security is a concern for both paper charts and electronic charts, but how safe are computer files from viruses? What keeps charts from disappearing if there is a glitch?”

To review, relating moves (i.e., using the EMR in conjunction with other structures) signaled that the EMR was well integrated into emergency room operations at Hospital H. Discussions in which providers compared the EMR with other structures revealed that the EMR changed workflow patterns, lengthened documentation time, doubled work for some providers, and changed how providers thought about and/or

planned patient care. Physicians and midlevel providers believed that the EMR contained less data than did paper charts. The EMR's design was compared to a spreadsheet, and its performance capabilities were questioned. Although I, along with many providers, regarded these events negatively, providers' neutral statements showed that comparison without condemnation occurred on several occasions. I recorded more instances of neutral commentary as the study progressed, which seemed to signal many providers' resignation that using the EMR was unavoidable. Thus, in reviewing providers' comments, I concluded that providers' feelings about the EMR appeared to soften somewhat over the 18-month-long study. Next, I describe providers' constraining moves.

Global and Institutional Analyses of Constraining Moves

As discussed in chapter three, an EMR's structural features (i.e., its inherent rules, resources, and capabilities) establish what the EMR can do and its effects on human agency. For example, an EMR may allow providers to access patients' pharmacy records, but not their medical files from other hospitals. The first feature enables providers' agency, whereas the second feature constrains it. *Constraining moves* compare technology structures and include observations about how structures affect human agency in positive and/or negative ways (i.e., enabling or constraining agency). Although not observed in this study, constraining moves also encompass how users enable or constrain a technology's structural features (e.g., by using an EMR in ways that are consistent or are inconsistent with its spirit).

Providers often compared the EMR at Hospital H with EMR systems that they had seen or used in other healthcare facilities. An EMR made by Epic was the system referenced most frequently because it was used widely in hospitals throughout

southeastern Louisiana. Nurse L compared Epic with Hospital H's Paragon system, which was made by the McKesson Corporation, saying, "Epic isn't perfect, but it's better than Paragon. It [Epic] lets me customize all of the templates to my liking. Paragon isn't as customizable." Dr. A, a typical "floater" who worked at several emergency rooms in the region, also explained why he preferred Epic:

I like Epic better for one reason: not as many warnings. With Paragon, all of these warnings pop up when you're trying to order something. Some of them make sense, like reminding us about patients' drug allergies, but there are some that are annoying. "Interacts with grapefruit juice." Well, I didn't order grapefruit juice! But it adds extra steps because I have to click through all those boxes.

Dr. A elaborated:

You have to acknowledge the warning by clicking on it. There's a 3-second delay every time you click "okay." All those clicks add up. Thirty checkboxes, and that adds a minute and a half to each patient every time you put in an order. With Epic, there's no delay, but that system costs more.

Several other physicians and all of the midlevel providers drew similar conclusions:

When compared with Epic, Paragon made documenting patient care more time-consuming and difficult. Because they acknowledged frequent warning boxes that they deemed to be "annoying" or "unnecessary," they were unable to engage in other aspects of patient care; thus, constraining their agency.

Dr. E, who also was a floater (i.e., he worked at several different emergency rooms) described another way that ordering medication differed between Epic and Paragon:

Epic controls how meds are put into the system better, which makes ordering easier. It [Epic] limits how medicine formulations are called up, restricted to what's available and common versus every imaginable, possible formulation. That saves me wasted time scrolling through endless lists of options.

Dr. E added, “With Epic, you can do voice dictation. Paragon doesn’t have that. It’s better to work with vocal cords than fingertips. Have you seen how slow some docs type?” Dr. E’s comments suggested that the Paragon system constrained his agency because the time that he could have spent on other tasks was “wasted” when he was forced to scroll through long lists of medications or type orders.

Many of the nurses’ comments also suggested that Hospital H’s EMR constrained their agency. Several of Hospital H’s part-time nurses worked at other facilities where they used a system made by Medical Information Technology, Inc. (MEDITECH). Similar to the physicians and midlevel providers, most of the nurses there preferred the other system to Paragon. One nurse, in particular, Nurse R, to the consternation of his coworkers, compared regularly the two systems. As two nurses tried, with difficulty, to access a patient’s medical history, Nurse R remarked that MEDITECH made accessing medical histories “easy” and, moreover, that MEDITECH could pull data from a regional network of interconnected hospitals. As he concluded, “A bunch of retarded third graders could figure out MEDITECH it’s so easy.” One of the nurses mired in the history-retrieval task mused that MEDITECH would be as asset in Hospital H’s emergency room, but lamented, “You have to pay to play with the good toys.” The other nurse quipped to R, “Just shut up about MEDITECH. I’m sick of hearing how awesome it is.” All of the comments from nurses that compared Paragon with other EMRs centered on ways that Paragon limited their agency by impinging on their ability to deliver timely care to patients.

In addition to comparing Hospital H’s EMR with other EMR systems, providers’ constraining moves included interpreting the EMR’s features and/or performance, asking

questions about or offering advice on how to use it, and discussing its effects on workflow. As described below, as with relating (described in the previous section), the same four themes surfaced in providers' constraining moves and subsequent talk: how the EMR changed workflow patterns, the perceived completeness of the medical record, the EMR's spirit, and the EMR's performance.

Workflow changes. Whereas workflow changes were conceded in providers' neutral relating moves (described previously), providers' constraining moves addressed specific ways that the EMR affected workflow negatively. Providers complained that Hospital H's EMR introduced longer documentation times, duplicated effort, delayed work, and interrupted their "train of thought." These changes affected the amount of time that providers spent with patients, and, in some instances, they threatened patients' safety. Each perceived change is described below.

Longer documentation times. Providers, overwhelmingly, attributed longer documentation times to the EMR's medication ordering and administering processes. A physician explained the difference between ordering medications using paper order sets and using the EMR's CPOE component:

When medications orders were on paper, you would write for the same drugs a lot, the same doses, and always the same way. In the computer, they have 100 different ways to prescribe a medicine, some, I've never even heard of. I have to scroll through all of that to find the one I want, and it adds time. In a code situation, that's valuable time that could make a difference in the patient's outcome.

I observed the same physician ordering pain medication for a patient with sciatica—the process involved 22 mouse clicks and took more than 3 minutes. Ordering a steroid shot for another patient required 23 mouse clicks and took 5 minutes. Both orders were hampered by multiple "confirm screens." As the physician complained:

I put the order in and up pops a screen, “Do you want to order this medication?” Yes, I want to order this, so click. Then there’s another screen. Yes, I *still* want to order this. Click. I have to click four more times: submit the order, confirm it, then confirm it again, and then once more. One screen, maybe two, I can see being useful for patient safety reasons, so you don’t accidentally order the wrong thing, but this is ridiculous.

To ascertain whether the slow medication-ordering process that I observed was unique to Hospital H, its McKesson-made Paragon EMR, and/or its providers, I asked five physicians who I met at a medical conference about their respective medication ordering experiences. All of them agreed that ordering medications—irrespective of the EMR—took longer when using EMRs than when using paper order sets. As Dr. Peter Viccellio, Clinical Professor and Vice Chair of Emergency Medicine at Stony Brook School of Medicine, explained:

I log on and that takes about 15 seconds. I find the patient’s name, that’s another few seconds. I have to make sure I have the *right* patient, and then I click on it to open the chart. Most of the time, it opens within 5 seconds. Sometimes, it takes up to 2 minutes to open. Up to 2 minutes to open a chart is an extraordinarily long time to wait when you’re experiencing it. Once the chart is open, you have to click on “add order,” then under “orders,” you have to find the medicine, click on it, sign it, and close the chart. The whole process, if you’re very efficient and quick, you might get in and out in a minute and a half or it may take you 4 or 5 minutes to do it.

The physicians all perceived that medication ordering was the single most time-consuming task associated with EMR use and that it limited the time they spent with patients.

At Hospital H, I observed that changing medication orders also was problematic and time-consuming. Routinely, nurses approached physicians and indicated that incorrect doses had been ordered because physicians “clicked on the wrong option.” On one occasion, I noted that it took a physician 17 mouse clicks and 6 minutes to correct a

medication error. As the nurse waited, she remarked, “On paper, it would take the doc 3 seconds. Cross out the old dose, write ‘300,’ and initial. Done.”

I asked most of the nurses how the additional minutes that physicians spent at the EMR ordering medications and/or correcting orders, compared with using paper order sets, changed their perceptions of nursing workflow. All of them agreed that the EMR’s medication order process prohibited them from giving care in a timely fashion. As Nurse L explained:

When they [physicians] type, we wait, and the patients wait. Nothing happens until the doc clicks “submit.” I can’t do my job until the order is submitted. If it’s you with a broken bone or migraine headache, that’s another 10 minutes that you’re not getting your pain medicines. That’s just ordering, but actually giving the medicine takes time, too.

When asked to describe the medication administration process, Nurse L explained that after a physician or a midlevel provider submitted a medication order, the EMR registered and processed the order, which allowed nurses to retrieve the medication from a locked cabinet (i.e., the Pyxis). As L noted, “We can’t physically get the medicine unless the doc puts in the order.” She explained that because the EMR controlled the Pyxis, without a valid medication order, “the Pyxis can’t be unlocked or opened.” Nurse B elaborated on the steps involved to administer medications:

It typically takes 8–10 clicks to give one medication; before, it was writing down one line in the chart. It takes too long now, and that’s just on the nurse’s side of it. It can take me 15 minutes to give one medication, because I get the order, go to the Pyxis, get the med, scan the med, go to the patient, confirm the patient, scan the patient, explain the med, click the screen, scan the med and patient *again*, give the medicine, then click the box that says I gave the medicine. When the scanner doesn’t work, I have to type up those little barcoded numbers! There are a lot of steps, and while I’m doing this, I’m not taking care of anyone else. There are other patients in pain, but they have to wait.

In explaining the medication administration process, Nurse B also referred to duplicated effort, which is described next.

Duplicated effort. Providers who took notes during patients' medical examinations and, later, entered the data into the health record acknowledged that the practice doubled their workload, but the EMR also duplicated providers' efforts in other ways. As Nurse B explained, "There's a lot of redundancy because when the doc notates something, the nurse is compelled to add to the nursing record. The doc writes discharge summaries, so the nurse types them into the computer." Nurse B's comment revealed that work was replicated regularly because the patient record consisted of separate physicians' notes and nurses' notes. Nurse M, a super-user, said that the EMR "doesn't make positive changes, from the nurse's point of view. There's so much duplication. Why do you have to have three people doing the same thing?" When asked to elaborate, M said:

Take for example, consultations. Consults with floor docs are written on paper first and then we type them in the nursing note. If a patient is admitted, then someone has to type the consult in the progress notes, which is a separate chart. Usually, an upstairs nurse will do that, but it could be one of us. Then, if there are orders, someone puts that in the emergency room record. If the consulting doc doesn't enter the orders, then the tech passes them to a midlevel to put in. The emergency room doc has to document all of this, too. So you have five or six people basically documenting the same thing in three or four different places. It's stupid. How is that efficient?

Although the duplicated effort annoyed many providers, some providers, like Nurse L, acknowledged that the redundancy could serve as a "checks and balance to ensure patient safety." Duplicated effort, which increased providers' workloads, led, frequently, as discussed next, to delayed work.

Delayed work. Many providers noted that the EMR added additional work, and that the time needed to complete it could pose risks to patients, because providers often delayed documenting certain tasks until “things slowed down” and “patients cleared out.” Dr. A explained that when physicians and nurses shared a common paper-based chart, certain documentation tasks, such as updating patients’ vital signs, were completed regularly by the nurses. Although he lamented having to read nurses’ handwriting (“Nurses have crappy handwriting, too”), he told me that because writing vital signs was “quick and easy,” he knew that the medical chart would remain current throughout a patient’s emergency room stay. Because entering vital signs into the EMR took longer than writing them in a paper chart, many nurses put off updating the electronic record until the emergency room was no longer busy or until they had completed their other documentation tasks. Nurses’ tendency to delay charting had consequences, as Dr. A revealed:

A while back, there was a patient I discharged home, and a few hours later, the nurse puts in the vitals. That patient left with a heart rate of 170! Nobody told me! We had to call him and bring him back to the hospital. That could have ended badly for everyone. The patient could have had a bad outcome and it could have led to a malpractice suit.

Physicians and midlevel providers also delayed completing documentation tasks, especially when the emergency room experienced a surge in patient volume. Drs. E and G both explained that the practice, although necessary “to stay on top of critical patients,” could affect negatively continuity of care. As Dr. E noted, “For admitted patients, it can be a problem, because the admitting [physician] isn’t seeing everything in the chart that we did.” Dr. G expressed frustration when he complained that “our hands are tied, but we can’t do two things at once.” He concluded, “We can either be at the bedside and take

care of patients or we can sit at a computer and click boxes, but we can't do both.” Next, I discuss the final workflow change that I observed: interrupted train of thought.

Interrupted train of thought. A lot of providers' constraining moves centered on beliefs that the EMR interrupted their train of thought. Dr. Viccellio explained that EMRs, when compared with paper charts, exposed physicians to more cognitive disruptions:

For example, a patient needs pain medicine. With paper, you could simply write the order and go back to what you were doing with minimal interruption. With the EMR, you have to go to the computer, log on, get to the patient's chart, find the medication, order the medication, and sign off on the medication, and now your chain of thought has been completely and totally interrupted. You have to mentally reboot.

Interrupted train of thought was cited frequently at Hospital H, but several physicians explained that using paper TSheets minimized disruptions.⁹ For example, many physicians spread all of their patients' paper TSheets along a counter and alternated quickly between them, documenting laboratory test results or updating findings as they became available (see Figure 5.2). When they used the CPOE component of the EMR, however, moving between patients' charts involved, according to Dr. F, “clicking back and forth between multiple tabs and waiting for screens to refresh.” As Dr. G explained, “With TSheets on the counter, I don't lose my train of thought. I can move from chart to chart. I write something in one chart, then go back to what I was doing in the other one.” Dr. A described how using the CPOE sometimes interrupted his train of thought:

With the CPOE, I have to completely switch gears. I get out of one chart, look for another one, open it up, and click through multiple tabs. You can have three or four patient charts up and running at the same time, and it's easy to click on the wrong chart. I've done it, and I type all this stuff and realize, “Oh, wrong patient.” I have to delete it and start all over again, and, by then, I've completely

⁹This advantage will disappear when Hospital H installs, finally, electronic TSheets.

lost focus on what I'm doing. I have to mentally go back and ask myself, "What am I doing and which patient is it for?" Is this safe medicine? No, because mistakes can happen. If my thinking isn't 100% on the task at hand, if I'm distracted, then there are consequences.



Figure 5.2. Physician Workflow When Using Paper TSheets. Physician accessing quickly several charts spread along a counter. Most physicians believed that this work habit reduced cognitive disruptions.

As he concluded, “I’ve seen more wrong orders on electronic charts in the last few years than I’ve ever seen on paper charts. Wrong orders put on the wrong patient’s chart, wrong medicines, you name it.” In addition to the perceived cognitive disruptions that providers described, as explained below, many providers believed that the contents of medical records and their ability to access patients’ data affected patient safety negatively.

Perceived completeness of the medical record. Whereas relating moves indicated that the perceived completeness of medical records changed how providers thought about healthcare delivery, constraining moves revealed that providers believed that the EMR restricted their access to data, which limited their ability to make informed judgments. Perceptions varied according to user type: nurses, generally, found the medical records adequate, whereas physicians and midlevel providers bemoaned both the quantity and quality of the medical records.

N, a midlevel provider, explained that although most hospitals’ EMRs displayed patients’ medical histories from all of their previous hospital and emergency room visits, the version of Paragon that Hospital H purchased limited search functions to the last 120 days. Moreover, according to PJ, the EMR trainer, the Paragon system could not display patients’ past cardiology test results. As she explained, “If you want to see old [EKGs], you have to purchase that option. We don’t have it yet, but we’re looking into it.” Citing the Paragon EMR’s limited search function, Dr. G declared, “If all I have is a 4-month window, how is this useful for identifying patterns or diagnosing a recurring problem? If I can’t see the chart, I may not even know that the patient is having a recurring problem.” Several physicians commented that inadequate patient records led them frequently to

order laboratory and diagnostic tests that they would not have ordered otherwise, which, ultimately, increased healthcare costs.

N explained that although a patient's past medical record was not crucial for delivering emergency medical care, accessing the record, in many situations, could expedite some aspects of healthcare delivery. He shared the following example:

We had a patient who came in over the weekend and she was discharged home. She wound up back in the emergency room a few days later on an overdose. She was unconscious, so I can't ask her anything, like height or weight. That's important for calculating certain medications. You would think I could pull up her chart, her visit from 3 days ago, and see it [her height and weight], but no, I can't. The new chart didn't auto-populate any of her past information.

In addition to N grumbling that the EMR did not "auto-populate" the patient's height and weight, several physicians complained that, in their estimation, the EMR generated too much automatic text. Dr. A commented that he rarely looked at past records because they often contained "gobbledygook," which he described as long lists of numbers, irrelevant laboratory test results, copied and pasted text, and checkboxes that lacked cohesive narratives and/or context. As he said, "A lot of old charts are full of garbage, stuff that's automatically generated. It's too much of a hassle to sort through." Dr. Viccellio shared with me that one of his emergency room patients had been admitted and, when discharged 2 weeks later, the patient's medical record contained over 8,000 pages of "garbage [and] about 10 pages of useful data."

Given the volume of data contained in the medical records, most physicians bypassed the medical records and gathered information directly from patients and/or patients' families. As Dr. E explained, "It takes lots of clicks to go digging around, looking for relevant information. It's not worth the time, so I just see the patient and go from there." Similarly, Christensen and Grimsmo (2008) found that physicians rarely

spent time searching EMRs for patients' histories, but, instead, asked patients about their previous visits and medical histories. Most of the physicians at Hospital H agreed with Dr. E's assessment of the medical record's utility. Upon reviewing my fieldnotes, I found that I recorded only three instances of physicians attempting to access past records.

Difficulty accessing data in electronic health records was not unique to the providers at Hospital H. As Dr. Viccellio explained:

One of the biggest disadvantages to EMRs is that these remain data systems, not information systems. In other words, it doesn't display information to me in an intelligent way. I have to hunt and hunt and hunt. New critical information may be in there, but there's no signal to me that it's there. I have to be lucky enough to find it.

Several providers also cautioned that information in active medical records, not just data in past records, was unavailable or concealed regularly. N stated that "sometimes, it's a matter of hitting the refresh button and, suddenly, you see labs results or new orders.

You have to make an effort to look for these things when it should be automatic."

Another midlevel provider commented, "It's funny because EMRs are supposed to help you find stuff. With paper, you pick up the chart, and, 'Oh, hey, here's a new order.'

Instead, it takes multiple steps to find orders now." Nurse B added, "If I'm spending time refreshing the screen every few minutes, then when am I free to leave the COW and take care of patients?"

Although Hospital H's EMR appeared to enable providers' agency by using the EMR's search functions to access limited data (e.g., records dating back 120 days), providers believed that the restricted search capability, coupled with the dearth of useful information in the record, hindered their agency. Moreover, oftentimes, accessing data in active records was difficult and/or time-consuming, further restraining providers' abilities

to deliver timely care to their patients. The relative completeness and value of the medical record was due, in large part, to the EMR's structural spirit, which is described next.

Spirit. As explained previously, the spirit of an EMR can be assessed according to its design, features, and usability (DeSanctis & Poole, 1994). I recorded more than 100 constraining moves condemning aspects of the EMR's incoherent spirit (i.e., poor design). Many such moves included providers asking questions or making statements about the EMR's interface. For example, Nurse J had trouble adjusting the display such that patients' names appeared across the top of the screen. She often sought help from super-users to customize, temporarily, the interface in a way that maximized her productivity. As she commented:

I need the names at the top, instead of going down the side of the screen. For me, it's easier to click between tabs that way. It takes less mental effort if I can look at the screen and say, "Oh, that's what tabs in my web browser look like," so moving between them is a little more intuitive. I don't know why they didn't design it that way in the first place.

Many providers believed that, in addition to the spatial orientation of the tabs (i.e., vertical versus horizontal), the number of tabs also was problematic. As Dr. G, who described the CPOE component of the EMR, explained, "Most of the tabs I don't use. I don't even know what this other stuff is. I have not been given any orientation on it. You've got 30 or 40 things up here." I observed that the CPOE interface actually consisted of about 95 tabs, information fields, and/or icons. Along the top of the screen, there were seven information fields and a refresh icon; beneath that, there were three other information fields and eight icons. A drop-down menu, 4 icons, and 13 information fields occupied the next row. Below that, there were three additional rows containing 21,

17, and 4 tabs, respectively. The first tab in the third row contained an extra 11 tabs and a refresh icon. I asked a midlevel provider, who also was a super-user, to explain the significance of the tabs and icons, and he commented, “I don’t know what half of those are for.”

Most providers complained that the tabs and icons, in addition to being too numerous, were too small. As Nurse Y remarked, “The EMR is killing my eyes. I can’t read this tiny shit and I can’t make it bigger.” When asked if the text could be enlarged, a super-user replied, “Not that I’m aware of. You just squint and lean into the screen.” As Dr. G noted, “You can’t read any of this stuff. It could say the patient’s coding for all I know. I simply can’t see the text.”

Other providers complained that medication lists were not displayed alphabetically. According to X, a midlevel provider, “Because the drug list doesn’t default to alphabetical, we have to do it. Every single time we have to search for a drug, we have extra clicks just to get it in an alphabetical list.” I observed N alphabetize the medication list one afternoon for a physician who had given up trying to do it himself. N assured the physician, “It’s not an intuitive process.” N began the task at 5:24 p.m. The physician, unable to enter orders with N sitting at the CPOE, complained, “Why can’t this be a default setting? If I have a chest pain to work up, I don’t have time for this crap.” At 5:41 p.m., nearly 16 minutes later, N finished alphabetizing the medication list and showed the physician how he had done it.

In addition to providers’ complaints that multiple tabs and small text marred the EMR’s interface, many providers complained that there were too many log-on screens and password prompts; hence, for providers who worked at several facilities, they had the

added task of remembering multiple sets of usernames and passwords. Providers' comments about "pointless and unnecessary" tasks, such as logging on repeatedly and alphabetizing lists, indicated that they believed aspects of the EMR's design impinged on their agency because the EMR limited how they spent their time. For example, a nurse said, "Every log on and mouse click is time away from treating patients."

Some of the EMR's other design features, besides being incoherent, were believed by providers to threaten patients' safety. For example, Hospital H's EMR and CPOE components, although part of the same McKesson-made Paragon system, were not integrated, meaning that emergency medicine physicians could not access nurses' notes, and nurses could not see physicians' electronic notes. EMRs with separate sets of providers' notes were not uncommon; as Dr. Viccellio explained:

When we rolled out our EMR [at Stony Brook], we couldn't see the nurses' documentation, so if a nurse writes, "Patient's complaining of much more pain, their blood pressure dropped, they look ashen, and I think they're going to die," I would not even see that. EMRs, as they are now, are not designed to facilitate data exchange between providers.

Several nurses at Hospital H explained that although not seeing what physicians documented was not detrimental, necessarily, to their practice, they believed that physicians being unable to see what nurses had documented could have disastrous effects. Nurse B alluded to the Dallas Ebola patient, Thomas Duncan, whose travel history, although recorded in nurses' notes, was unseen by emergency room physicians, when he said: "If the doc had seen that this man [Duncan] had been in West Africa, that he had a fever, etcetera, he [the physician] may have put two and two together. Instead, an Ebola patient gets sent home." Nurse Y added, "Dallas was a wake-up call. We can't

depend on EMRs to communicate. I need to [say], ‘The doc can’t see what I type,’ and so if it’s really important, then I have to go tell him [the physician].”

Several physicians agreed that the EMR could not take the place of face-to-face communication. As Dr. A commented, “I’ve tried to look up the nurses’ notes, but I couldn’t figure out how to do it. I have to trust the nurses will find me if there’s something I should know.” Another physician said, “The problem is that nurses are nurses. They may not know when something needs to be brought to your attention.” When asked to elaborate, he explained, “They don’t know what they don’t know, medically. They’re not doctors. The new ones [nurses] think, ‘It’s in the EMR,’ so they’ve done their job.”

Providers at Hospital H believed that their EMR was flawed, not only because of the separate sets of notes for physicians and nurses but also because, according to Nurse L, “anyone, anywhere in the hospital” could alter emergency room patients’ medical records. L explained that anyone “with a username and password [could] add orders, put in meds, you name it.” She then elaborated:

We’ve had upstairs nurses click our patients by mistake, and we start seeing orders show up that don’t make any sense. A lot of meds are put in for the wrong patient; it happens a lot. So, if the chest pain protocol shows up for a headache, you have to ask, “Is this the right patient?” Usually, someone clicked the wrong chart. Usually, it’s someone upstairs. Why they even have access is a mystery. I think the system isn’t designed to prevent these kinds of mistakes.

During the second training session that I attended with Dr. C, I observed the trainer, K, accessing the charts of active patients and entering orders. Although she deleted immediately the “dummy orders” after she demonstrated the order-entry processes, I saw that L was right—that “anyone, anywhere in the hospital [with] a username and password” could manipulate charts.

Although the constraining moves described here highlight the EMR's role in diminishing agency, several providers—mainly, nurses—acknowledged that some aspects of the EMR's spirit enhanced their agency. For example, a nurse commented that the EMR's flashing icons alerted him to laboratory test results in a timely fashion:

There are these little icons next to the patient's name; one is for med orders, one is for labs, and another one is for radiology. They flash red when the doc puts them in and green when [results are] back. I can see as soon as the tests are back, and I can address them right away, without constantly having to go around looking for the paper chart. There's no waiting with the EMR.

Another nurse explained that the flashing icons helped nurses to “keep an eye on each other's patients better.” As he said:

I can look over at your screen and see you have orders pending or tests back. I can let you know, “Hey, room 2's labs are ready.” If you're busy, maybe I pitch in and give meds for one of your patients. With the old [paper] charts, we wouldn't necessarily see that an order is pending, because it's a piece of paper in the back of the chart. With the EMR, anybody who looks at the screen knows what's going on.

Nurse B, who conceded that the flashing icons were “a nice feature,” said, “with time, EMRs will be great. I see the potential.” Dr. Viccellio also appeared hopeful when he said, “These things [EMRs] can be absolutely fantastic, if they're properly designed, and if they're designed as information systems instead of data repositories. I wish we [physicians] could have designed them. Maybe someday.”

To review, although providers working in the emergency room at Hospital H believed that EMRs, generally, had potential, an incoherent spirit tainted Hospital H's Paragon system. Providers complained that multiple tabs, information fields, and icons, in conjunction with small text and numerous log-on screens, complicated the EMR's interface and impinged their agency. Separate sets of physicians' notes and nurses' notes were thought to be detrimental to patients' safety. Moreover, anyone with a user name

and password could manipulate patients' records, which contributed to an increased risk of medication errors. However, some providers found some of the EMR's features helpful, like flashing icons that announced laboratory test results or pending orders. Next, constraining moves associated with the EMR's performance are discussed.

Performance. I grouped the constraining moves that involved the EMR's performance into two categories: hardware performance and software performance. The constraining moves, largely, were negative. Providers believed that poor performance contributed to longer documentation times, which, consequently, meant less time spent at patients' bedsides. Thus, the EMR's poor performance affected negatively providers' agency, because they believed that they were forced to use a structure that robbed them of their freedom to practice medicine how and where they wished, which was with paper charts at patients' bedsides instead of at computer terminals. A discussion of each category of performance constraining moves follows.

Hardware performance. Early in my fieldwork, I noted that "numerous paper notices hang all around the emergency room, alerting users to various glitches and battery issues." Some of the notices contained "workarounds" that instructed users to reboot and/or replace COW batteries at regular intervals. Nurse J complained that the prescribed workarounds were ineffective:

This is the fifth COW battery I've put in today, and it's already about to die. Every time I do this, I have to completely sign back on. Do you know how long that takes? Plus, the last time I rebooted, the patients' names weren't even showing up! I couldn't administer meds because nothing showed up! We need new batteries, or new COWs.

J then directed my attention to the nurse manager's office door, which was covered in handwritten post-it notes that called attention to the poor battery performance. One note

read: “Battery life is getting worse. Can we please, please, please do something about it? We need to buy new ones. Please tell them [administrators] to fix this!”

Over the course of a year, the number of notes plastered on the nurse manager’s door grew. In that time, I recorded dozens of episodes of battery failure, followed by rebooting procedures that, sometimes, took more than 10 minutes. As Nurse M complained, “This is bullshit. I do this multiple times every shift. If they [administrators] are going to make us use this crap [the EMR], at least make sure the damn batteries work.” When asked why replacement batteries had not been procured, Q, the nurse manager, explained that she had requested repeatedly that new batteries be provided but had been told that funds were not available.

I asked the nurses how the deteriorating battery life affected their work. Aside from the time spent replacing batteries, rebooting COWs, and signing back onto the system, providers complained that the process interrupted their train of thought. As Nurse B remarked, “It just takes you out of whatever you were doing and then you have to mentally reboot yourself.” Nurses also stated that the delay associated with replacing batteries and rebooting COWs added to patients’ lengths of stay. As Nurse L said, “If you’re the patient, that’s another 10 minutes you’re stuck here when you’d rather go home, plus, it makes our times look bad.” She explained that nurses’ performance reviews were based, among other things, on metrics that tracked patients’ lengths of stay.

Several physicians complained that although they did not use the COWs (they used exclusively computers that were housed in a small workroom adjacent to the emergency room’s common work area), they depended on nurses receiving orders through the COWs. For example, Dr. A explained that earlier that day, he had ordered a

suture tray, which contained a scalpel, needles, sutures, and numbing medications, but when he entered the patient's room a short time later, ready to begin suturing the patient's laceration, he found that a suture tray had not been set up—the nurse was busy rebooting her COW after replacing its battery, and, therefore, she had neither seen nor addressed any of her pending orders. Dr. A's frustration was apparent when he said:

So now, the whole emergency room comes grinding to a halt. I can't suture the patient. I can't get the meds out of the Pyxis.¹⁰ I can't do anything but move onto the next patient. Meanwhile, this guy [patient] is sitting here with a nasty head wound and I can't close it until the nurse gets her COW working. What if I have several procedures waiting? Multiple lacerations? Pelvic exams? All of those require nurses setting up and assisting. If they're preoccupied with COWS, everything stops.

In late 2014, several surgical nurses and floor nurses complained to administrators that their COW's batteries were performing poorly. In December 2014, a battery malfunctioned in an unused surgical suite and caught fire. Only after this incident did the emergency room receive, finally, the replacement batteries that Q had been requesting for over a year. A nurse commented, "All it takes is for the upstairs nurses to complain and everybody gets new batteries. We've been begging for a year and nothing." Q added, "Good thing no one was in there when it [the COW] caught on fire. This could have been prevented if administration would have taken our complaints seriously last year."

In addition to the COW's faulty batteries, compatibility issues between the EMR and other technology structures were viewed as problematic. For instance, the connection between the EMR and the printer failed frequently. On one occasion, technicians complained that because they could not print admission orders, they were unable to transfer patients from the emergency room to the floor. One of the technicians

¹⁰At Hospital H, and most other hospitals, only nurses can access the Pyxis machine.

explained, “The floor nurses won’t take patients without printouts, so we have to babysit them [patients] down here. They [floor nurses] can see the orders on their EMR, but they still won’t take the patients.” On another occasion, nurses were unable to print discharge summaries, which meant that they had to copy, by hand, the entirety of the discharge summaries as they appeared in the EMR, to give to patients before patients were allowed to leave the emergency room. A repairperson was dispatched, but he arrived 3 hours and several discharges later.

Software performance. Providers’ constraining moves that focused on the EMR’s software also were commonplace. Providers referred to most performance issues as “glitches,” and there were two major types of glitches: those that stemmed from programming errors, which providers were made aware of through McKesson Corporation memoranda; and glitches that were experienced by providers firsthand. Below, I discuss briefly each type of glitch.

Programming errors. McKesson sent numerous “alerts” to Hospital H over the course of this study that documented programming errors and temporary workarounds. Many of the notices described issues that affected billing. For instance, a coding error meant that the cost of electrocardiograms (EKGs) could be billed only to patients or their insurance companies if the EKGs were ordered in a very specific way. Other notices, however, detailed problems that threatened patients’ safety. One such notice was posted in the emergency room in August 2014. In part, the memorandum, which was titled “Random patient context issue” read:

When the user changes patients by selecting a patient from the dropdown in the Work List, the lower portion of the screen may not refresh leaving information from the prior patient displayed. . . . While the occurrence of this issue is infrequent, it appears to be related to the user quickly changing tabs and patients

without waiting for the screen to refresh. . . . If this situation occurs, selecting any other tab will refresh the lower portion of the screen and will ensure that all of the data displayed is for the same patient. Until this issue is resolved, users should visually confirm the screen display changes as expected when changing patient information displays.

I asked several physicians and midlevel providers what they knew about this programming error, and one of the midlevel providers mentioned, “Oh, we get these notices all the time.” Dr. G called my attention to the phrase “related to the user,” which appeared in the memorandum, and said, “They’re blaming us for the problem. See that? It’s always ‘so-called’ user error.” Another midlevel provider pointed out the numerous notices that were posted inside the physicians’ workroom; most of those notices were taped onto the wall, behind the CPOE monitor—when a user sat at the computer, as I did, the notices were not visible.

One of the physicians told me that, in addition to the “random patient context issue” error, there was another programming error that put patients at risk. This additional glitch, although infrequent, meant that not all patients’ allergies were stored in their electronic health records and that some allergies were attributed erroneously to the wrong patients. He rummaged through a pile of notices that he had printed out, but was unable to locate the memorandum in question. He recalled that the memorandum instructed physicians to “double check allergies with every patient.” He then said:

I check anyway, but, sometimes, people forget. You think it’s in the chart, you look, it says, “No allergies,” so you write the prescription. Especially if you work in a busy emergency room, you take for granted that the tools you’ve been given work, so you do your job as quickly as you can. You might not ask every single patient about allergies. You should, but all it takes is one lapse. You would think something like that, that kind of mistake, wouldn’t have made it out of the testing phase. How does a company release a product that can kill people?

A nurse, who had been listening in, answered the physician's question, "Because they don't get sued; *you* do."

Although these kinds of glitches (i.e., programming errors) occurred regularly, glitches experienced firsthand were more common. Next, I describe providers' constraining moves specific to this type of glitch, as well as several instances where glitches affected providers' agency.

Glitches experienced firsthand. A number of minor, "inconvenient glitches" occurred during every shift that I observed, but on several occasions, the glitches were more bothersome to providers. Minor and major glitches alike disrupted emergency room operations regularly. I defined *minor glitch* as a temporary inconvenience caused by a malfunction in the EMR's software, whereas a *major glitch* created significant disruptions to providers' workflow, increased patients' length of stay, and/or posed risks to patients' safety. Described below are examples of minor and major glitches that I recorded.

I observed three nurses confront a standard minor glitch connected to the EMR's refresh function: J, M, and B tried to close a dialogue box that appeared in J's EMR monitor. J noted that she "clicked on it three times" but that the window did not close. M noted that because the emergency room was "full of patients, the system [was] running slow." He then explained, "There's too much information running through the system, so it's overwhelmed. It's not refreshing." B resorted to rebooting the system, noting, "This is the kind of inconvenient glitch that happens when we get more than a dozen patients. For some reason, it just seizes up sometimes." It is worth noting that although the emergency room was "full of patients," three nurses who, otherwise, could have been

caring for patients, instead, were addressing a computer glitch. Other minor glitches, according to providers, included regular system updates that erased individual users' customizations, and free-text entries that disappeared "magically" from patients' medical records.

Among the major glitches that I witnessed, one had to do with the electronic whiteboard component of the EMR, which displayed several columns of data for each patient that included the patient's name, room number, length of stay and the name of the nurse assigned to care for the patient. I overheard a heated exchange between two nurses who, unbeknownst to them, had been caring for the same patient for at least an hour. A major glitch meant that although the large electronic whiteboard, which was mounted near the ceiling, displayed correctly names of patients alongside names of the nurses caring for them, the data contained in the miniature version of the whiteboard visible on each nurse's COW, unfortunately, were incorrect. When looking at their COWs, both R and Y saw their names next to the name of the patient in room 3. Both nurses proceeded to perform and, then, document physical examinations of the patient. Although this glitch resulted only in duplicated effort and wasted time for the nurses, it could have proven disastrous had the nurses not discovered the error before they administered medications to the patient. As R noted, "What if we gave the patient a double dose of something? That might not have ended well. That's why we have checks and balance, but the damn EMR screwed up." As Y pointed out:

We can't see the whiteboard from the nurses' station, so we look at our screens instead. You would think they'd match. Now, I have to walk all the way around to the other side, look up at the ceiling, and double check that my patient is really my patient.

Another major glitch that I observed on several occasions had to do with “dropped” orders. For example, one evening, the physician on duty, Dr. A, kept checking the radiology reporting system for the results of a computerized tomography (CT) scan that he had ordered several hours before. I asked how long it took, generally, for the radiologist to read the CT scan and then send a report to the emergency medicine physician. Dr. A replied that the entire process, from the time the patient was scanned until the report was generated, took, usually, 3 or more hours. Tired of waiting, Dr. A asked the technician to follow up with the radiology department, to which the technician replied, “What CT scan? We didn’t send anyone to CT.” The patient, apparently, had been left waiting for several hours, with the physician believing, erroneously, that the requested procedure had been performed. The midlevel provider on duty remarked, “The EMR drops orders all the time. Computer glitches steal them. ‘I swear, I just put those orders in and they’re gone.’”

The glitches, both minor and major, disrupted providers’ workflow patterns and annoyed them. Taken together, suboptimal performance with respect to the EMR’s hardware and software components constrained providers’ agency by not allowing them to allocate their time on a shift. Poor EMR performance meant that providers spent a disproportionate amount of time changing batteries, rebooting computers, and noting programming errors and workarounds, instead of engaging in direct patient care.

In sum, the constraining moves that I documented, overwhelmingly, were negative—providers’ constraining action and talk underscored many ways that they believed the EMR hindered their agency and, in some cases, threatened patients’ safety. Providers compared routinely Hospital H’s Paragon EMR with other EMR systems, and

they concluded that the Paragon system increased documentation time and, generally, was harder to use. In addition to longer documentation times, Hospital H's EMR changed workflow in other ways: When compared with providers' perceptions of using paper charts, they believed that the EMR led to duplicated effort, delayed work during periods of peak patient volume, interrupted train of thought, and increased the risk of medication errors. Physicians and midlevel providers complained that EMR-generated medical records contained little useful data and, moreover, that searching the medical records for valuable information was difficult and time-consuming. Providers found the EMR's spirit incoherent, with poorly designed features (e.g., multiple tabs, small text, and numerous password prompts) limiting the EMR's usability. Additionally, separate sets of physicians' notes and nurses' notes hindered physicians' practice and put patients at risk. Hardware and software that performed poorly affected providers' agency and prolonged patients' lengths of stay. In the next section, I discuss appropriation moves involving judgment.

Global and Institutional Analyses of Judging Moves

Users' *judging moves*, according to DeSanctis and Poole (1994), praise or condemn a technology's performance, but unlike relating and constraining moves, judging moves do not compare the technology with other structures. Judging moves indicate whether users accept, negate, or ignore a technology structure.

At Hospital H, most of the providers' judging moves that I documented condemned EMRs (e.g., "I hate these things," "EMRs suck," and "EMRs are not very good"). Although the majority of judging moves criticized EMRs generally, some moves critiqued, specifically, Hospital H's Paragon system. For example, in late 2014, Dr. G

stated, “I hate Paragon. It’s a crappy EMR. It’s basically the DOS 1.0 of medical information systems.” All of the physicians and midlevel providers I interviewed shared Dr. G’s sentiments. X, a midlevel provider, said, “I’m quitting my job before the rest of this godforsaken system is installed. That’s how much I hate Paragon.” Another midlevel provider added, “Paragon is especially bad and a total waste of money.”

Nurses’ feelings about the Paragon system, however, varied and ranged from revulsion to excitement. One nurse claimed repeatedly that he was so upset by the EMR that he would “rather shovel shit for a living than use the damn thing [the EMR] another day.” In contrast, another nurse remarked, “I think our EMR is a good thing because it makes our jobs a lot easier.” Another nurse commented, “I love Paragon because we can read everything now. There’s no more figuring out people’s sloppy handwriting.”

Nurses praising the EMR were in the minority (i.e., 5 of the 15 nurses I interviewed), and although they lauded enthusiastically its structural potential, they acknowledged that the EMR made work more difficult for physicians and midlevel providers. As a nurse explained, “I see that it’s [EMR] harder for the docs and midlevels. They struggle with it. Paragon makes my job easier, but it definitely makes things worse for them.” Providers’ judging moves that I recorded supported research that found nurses, usually, were more accepting of EMRs than were physicians (Lærum et al., 2004; Likourezos et al., 2004; Otieno et al., 2007; Weiner et al., 1999).

Results from the questionnaire that I administered supported my reading of providers’ judging moves, as providers, largely, condemned the EMR, although minor differences existed between user types, with more nurses than physicians reporting being somewhat satisfied with the EMR (see Table 5.2). Only 43% of respondents ($N = 30$)

Table 5.2

Responses to the Questionnaire Item, “Overall, how satisfied are you with the EMR that your emergency room uses?”

Response	User Type					Total (<i>N</i> = 30)
	MD (<i>n</i> = 5)	MLP (<i>n</i> = 3)	RN (<i>n</i> = 17)	Tech (<i>n</i> = 4)	Other (<i>n</i> = 1)	
Very satisfied	0% (0)	0% (0)	0% (0)	25% (1)	0% (0)	3% (1)
Satisfied	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)
Somewhat satisfied	20% (1)	67% (2)	29% (5)	25% (1)	100% (1)	40% (12)
Somewhat dissatisfied	20% (1)	0% (0)	12% (2)	0% (0)	0% (0)	10% (3)
Dissatisfied	20% (1)	33% (1)	18% (3)	0% (0)	0% (0)	17% (5)
Very dissatisfied	40% (2)	0% (0)	35% (6)	25% (1)	0% (0)	30% (9)

Note. MD = physician; MLP = midlevel provider; RN = nurse; Tech = technician.

reported being somewhat satisfied, satisfied, or very satisfied with the EMR. Among physicians (*n* = 5), 80% condemned the EMR and reported being somewhat dissatisfied, dissatisfied, or very dissatisfied with the EMR, compared to 65% of nurses (*n* = 17) who were somewhat dissatisfied, dissatisfied, or very dissatisfied with the EMR.

Three midlevel providers completed the questionnaire and two of them reported being somewhat satisfied with the EMR, whereas the third midlevel provider reported being dissatisfied. Results from the questionnaire, which was administered in January

and February 2015, suggested that midlevel providers' attitudes changed over the course of the study. Midlevel providers' comments that I recorded throughout 2013 and 2014, mainly, were negative, but their questionnaire responses, mostly, were positive. When asked how he interpreted the discrepancy between my fieldnotes and the questionnaire results, N replied:

Well, I guess that means we've finally surrendered. At some point, you just give up and make the best of it, or try to. I know that X is still planning to quit, but even he's quit his bitching about EMRs. Personally, I feel defeated, but the EMR is here to stay. I still don't like it [the EMR] but I have to suck it up.

Similar to midlevel providers, nurses also appeared to adjust their positions on the EMRs (e.g., see the previous discussion on relating moves), softening somewhat over the course of the study, but the questionnaire results suggested that their opinions remained, mostly, negative. Physicians' attitudes, however, remained negative throughout the course of this study.

I asked physicians working at Hospital H and physicians I met at medical conferences why they believed that physicians, generally, appeared so steadfast in their disdain for EMRs. As Dr. F explained, "It's because EMRs have been around for 20 years, but they are not very advanced. The programs were not designed by medical people, and that's why we hate them [EMRs]." Dr. Bukata, the editor of *Emergency Medical Abstracts*, indicated that although some types of physicians—namely, those with office-based practices, such as generalists and pediatricians—appeared to be embracing EMRs, he believed resolutely that most emergency medicine physicians would not change their views on EMRs. He explained his position in an e-mail that he sent to me:

It's very important to make a distinction between EMRs in physicians' offices and EMRs in the emergency room: doctor's offices don't see an average of 2.5 *new* patients per hour, have all new patients per CMS [Centers for Medicare Medicaid

and Services] charting criteria, and need ROS [review of systems], FH [family history], SH [social history], etc. Plus, with 20% of patients admitted, there is a lot of interval progress notes and decision making that needs to be documented by emergency physicians. . . . We are having EMRs driven down our throats by a government providing hospitals with financial incentives to install these inventions of the devil. (R. Bukata, personal communication, February 3, 2014)

Dr. Milne, Chief of Staff at South Huron Hospital in Ontario, Canada, stopped short of calling EMRs “inventions of the devil,” but he condemned them because “computers cannot read facial expressions, talk to patients, meet the family, or provide care.” He explained that because EMRs were not mandated in Canada, he could decide if his emergency department would adopt an EMR:

In my situation, EMRs vendors are always coming to my institution and I say to them, “Prove to me that it improves patients’ outcomes. Show me the literature.” They don’t have the data because EMRs don’t improve outcomes! So, I say, “Thank you very much, but no thanks.” Physicians, not computers, improve patient outcomes.

In sum, the majority of providers’ judging moves condemned EMRs, generally, and Hospital H’s EMR, specifically. Although midlevel providers’ moves were negative, questionnaire results indicated that their opinions shifted over this 18-month study. Nurses’ moves were varied, but physicians condemned unanimously the EMR. In the next section, I discuss findings related to structurational divergence and their implications for providers at Hospital H.

Structurational Divergence

As explained in chapter three, structurational divergence (SD) theory proposes that recurring, intractable conflict cycles are based in oppositional meaning structures that impede effective communication and goal attainment (Nicotera & Clinkscales, 2010). The theory hinges on two concepts: *SD-nexus*, the unresolvable conflict that arises from the intersection of incompatible structures (Nicotera & Clinkscales, 2010); and *SD-cycle*,

a self-perpetuating downward spiral of negative, ineffective, or aggressive communication that is rooted in unresolved conflict (Nicotera & Mahon, 2013). According to Nicotera and Mahon (2013), immobilization, interrupted goal attainment, and stymied individual and organizational development characterize the SD-cycle, which predicts negative outcomes among nurses (e.g., burnout, bullying, poor job satisfaction, and turnover). What pushes an SD-nexus into an SD-cycle, however, has not been established empirically (A. Nicotera, personal communication, April 7, 2015), but Dr. Nicotera and I agreed that my findings, discussed next, suggest that loss of agency characterizes the SD-nexus to SD-cycle escalation.

Observational findings that pointed to the presence of SD in Hospital H's emergency room were assembled from fieldnotes and interview transcripts, and, then, grouped into five themes: (a) conflicting structures, (b) providers' satisfaction and burnout, (c) "us" versus "them" language, (d) negative communication spirals between providers and administrators, and (e) providers' diminished agency. Moreover, results from the questionnaire items were summed and revealed varying degrees of SD and burnout among providers. These findings are described in the sections that follow.

Conflicting Structures

Federal mandates, hospital policies, physicians' goals, and patients' needs collide in the emergency room at Hospital H every day; thus, the emergency room, inherently, is an SD-nexus. Providers identified three examples of "federal interference" that they believed placed them at the intersection of conflicting structures: the Emergency Medical Treatment and Active Labor Act (EMTALA), the Health Information Technology for Economic and Clinical Health Act (HITECH), and the Centers for Medicare and

Medicaid Services (CMS). These three external structures, according to Dr. O, “intertwine and create unrealistic demands on emergency rooms.” As she elaborated:

Because of EMTALA, HITECH, and CMS, we [physicians] have to comply with tons of mandates. It all trickles down, from the government and from the hospital, and we’re stuck in the middle. If we order a test to meet a mandate, then the bill goes up and the patient is upset. We skip the test, save the patient some money, then the CEO clamors, “You didn’t meet metrics.” We can appease either the policy makers or the patients. Which is it going to be?

Dr. O and most of the physicians at Hospital H likened their predicament (i.e., appeasing policy makers or patients) to being “stuck between a rock and a hard place.”

The first external structure, EMTALA, passed by the U.S. Congress in 1986, requires that “all hospitals participating in the Medicare program must provide emergency department screening evaluation and stabilization” (Zink, 2006, p. 270), regardless of patients’ ability to pay. The unfunded mandate was intended to curb *patient dumping*, a practice whereby “some hospitals refused to accept, or inappropriately transferred indigent or uninsured patients to other hospitals” (Zink, 2006, p. 270). EMTALA, thus, ensured that patients with medical emergencies who sought care in emergency rooms would receive emergency medical care.

Over the years, however, EMTALA has been reinterrupted as guaranteeing free care irrespective of the seriousness of patients’ medical problems. As a result, increasingly, emergency rooms provide primary care for uninsured and publically insured patients without healthcare homes, and patients seeking care after hours and on weekends (Overton, in press-b). Consequently, nearly half of all emergency room visits are for “nonurgent” conditions that are treatable in primary care settings; thus, EMTALA contributed, albeit inadvertently, to emergency room overcrowding (Overton, in press-b).

Dr. E explained that emergency rooms are the only part of the healthcare system required by federal law to provide free care to “anyone who shows up, no matter the reason.” As he said, “Primary care docs don’t *have* to take patients. If a patient doesn’t have insurance, private practice docs can say, ‘No.’ You’ve seen those signs: ‘We have the right to refuse service.’ It’s like that.” Dr. E lamented:

Because of EMTALA, patient volume has gotten out of hand. Got a toothache? Come to the emergency room! It’s free! Need aspirin for your headache? Why bother going to the drugstore and paying two bucks for it when you can get it here for free? The problem is that EMTALA doesn’t distinguish between medical emergencies and primary care issues. Most toothaches and headaches don’t constitute medical emergencies but I have to treat them as if they *were* emergencies, and, meanwhile, we have heart attacks, strokes, gunshots, you name it, piling up in overcrowded emergency rooms. Turn a patient away? That’s an automatic \$25,000 fine. These patients need care, absolutely, but not *emergency* care at the expense of the truly sick and dying.

Nurse L also discussed the role that EMTALA played in emergency room overcrowding:

We need to be more proactive with public health initiatives and teach people where and how to access appropriate care. Because of EMTALA, they’ll come to us in the emergency room with acute care issues. The emergency room isn’t the most appropriate place for these issues. We’re getting overwhelmed, but where are you going to tell these people to go? You have to treat them or risk an EMTALA violation, which can get you fired or cost you your [medical] license.

Providers, thus, decried EMTALA, largely, because they believed that it stripped them of agency. For example, Dr. F commented, “Let me direct the nonurgent cases somewhere else, especially if we’re busy with critical patients, but EMTALA says I can’t be trusted to do what’s medically or ethically right for my patients.”

The second external structure, the HITECH Act, was described in chapter two. HITECH was passed in 2009 as part of the American Recovery and Reinvestment Act and its major goals included reducing healthcare costs, improving healthcare quality and

coordination, reducing medical errors, improving IT infrastructure, and creating a national electronic health information exchange (Pipersburgh, 2011). Providers at Hospital H cited the HITECH Act, frequently, in their complaints about EMRs and forced adoption. For example, Dr. G shared the following diatribe:

The government forced EMRs down everyone's throat. These are broken systems, but do you know who is benefiting? The companies that make them. They now have zero motivation to make EMRs any better because they have a captive audience of forced adopters. I'm dumbfounded by HITECH. There had to be dirty money involved or lobbyists somewhere who made that happen. This legislation is going to kill patients.

Although not all providers believed that the legislation was funded by "dirty money," there was a consensus among physicians that the HITECH Act, in conjunction with CMS policies, created unresolvable conflicts. For example, Dr. E said:

I do things that I know are not in the patient's best interest because of the EMRs, the mandates, et cetera. . . . I'm running up huge bills; I'm doing things that won't help, won't improve anything, and won't change outcomes [because] of hospital policy and CMS mandates. I feel like I'm a cog in a horrible, broken machine.

Dr. E explained that the "CMS mandates" he referenced were the time-based performance metrics that CMS devised to reduce emergency room overcrowding, which was caused, in part, by EMTALA.

The last external structure, metrics, are recorded by EMRs and tracked closely by CMS. The most important metrics, according to providers at Hospital H, measure patients' length of stay and "door-to-doc times." Dr. O explained that *door-to-doc* refers either to the time that it takes a provider to "lay eyes on the patient and do a quick assessment, such as 'the patient's not going to die this minute' or 'the patient needs immediate attention'" or to the time that it takes for a provider "to order some sort of diagnostic test, like blood sugar or CBC [complete blood count]." She added, "Ordering

tests is easier and faster, especially if we have a lot of patients. It drives up the bill, but if you don't meet metrics, CMS doesn't pay the hospital." When asked if metrics could incentivize faster care and, possibly, alleviate overcrowding, Dr. O replied:

The problem with metrics is that acuity isn't factored in. There's a difference between someone with a stroke or a toothache. If you have a choice between seeing the stroke or the toothache, are you going to leave the stroke so that you can be sure to say "hello" to the toothache within 10 minutes of arrival? I don't think so. What if you're busy with a heart attack or car accident? The metrics don't distinguish. The EMR says that this patient, the toothache, waited an hour to be seen, but the EMR doesn't explain that you were busy saving lives down the hall. So, you're going to order a bogus test on the toothache just so you can click the box and stop the clock, "Yup, seen the patient."

Complicating matters for providers is that many of the metrics conflict with each other, "making it impossible to meet all of them simultaneously and adding to the unrealistic demands placed on emergency departments" ("Metric Madness," 2014, p. 22).

During an interview conducted with Dr. P, he opined:

The thinking behind metrics is a "move the meat" mentality. Get the patients in and out as fast as possible, and then you won't have overcrowding. If a hospital is too slow, then it loses some of its Medicare and Medicaid money. But guess what? We *still* have overcrowding. Metrics don't work. They just run up bills and add to our stress. I have to pick which metric I'm going to satisfy and hope that the one I don't pick isn't the one that will get me fired.

All three external structures—EMTALA, HITECH, and CMS—intersect and leave emergency medicine providers feeling as if they are at an impasse: patients' health and financial interests are pitted against federally mandated EMR use and "fast-care" metrics that, oftentimes, subject patients to unnecessary tests, and, when unmet, jeopardize physicians' employment and carry fines. The impasse left many providers at Hospital H feeling both immobilized and dissatisfied with their careers, which are hallmarks of an SD-cycle.

In addition to the external structures just named, there were contradictory internal structures that contributed to SD-nexus conditions at Hospital H. For example, because revenue at Hospital H had fallen, administrators decided to advertise heavily the hospitals' emergency medical services. Billboards, print advertisements, and radio advertisements described "short wait times," but Q, the nurse manager, worried that the EMR, which resulted in slower care delivery and increased lengths of stay, would prohibit providers from delivering the timely care that the advertisements promised. As Q commented, "We're getting a lot busier because the CEO is pushing marketing, but they don't understand that we're not equipped to meet the demand. The EMRs slow us down and we're short staffed." She went on to explain:

Patient volume went from 19,000 to around 33,000 this past year, but administration hasn't funded nurse positions to keep pace. I was allowed to hire temporary nurses, but I wanted to offer permanent positions. Administration balked at the \$2 an hour raise requested by at least one potential hire, so he left. Three other nurses have also left for various reasons, so now we have a real shortage. That means that existing nurses have to work overtime and now administration is complaining about paying them time and a half. They could have given this guy his \$2 an hour raise, but, instead, they're paying twice that in overtime pay. They wonder why we can't meet their time quotas? There are too few nurses doing too much work! Of course, the patients are going to wait! With slow docs on the EMRs, they [patients] wait even longer!

Most of the nurses also complained that the advertisements added to their work-related stress. Nurse B bemoaned the advertisements because not only did they promise short wait times but they recast patients from "people seeking medical care to customers calling the shots." He described the patient/customer dilemma:

The CEO's motto is "Make the patients happy," but we [nurses and physicians] are in the "make people well" business, which doesn't always make them happy. There's a difference between good customer service and good medical care. Good customer service is more expensive. Ever heard of therapeutic radiation? Patients insist on the X-ray because they're sure they have a broken leg. The

doctor assures them, but nope, only an X-ray will do. The X-ray costs more, but without it, the doctors get complaints. The customer is always right, even when he's not.

Nurse B and several other nurses complained about the untenable situation that they believed they were put in by administrators' customer service mandates. As Nurse Y said:

How do I defend practicing "so-called medicine" when I know in my heart that this isn't right? Your kid doesn't need a CT scan because he bumped his head, but you demanded it. Now I'm the one wheeling your kid down to radiology to get his head zapped for no good reason and I know he'll lose IQ points because of it. Is it right? No. Is it what I have to do to keep my job? Yes.

Physicians also complained about hospital policies that left them immobilized and angry. Dr. E believed that his hands were tied by "policies that increasingly marginalized physicians." He admitted to writing prescriptions that he knew patients did not need, to avoid violating customer service directives:

Yeah, you write for the antibiotics and the narcotics just to stave off the patient complaints, because those can get you fired if the CEO gets bad patient surveys that say, "The doctor didn't give me antibiotics" or "The doctor didn't give me pain meds." That almost happened to me. A patient complained that I didn't give her kid antibiotics for his virus. A virus! You don't give antibiotics for a virus. She wrote a letter and I had to answer to the CEO. So, now I give the antibiotics. I don't feel like I have a choice.

Dr. P expressed similar sentiments:

I hate what medicine is becoming: Give patients a door prize [a prescription] and send them off with a smile on their face. Be sure to give them every test they ask for, whether they need it or not. I'm starting to think the MD after my name means "Mustn't Deny." I feel bad about it, especially when it comes to the cost of everything, and what I know they charge for what we do, the grossly inflated charges, I feel terrible. People, the public, think I have a voice in this. I don't. They think greedy docs made it this way. It's the hospital and I don't have the power to change it. I feel guilty that I'm a part of a broken healthcare system, but what can I do?

I observed that these external structures (EMTALA, HITECH, and CMS), together with internal structures (e.g., Hospital H’s customer service policies), collided regularly with patients’ best interests and providers’ goals. Despite what patients wanted (e.g., “therapeutic radiation”), what was best for them—namely, affordable care and better health—could not be delivered by providers who were constrained by contradictory structures that restricted and, oftentimes, penalized them. According to Dr. F., providers wanted to “first and foremost, do no harm and, second, keep their jobs.” Conflicting structures meant that providers were immobilized, mired in unresolvable conflict, and experienced erosion of development (e.g., patient complaints and/or poor performance reviews), which, taken together, suggested an SD-nexus in the emergency room at Hospital H (see Figure 5.3). Additional evidence that pointed to SD at Hospital H is described next.

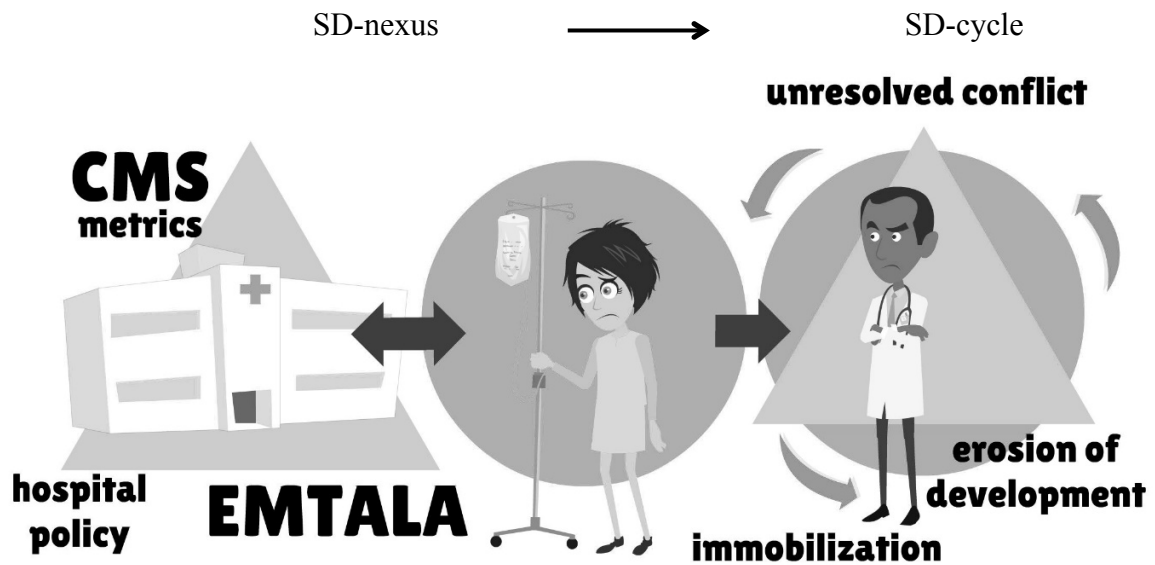


Figure 5.3. The Interpenetration of Contradictory Structures and the Resulting Negative Spiral

Providers' Satisfaction and Burnout

Because many of the providers at Hospital H felt “stuck,” given the conflicting structures, they also felt dissatisfied. Nurse A told me, “We’re kind of damned if we do and damned if we don’t; no matter what we do, we piss somebody off. Would *you* be happy working in a place like this?” She added, “Since the EMRs, my work satisfaction has gone *way* down.” An older nurse volunteered, “I was a nurse for 33 years before they put these computers in. I almost quit. I would [quit] if I could get a job doing something else.” X, a midlevel provider, revealed that he planned to resign from Hospital H and open an urgent care clinic. He spent his weekends renovating a rented space and preparing to open his practice. As he explained:

My goal is to be out of here before the electronic TSheets are put in. And you know what? I’m not putting an EMR in my clinic. I’ll take the hit from CMS. I’ll save more [money] by *not* buying an EMR than CMS would pay me in Medicare money anyway. Plus, and I know this sounds crazy, but I might actually like my job again. It’ll be nice looking patients in the eye and having conversations again.¹¹

Over the course of this study, several nurses resigned from Hospital H and a physician left. The most shocking, from my perspective, was the resignation by Q, the emergency room nurse manager and my sponsor. Q, who had worked for Company S, stayed behind after Corporation G bought Hospital H, because she believed strongly in the hospital’s potential. As she explained, “I believed in what the administrators wanted to do. I had faith in the nurses and docs, and knew that they, *we*, could accomplish a lot.

¹¹X, eventually, did open his clinic, but because he was unable to generate enough income to resign from Hospital H, he continued working part-time in the emergency room.

I wanted to be a part of that, so I stayed.” A few years later, on August 1, 2014, she announced her resignation. The next day, she told me:

Sixty percent of the reason I’m leaving is the EMR. They’re going live with electronic TSheet any day and I don’t want to be here. Unlike the CPOE, the nurses don’t know how to use the TSheets, so they cannot help the docs, plus patients will be impacted and length of stay will go way up. I would have been held accountable despite administrators’ claims to understand that there will be some hiccups. Past experience tells me that they are not understanding and will come down on me when things don’t go well, plus the docs and nurses complain to me as well. I’m caught in the middle.

She also implied that several physicians who were unhappy with the impending changes had started looking for jobs elsewhere, “When the docs jump ship, I don’t want to be the one left holding the bag. It’s time to go.” Q agreed to remain in her position as the nurse manager until Hospital H found someone to replace her.¹²

Because so many providers at Hospital H complained that they were unhappy and wanted to quit their jobs, I speculated that some of them suffered burnout, a surface-level manifestation of SD (Nicotera & Mahon, 2012). I asked providers if they experienced symptoms of depersonalization or emotional exhaustion, the dimensions that are used most commonly to measure burnout in medical providers (Rehder et al., 2014). For example, I asked, “Do you ever feel callous toward other people?” and “Do you ever feel burned out from your work?” Nurse B said, “I’m more cynical than I’ve ever been. I still enjoy looking after patients, but the system frustrates me. Maybe I am a little [burned out], but not as much as I could be.”

¹²When the administrators at Hospital H were unable to find a qualified candidate to replace her, Q agreed to remain the nurse manager, but she lobbied actively to delay the electronic TSheet implementation. In February 2015, she withdrew her resignation. As of May 2015, providers still were using paper TSheets.

Nurse J believed, emphatically, that most of her fellow nurses experienced symptoms associated with burnout, regularly, and, sometimes, daily. As she explained, “A lot of people are getting more and more burned out. I see it every day. Some people are just there for the money, honestly. The passion, the care, is gone.” Several of the physicians admitted that they experienced burnout frequently. As Dr. E said:

Yeah, I think a lot of us are burned out. I can tell because some of us just go through the motions sometimes. It’s frustrating, because these days, you don’t get to practice clinical medicine; you have to practice totally defensive medicine based on covering your ass. You have EMRs, metrics, and pissed off patients threatening to sue you at every turn. Cynical? Callous? Yeah, I guess I am. I think the system [and] the policies have to change before it’s going to improve for any of us.

In January and February 2015, I administered a questionnaire that solicited providers’ perceptions about their career and/or workplace satisfaction and burnout. In response to the prompt, “Since I’ve begun using EMRs . . .,” a third of the respondents ($n = 10$) reported that they had considered quitting their jobs, another third reported that they had considered changing jobs, and 10% ($n = 3$) had considered retiring. Twenty percent ($n = 6$) reported that they had considered changing careers altogether since Hospital H installed the EMR. Thirty percent ($n = 9$), however, reported that they were more satisfied with their jobs following the EMR adoption; of those respondents, five were nurses, three were technicians, and one identified as “other.” Eighty percent of respondents reported being very satisfied, satisfied, or somewhat satisfied with their careers in emergency medicine, but only 63% would choose a career in emergency medicine if they had it to do over again. Among physicians ($n = 5$), two were satisfied with their careers, two were dissatisfied, and one was not sure. Fifteen out of 17 nurses

were satisfied with their careers, and all three midlevel providers were satisfied with their careers.

Despite observational evidence accrued over the previous year that indicated many providers were unhappy with their careers in emergency medicine, results from the questionnaire, which was administered near the end of the study, suggested that the majority of providers, generally, were satisfied with their careers. Physicians who completed the questionnaire were split on career satisfaction, which, according to Dr. F, was because “physicians shoulder a disproportionate share of the EMR burden, so you would expect them to be more unhappy compared with nurses.” He added, “I’m surprised that two docs actually said they *were* satisfied.”

When asked how he interpreted the discrepancy between my fieldnotes and the questionnaire results, Dr. A replied:

It’s important to distinguish between how much I hate the EMR and how I view my career as a whole. Before the EMR, I really liked my job. The last few years? Not so much. If I have to choose “satisfied” or “dissatisfied,” overall, I’d have to say I’ve been satisfied. It’s been a good career. Until the EMR, that is. Am I looking around? Sure. If I can find a hospital with a better EMR, then I’ll go.

Dr. G gave a similar response:

I like being a physician because I enjoy taking care of people, but I hate the EMR. I’m dissatisfied with the EMR, not my career choice. If I feel burned out, it’s because of EMRs, not patients. Trust me, I rarely felt burned out before these things [EMRs] showed up in the emergency room.

Several of the questionnaire respondents reported experiencing emotional exhaustion (see Table 5.3) and depersonalization (see Table 5.4), which are indicators of burnout in medical providers. On the emotional exhaustion item (“*I feel burned out from my work*”), the most common response was “once a month or less” ($n = 10$), followed by “a few times a year or less” ($n = 6$) and “never” ($n = 6$). On the depersonalization item

Table 5.3

Responses to the Questionnaire Item, “I feel burned out from my work.”

Response	User Type					Total (<i>N</i> = 30)
	MD (<i>n</i> = 5)	MLP (<i>n</i> = 3)	RN (<i>n</i> = 17)	Tech. (<i>n</i> = 4)	Other (<i>n</i> = 1)	
Never	40% (2)	0% (0)	6% (1)	75% (3)	0% (0)	20% (6)
Few times a year or less	0% (0)	67% (2)	18% (3)	0% (0)	100% (1)	20% (6)
Once a month or less	40% (2)	67% (2)	41% (7)	0% (0)	0% (0)	33% (10)
A few times a month	0% (0)	33% (1)	12% (2)	0% (0)	0% (0)	7% (2)
Once a week	0% (0)	0% (0)	6% (1)	0% (0)	0% (0)	3% (1)
A few times a week	20% (1)	0% (0)	12% (2)	25% (1)	0% (0)	13% (4)
Daily	0% (0)	0% (0)	6% (1)	0% (0)	0% (0)	3% (1)

Note. MD = physician; MLP = midlevel provider; RN = nurse.

(“*I have become more callous toward people since I took this job*”), “never” was the most common response (*n* = 11), followed by “a few times a year or less” (*n* = 6) and “few times a month” (*n* = 6). For both items, responses were coded 0 (“never”) through 6 (“daily”), and then summed. Respondents’ scores ranged from 0 to 12, with a mean score of 3.8; scores above 3, according to McManus et al. (2003), suggest burnout. Individual scores (see Table 5.5) indicated that 23% of providers experienced burnout (*n* = 7): one physician, five nurses, and one technician scored 3 or above on the burnout scale.

Table 5.4

Responses to the Questionnaire Item, “I have become more callous toward people since I took this job.”

Response	User Type					Total (N = 30)
	MD (n = 5)	MLP (n = 3)	RN (n = 17)	Tech. (n = 4)	Other (n = 1)	
Never	20% (1)	67% (2)	29% (5)	75% (3)	0% (0)	37% (11)
Few times a year or less	20% (1)	0% (0)	24% (4)	0% (0)	100% (1)	20% (6)
Once a month or less	0% (0)	33% (1)	12% (2)	0% (0)	0% (0)	10% (3)
A few times a month	40% (2)	0% (0)	24% (4)	0% (0)	0% (0)	20% (6)
Once a week	0% (0)	0% (0)	0% (0)	25% (1)	0% (0)	3% (1)
A few times a week	20% (1)	0% (0)	6% (1)	0% (0)	0% (0)	7% (2)
Daily	0% (0)	0% (0)	6% (1)	0% (0)	0% (0)	3% (1)

Note. MD = physician; MLP = midlevel provider; RN = nurse.

To review, providers at Hospital H verbalized frequently their unhappiness and dissatisfaction over the course of this study, with many providers citing the EMR and conflicting structures as the primary sources of their grief, frustration, and displeasure. Several dissatisfied providers resigned their positions and/or indicated that they were looking for new jobs. Most of the questionnaire respondents, however, reported that they were satisfied with their careers. Several providers explained the discrepancy between

Table 5.5

Individual Burnout Scores.

ID	Σ	\bar{x}	role	ID	Σ	\bar{x}	role
1	7	3.5*	RN	16	8	4*	RN
2	3	1.5	RN	17	1	.5	MLP
3	3	1.5	MD	18	2	1	RN
4	3	1.5	MLP	19	9	4.5*	tech
5	10	5*	MD	20	2	1	RN
6	0	0	RN	21	10	5*	RN
7	1	.5	RN	22	0	0	tech
8	3	1.5	other	23	12	6*	RN
9	0	0	tech	24	3	1.5	RN
10	4	2	MD	25	2	1	RN
11	6	3*	RN	26	4	2	RN
12	0	0	tech	27	0	0	MD
13	2	1	RN	28	2	1	MLP
14	4	2	RN	29	5	2.5	RN
15	3	1.5	RN	30	5	2.5	MD

Note. ID = respondent; MD = physician; MLP = midlevel provider; RN = nurse.

* Indicates burnout.

what they said in interviews and what they reported on the questionnaire: They were satisfied with their careers, especially in the years before EMRs were adopted, but they were dissatisfied with EMRs, which impacted, marginally, their overall career satisfaction. Providers complained that they experienced emotional exhaustion and

depersonalization regularly, and questionnaire results revealed that 23% of providers suffered burnout. Next, I describe findings associated with “us” versus “them” language, which contributed to providers’ dissatisfaction and workplace stress.

“Us” versus “Them” Language

Most of the “us” versus “them” encounters that I witnessed were between floor nurses and emergency room nurses, and although not all of those exchanges were about the EMR, such exchanges contributed to SD-nexus conditions. As described previously, the perceived imbalance in workloads between floor nurses and emergency room nurses, coupled with floor nurses’ tendency to resist patient admissions, leads many emergency room nurses to dislike floor nurses (Eisenberg et al., 2005; Nicotera et al., 2010).

Additionally, Nicotera and Mahon (2012) found that discordant interactions between floor nurses and emergency room nurses contributed to SD-cycle development at the hospital that they studied. Discordant interactions also may lead to workplace bullying, which is a surface-level manifestation of SD (Nicotera et al., 2014). I observed many instances of discordant interactions that contained “us” versus “them” language between floor nurses and emergency room nurses, with many of discordant interactions being exacerbated regularly by the EMR. Interactions, such as those described below, contributed to SD conditions at Hospital H.

I observed Nurse A on the phone one afternoon, and, judging from her facial expression (e.g., furrowed brow and pursed lips), I surmised that she was upset. My suspicion was confirmed when she slammed down the phone a few minutes later and proclaimed, “I hate upstairs nurses!” She explained that the floor nurse she had been speaking with on the phone “called down demanding an update on an admitted patient,”

but, as A pointed out, “she can look on the EMR just as well as I can and see the status. It’s just a power play.”

Nurse J and Nurse Y told me that upstairs nurses engage in “turf work” frequently to avoid using the EMR. For example, J told me:

The upstairs nurses have a problem with direct admits because they don’t want to do the [patient’s medical] history. It takes too long to do in the EMR, so they just turf it to us. They dump their work on us while we’re busy with patients, and it pisses me off.

Y further explained:

A direct admit bypasses the emergency room and goes straight to the floor, so if you are at your doctor’s office and he says, “I think you should be admitted for a few days,” you show up at the main entrance [to the hospital] and get sent up to the floor. Well, the nurses up there don’t want to do the work so they send the patients down here and now we have to triage them, do all the paperwork, and then the patients get sent up. That ties up things down here and adds to our workload.

On another occasion, I observed a technician returning from a trip to “the floor” (i.e., the intensive care unit), pushing a patient on gurney who was supposed to have been admitted. When a nurse asked why the technician had returned with the patient, the technician responded that the “floor nurse refused to take him because they were busy.” The technician added, “They had three patients. Poor babies are getting slammed up there.” The nurse replied, “So? We have 12 [patients]. We’re busier.” The nurse immediately picked up the phone and dialed the floor nurse’s extension, but no one answered the phone. Thirty minutes later, the technician told me that a floor nurse “called down and consented,” finally, to the admission.

The “power plays” described above were commonplace. Typically, power plays involved floor nurses refusing or delaying admissions, which meant that emergency room nurses had to continue providing care for the admitted patients and, simultaneously,

treating new emergency room patients. One afternoon, I heard Nurse J explain to Nurse M that a floor nurse had refused an admission because “she was on her lunch break and didn’t want to be disturbed.” J rolled her eyes and said, “Must be nice.” M asked, “She actually wants us to hold a patient so she can finish her lunch?” J nodded. M waved a technician over and instructed her to take the patient immediately to that floor. J laughed and said, “You’re so evil,” to which M replied, “Fuck that bitch. We’ve got MVAs [motor vehicle accidents] and chest pains rolling in.”

I asked Nurse B if he had experienced incidents such as those I had witnessed. He told me that confrontations between floor nurses and emergency room nurses happened routinely and “on almost every shift.” Moreover, the incidents that I described, from B’s perspective, were “rather civil.” He commented:

Nursing, as a profession, can be evil. I think some nurses are undermining. Nurses can be conniving. They’re bullies. They’re often not very supportive of one another. I speak from experience. I don’t think nursing is the profession it could, or should, be.

When asked if he thought the interactions between floor nurses and emergency room nurses could be characterized as downward spirals of negative, ineffective, or aggressive communication, B replied:

Absolutely. The problem is that you got two sets of nurses who are at odds and there’s no satisfying anyone. We talk past each other all the time. For a lot of nurses, here and on the floor, there’s no getting past the “us” versus “them” mentality. It’s even worse between the doctors.

Although several physicians complained to me about their encounters with “upstairs doctors,” I did not observe discordant interactions between emergency medicine physicians and consulting or admitting physicians at Hospital H. Dr. E assured me that “just because you didn’t see it doesn’t mean it doesn’t happen.” I told him that in the 2

decades that Dr. C and I had been a couple, I had witnessed enough discordant interactions between emergency medicine physicians and specialists to know that the phenomenon was real. Dr. E conveyed that, typically, his “problem exchanges” were rooted in “ego concerns,” explaining that

most of the time it’s specialists on call who don’t want to be bothered with an admission. They don’t trust our medical judgment, so they put us off by asking for every test in the book. For example, I had a patient with appendicitis. It was a clear-cut case. The surgeon wanted a CT scan, because, I guess, the MD behind my name isn’t as good as the MD behind his name. So, we go through this rigmarole, back and forth, for a few hours. Finally, the patient gets admitted with, you guessed it, appendicitis! Now it’s a surgical emergency and we’ve wasted time because this jerk doesn’t want to get out of bed and come in. . . . People seem to forget the fact that emergency medicine is a specialty. I’m boarded. I did a residency. I know my shit. Respect that and when I say “appendicitis,” you can bet it’s not my first appendicitis. I know what I’m talking about.

Three other physicians shared similar stories and complained that specialists’ antics (e.g., ordering tests to avoid or delay patients’ admissions) added to both healthcare costs and patients’ length of stay. As Dr. O said:

We’re already clicking on tests just to stop the clock because we don’t have a choice, and, on top of that, now you want a CT scan? A blood test might add \$100 to the bill, but a CT scan? Now we’re talking thousands of dollars! Plus, what do you think that does to [patient] length of stay [metrics]? Now I’m really getting screwed, because this patient is going to be here all night and the hospital is pushing to get him or her out in under 4 hours.

In sum, tensions between floor nurses and emergency room nurses were exacerbated by the EMRs, because floor nurses shifted regular documentation chores that involved the EMR onto emergency room nurses (e.g., refusing direct admissions). Negative communication spirals and bullying among nurses were present, suggesting an SD-cycle at Hospital H. Emergency medicine physicians also experienced discordant interactions with other physicians, which intensified SD-nexus conditions, albeit

indirectly, by violating metrics and adding to patients' length of stay. Discordant interactions between providers and administrators are described next.

Negative Communication Spirals between Providers and Administrators

I observed that relationships and communication between the emergency medicine providers and administrators at Hospital H were strained, which contributed to SD conditions and resulted in negative communication spirals between providers and administrators. As explained below, three themes emerged as I reviewed my fieldnotes and interview transcripts: (a) there was a lack of collegiality because providers, generally, viewed administrators negatively; (b) providers believed that administrators communicated too little information about the electronic TSheet installation; and (c) providers and administrators had different, often contrasting, recollections of their interactions with each other.

Lack of collegiality. Providers, like Dr. F, defined *administrators* as hospital executives and officers working in “the C-suite” (i.e., corporate office suite), as well as members of the IT department. Although I would not have categorized IT staff as administrators, Dr. F explained that “they’re not ‘us’; they’re not emergency room, so they’re C-suite. They have offices upstairs and they try to tell us what to do, so they’re administration as far as I’m concerned.” As explained below, providers, generally, did not regard administrators favorably for two main reasons: providers thought that administrators neither listened to them nor supported them in their work.

Providers did not view administrators as listening to them. Nearly all of the providers I interviewed believed that administrators did not listen to them because, mainly, administrators did not solicit providers' opinions during the EMR selection

process. Eighty-three percent of questionnaire respondents reported that none of them had been asked by administrators for input on the EMR systems being considered for adoption; the remaining 17% of respondents reported that the EMR already had been installed before they began working at Hospital H, and, thus, the point was moot. Many providers had offered administrators unsolicited feedback about the EMR, but 88% of questionnaire respondents believed that administrators ignored providers' concerns. Dr. E said that he advised members of the IT department not to design the generic, electronic TSheets with "pick boxes, because boxes slow everything down." He advocated for a free-text charting platform with voice recognition capability, which would have been "more user friendly." Later, during an EMR training session, he saw an electronic TSheet template and, afterward, he told me, "They obviously didn't take my advice. It's all pick boxes."

One of Hospital H's vice presidents consented to an e-mail interview, and, when asked whose input was taken into account when deciding to purchase the McKesson-made Paragon system, she replied, "We all agreed with input from the emergency room physicians." The head of the IT department, however, later contradicted the vice president when he said, "Corporate made the decision Providers had no choice regarding the selection of EMR." Dr. F described, from his perspective, providers' involvement in the EMR adoption process:

We [providers] made recommendations, but their minds were made up. They [administrators] said, "No, we're sticking with Paragon." It's a horrible system! I am less than happy with Paragon. We made suggestions. We tried to talk to them, they nodded their heads, pretended to listen, but they [administrators] don't care about us. We told them Paragon was bad, but they didn't listen.

Q admitted that one of the many reasons that she resigned was “not being listened to” by administrators:

I can't be an effective manager when my input isn't taken into account, especially when I could have fixed some of the problems. They're pushing generic TSheets on us, but I could have gotten the real thing for a song. The actual TSheet system is around \$55,000, but I talked them [leaders of Company S] down to \$35,000. I brought this up in several meetings and no one said anything. I sent e-mails and reports [to administrators], and there was no response. No one responded! That was the last nail in the coffin. My nurse director told me basically to drop it. I handed in my resignation the next day.

Nurse B admitted that he believed Q was ineffective as the emergency room nurse manager because of administrators:

She's run up against too many barriers. She can't achieve any more. She's tried and she's been denied. They [administrators] stopped listening to her a long time ago. At this point, they are waiting for the consultant's report to decide what to do next.

B explained that Hospital H's administrators hired a consulting firm to review emergency room operations and make recommendations:

This firm was hired to tell administration what Q, in essence, is paid to do: assess patient flow and determine appropriate nursing coverage. They [administrators] are paying upwards of \$25,000 for this report. That money would have gone a long way toward fixing some of the problems in the emergency room. No wonder Q resigned.

I told B that the actual, proprietary TSheet system could have been acquired for \$35,000, to which he responded, “I'm guessing no one listened, huh? That alone would have saved us all a lot of heartache.”

Other nurses also believed that administrators rendered Q ineffective and that emergency room nurses, consequently, were denied a voice in hospital politics. Nurse Y commented:

Since they [administrators] cut Q off at the knees, I don't feel that there's anyone I can approach with issues. There's the head of nursing for the whole hospital,

but you can talk to her and it's like it never happened. She just doesn't hear, or remember, or seem to care. She's off on another planet. She's a great politician, but she's not a great communicator. We're kind of on our own down here.

Nurse J added, "A lot of these administrators used to be nurses. What happened? Have they forgotten what it's like to be in the trenches? Don't they care? Why else don't they listen?" Nurse A responded, "The CEO makes \$450,000 a year and he just got a raise. Where is our raise? Oh, wait, we just got a pay *cut*. Hell no, they don't care about us."

Providers did not feel supported by administrators. The other reason that providers disliked administrators, generally, was because providers did not feel supported in their work. Not feeling supported by administrators, although not connected directly to the EMR adoption process, contributed to SD-nexus conditions by creating an unpleasant work environment for providers. Additionally, many providers saw administrators as sabotaging them by making providers' work more difficult. For example, B explained that the C-suite decided, as a cost-cutting measure, that the registration office would close each evening at 8:00 p.m., but as B pointed out, "the emergency room still admits patients after 8:00 p.m." Moreover, "all of the registration paperwork that we have to send up with the patients prints out in the registration office." As he explained further:

We can't get to the papers to give to the floor nurses because the department is locked. I figured out a way in, though: I have to walk out of the ER, down the hall, then climb over one of the registration desks, shimmy under a glass partition, get in the back way, get to the printer, and pull out our paper work. It's ridiculous, but that's how I do it.

When asked if anyone had requested a key or an additional printer for the emergency room, he replied:

Well, administration [sic], in their great wisdom, decided to close up the registration office, but no, it never occurred to them to give us a key. It's been

brought to their attention and it still hasn't been fixed. The process is broken. Locking the registration department? Not sure why. Does it save money? I doubt it, but it makes our jobs harder. If I gain any weight, I won't fit under the partition!

I asked other night shift nurses how they retrieved the registration papers from the locked office. Nurse M replied that he simply stopped collecting the paperwork, and when floor nurses inquired about the missing documentation, he told them where they could find it. He added, "I bet they got keys to the office, but not us. As far as I'm concerned, it's not my problem anymore."

Several nurses complained that they had been "singled out for bad treatment" by administrators' policies. For instance, because the hospital's cafeteria was closed at night, sometimes, night shift nurses would visit the physicians' lounge for bottled water or soft drinks. Nurse Y was caught "sneaking into the lounge" one evening and reprimanded by a nurse manager from the floor. Soon thereafter, a security camera was mounted above the entrance to the physicians' lounge. When the nurses were thirsty, they implored a midlevel provider or physician to "fetch drinks" for them. Y volunteered that access to the physicians' lounge was "only half of the story," adding, "there's a paramedic buffet that we're not allowed to touch."

Nurse B informed me that in addition to the physicians' lounge, there was a separate lounge reserved for ambulance crews. That lounge was adjacent to the emergency room and accessible only with a five-digit alarm code, but nurses were not given the code. B said that the paramedics' lounge was stocked fully with drinks, sandwiches, and snacks. When asked why there was a lounge for ambulance crews but not a lounge for nurses, B replied:

The lounge is a ploy to attract ambulance traffic. More patients mean more money. If the ambulance driver bypasses another hospital to come here because he knows he'll get a free meal, then the hospital just made money, and all it cost them [sic] was a sandwich. We [nurses] don't count, apparently.

Another nurse commented, "They can eat here for free three times a day, but we can't," and another replied, "Yeah, at night, the cafeteria's closed. We've got no options, except what we bring ourselves. They don't even have vending machines we can hit up."

Nearly all of the 15 nurses I interviewed complained that the paramedics' lounge left them feeling unappreciated and unsupported by administrators. As Nurse A lamented, "It's just not fair. Don't we work hard enough around here? It's a slap in the face." Administrators' policies that excluded nurses from the physicians' lounge and from the paramedics' lounge contributed to nurses' workplace dissatisfaction and eroded organizational identity. As Nurse M said, "We're not a team. There's no pride here. Hospital H is a terrible place to work."

To review, providers believed that administrators did not listen to their concerns about the EMR and did not support them in their work; consequently, many providers disliked the administrators. Furthermore, providers believed that administrators rendered the nurse manager ineffective, which left them without a voice in hospital politics. Nurses, in particular, felt singled out and victimized by policies that barred them from the physicians' lounge and the paramedics' lounge. Collectively, these factors contributed to providers' workplace dissatisfaction and SD-nexus conditions, which resulted in a cycle of ineffective communication between providers and administrators.

Administrators' communication about the electronic medical records system installation. When I began fieldwork at Hospital H in September 2013, I was told that the electronic TSheet component of the EMR was scheduled to launch on November 1,

but on that day, nothing happened. I asked when and how the launch would be executed, but no one seemed to know. The midlevel provider on duty that day said, “They [administrators] don’t tell us anything.” I asked, again, in December, when the system would launch, and was told by Dr. F., “End of the year, supposedly. At least that’s the rumor.” I asked when he had last received an official update from administrators about the electronic TSheet component, and he replied, “Never. I hear stuff in hallways and in meetings, but there’s been no ‘official’ word about anything.”

When, in January 2014, the electronic TSheet still had not been installed, providers told me that the “go live” date was “not being communicated.” Nurse Y heard that there were compatibility problems between the electronic TSheet and the billing department, which was why the installation was delayed. Nurse B claimed he heard that administrators had decided to “scrap the whole thing.” The only official communication from administrators about the EMR installation was an e-mail sent to physicians in June 2014, in which the CEO required physicians to complete mandatory training in anticipation of the EMR relaunch (see the earlier discussion in this chapter about EMR training). The EMR, however, was not relaunched or “changed in any perceptible way,” according to providers, and the electronic TSheets were not installed.

By August 2014, providers complained regularly that the uncertainty about the electronic TSheet installation added to their work-related stress. Dr. P lamented, “They [administrators] say it’s coming and then nothing happens. I have no idea what to expect. Will there be training? Will we at least get some kind of warning?” Dr. G said he worried that he would come to work one day to find “electronic TSheets already installed

and no one here to explain how to work them.” He added, “I have nightmares about it. I just wish somebody would say something. Let us know what’s going on!”

Many of the providers at Hospital H were experiencing *technostress*, which is stress experienced by technology users in organizations that is “associated with decreased job satisfaction and organizational commitment” (Rice & Leonardi, 2014, p. 433).

Technostress, especially in technology-adoption scenarios, can be mitigated by frequent updates from managers, “practice sessions and early trials to create psychological safety and encourage new behavior” for end users (Rice & Leonardi, 2014, p. 433), and by feedback sessions that allow end users to express their opinions and/or concerns, but none of these things happened at Hospital H. According to Moore (2014), change in emergency room settings is difficult and requires the understanding and commitment of staff, “which in turn requires the development of an open communication culture” (p. 29). Strong internal communication leads to organizational effectiveness (Moore, 2014), but Hospital H, seemingly, lacked an internal communication network: information about the TSheet implementation was circulated secondhand or not at all.

On September 20, 2014, Nurse B sent me a text message proclaiming that the “go live date” was imminent. He wrote, “They recently installed extra monitors at the MD and MLP [midlevel provider] desks for the new EMR, so I guess it’s happening soon.” I went to the emergency room that night and asked the midlevel provider, X, what he had been told about the new computer monitors. X replied, “I have no idea. No one’s told us anything. They [the computer monitors] just showed up today.” When asked if he believed that the monitors were related to the electronic TSheet component of the EMR, he replied, “Probably, but I hope my clinic will be up and running by then so I can quit.”

He added, “There’s been absolute silence about this. We’ve heard nothing from administration [and] nothing from IT.”

A few weeks later, when I saw that providers still were using paper TSheets and the new computer monitors sat unused, I asked Dr. F what he had been told about the electronic TSheet installation. He said:

I heard someone say the end of the year, but they [administrators] said that this time last year. IT doesn’t know how to make this happen. In fact, I have no faith in our IT department. We’ve wanted to see 10 TSheets before any kind of launch and they’ve not even come up with one. Wait, they did make one. It’s taken them 6 months to build *one* template. I have negative 50% faith in their ability to get this done.

Dr. F, then, reviewed with me the timeline of promised launch dates and missed deadlines, explaining:

Back in June [2014], they [administrators] told me it would take 30 days to make 10 TSheets. It’s October and I haven’t seen anything yet. You have to consider that there are new core measures¹³ coming out and that means updates all the time. How are they going to stay on top of updates? They can’t. You’re just chasing your tail. We’re never going to stay current. Look at Ebola. You need those updates done today, *right now*.

In April 2015, I asked the providers, again, when the electronic TSheets would be installed, and, again, I was told by almost everyone, “I don’t know” or “We haven’t heard.” Nurse B said, “The night and weekend crew is kept in the dark. We’re never told anything. The last I heard was that Q and Dr. F were trying to squash it [electronic TSheets].” Dr. G claimed, “All I know is that they [IT administrators] pass through every once in a while and claim they’re almost finished. It’s been almost 2 years. We haven’t heard a peep from administration. Nothing.”

¹³The Joint Commission issues common performance standards (i.e., core measures) several times a year that hospitals are required to meet to receive Medicare and Medicaid funding.

Providers' and administrators' contrasting accounts of their shared

interactions. Although I conducted only two interviews with administrators—one interview was conducted over the phone and the other interview evolved as a series of e-mail exchanges—I noted that there were many discrepancies in what administrators claimed and what providers said about the EMR adoption process. In some instances, as described in a previous section, administrators contradicted one another, such as the vice president claiming that the emergency medicine physicians participated in the EMR selection process, and SR, head of the IT department, saying that “providers had no choice regarding the selection of EMR.” Administrators, however, did agree on one important fact: Providers were pleased with the EMR. The vice president acknowledged that “the transition was painful in the beginning,” but by October 2014, she was confident that providers had accepted the EMR because “comments are more positive the longer we use the EMR.” SR claimed that “75% of the physicians are pleased with our EMR.”

I asked Dr. F and Q if they believed that 75% of physicians were pleased with the EMR. Dr. F exclaimed, “Absolutely *not*. We hate this piece of garbage. We’ve told them [administrators] so. Where did they get that we were happy?” Q seemed genuinely shocked, staring at me, with her eyes wide and mouth agape, and saying, “*Really?* They [administrators] actually told you that? Don’t they know that you’re down here with us? You see it for yourself. You tell me who here is happy with the EMR.” Q laughed loudly and then asked the nurses working at a nearby counter who among them liked the EMR: “Come on, show of hands, who likes the computer?” There were stifled laughs and a few groans, to which Q replied, “See, nobody likes it.”

SR explained that although physicians wanted, initially, to use the actual, proprietary TSheet system, he believed that physicians would be happier with the generic version of the TSheets that were crafted in-house, because Dr. F and Q were involved heavily in the design process. As he claimed, “The physicians will like the TSheets better this way because it’s been customized for them.” Both Dr. F and Q, however, denied participating in the design process. Q reminded me that she had lobbied for the proprietary TSheet system and had negotiated a discounted rate with Company S. SR told me that the proprietary TSheet system would have cost \$300,000, but Q said that the discounted rate was \$35,000. When I asked SR about the discrepancy, he said, “That’s not true. Paragon, as an entire system, is much less expensive.” Q’s response to SR’s comment was, “See, they [administrators] don’t listen. I sent them the actual quote from [Company] S and nobody looked at it.”

Although I did not witness, directly, interactions between the emergency room staff and the IT staff outside of the formal training sessions that were described previously, the secondhand accounts of interactions that were shared with me suggested that many of the exchanges were tense and unproductive; consequently, relationships between the emergency room staff and IT staff were strained as well. SR told me that he was “extremely frustrated with the physicians” because he believed that they were difficult to work with and were belligerent. He told me that the physicians complained routinely about the CPOE order sets and, yet, from his perspective, physicians were not using the order sets properly. Hence, the difficulty that physicians experienced, SR claimed, “was their own doing.” As SR explained:

They skipped the training for starters, but we [IT staff members] need to ask ourselves how can we enable them to do their jobs better. The decision support

and the order sets, if used properly, can help. . . . The average physician will say, “I went to school for 12 years and I don’t need a computer telling me what to do. I don’t want to practice cookie-cutter medicine.” Yet, at the same time, they click on order sets and don’t add or remove any tests to personalize it for the patient.

Dr. F countered, “Adding or removing tests takes longer, and then we get dinged on length of stay metrics. What’s he [SR] expect us to do?”

Several other Corporation G-owned hospitals used the Paragon EMR because, as SR explained, “research shows that Paragon meets the need at small hospitals.” He added, “We’re using it at other facilities and it works really well. We’ve had no problems anywhere else, just here.” SR tried repeatedly to facilitate conversations between Dr. F and providers working at the other Corporation G-owned hospitals, because SR believed that the conversations would help Dr. F to appreciate Paragon’s potential. However, SR lamented, “Dr. F has refused to talk with facility directors. I don’t understand that. Why wouldn’t you want to collaborate?” Dr. F explained his position to me, which he claimed to have also explained to SR:

What are they going to tell me? Their version of Paragon is different. Each facility has its own customized version, so what’s the director out there going to tell me that I can use here? Nothing. He’s a busy doc, I’m a busy doc, so let’s not waste each other’s time.

Dr. F and SR disagreed on many points, including the topics of their past conversations with one another, but one of the more contentious points between them centered on how busy each thought the emergency room was. Dr. F pointed out that patient volumes were increasing steadily, which he attributed to Hospital H’s advertising campaign, yet SR claimed that the emergency room was “pretty quiet.” On October 9, 2014, SR told me, “I just walked through the emergency room and there were two patients, with six full-time nurses standing around. They have a lot of free time. It’s an

easy job.” The following day, I asked Dr. F about SR’s comments, and Dr. F became livid. He slammed the chart that he was holding onto the countertop and said, “*Easy?* Really? We may have had two patients at that exact moment he casually strolled through, but we had over 40 patients yesterday! Trust me, we’re *busy!*” Q added:

We don’t have six nurses; we have three or four, tops. He’s confused. Maybe he saw a tech and assumed it was a nurse. How would he know the difference? He doesn’t work down here. He doesn’t know how an emergency room operates, so he needs to quit jumping to conclusions and running his mouth.

Q also was angry because SR made what she believed were disparaging comments about the emergency room staff. As Q explained:

He has no idea who you are. You call on the phone, he’s never met you, and he’s going to tell you that we’re not busy [and] that we’re “standing around?” He undermines me and he makes the emergency room staff members look less efficient and hardworking than they really are. We’re busting our asses down here. Who else is he saying this to? I’m begging for additional staff and he’s running around telling everyone that we’re overstaffed.

Dr. F just shook his head and said, “It’s not warm and fuzzy between us and IT. I think you can see why.”

To review, communication between providers and administrators at Hospital H was ineffective because they appeared to draw conflicting conclusions regularly. As Q explained, “It’s like we’re speaking different languages altogether. I don’t know how they [administrators] don’t understand us.” This communication impasse was indicative of an SD-cycle. There, thus, was clear evidence of an SD-cycle (i.e., negative communication spiral) at Hospital H. First, there was a lack of collegiality between providers and administrators that affected their communication negatively: Providers did not view administrators as listening to them because they believed that their opinions about the EMR were not taken under consideration by administrators, and, furthermore,

they believed that administrators did not support their work. Second, administrators communicated very little information to providers about the electronic TSheet installation process, which added to providers' uncertainty and technostress. Lastly, providers and administrators had different, often contrasting, recollections of their interactions with each other, which exacerbated SD-nexus conditions and led to an SD-cycle. Providers' diminished agency, a key component of SD-nexus to SD-cycle escalation at Hospital H, is described next.

Providers' Diminished Agency

As defined in chapter three, *agency* is human activity, which is enabled or constrained by structures (Giddens, 1984). Agency hinges on an agent's ability "to 'make a difference' to a preexisting state of affairs" (Giddens, 1984, p. 14); hence, without some measure of power, agency is not possible. When SD is present in an organization, individual agency is limited (Nicotera & Mahon, 2012). SD-entrenched systems often lead to *impotent agency*, the inability to meet goals effectively because of conflicting structures in environments where performance and productivity are monitored closely. Impotent agency feeds unhealthy communication patterns, and, in addition to immobilization, it can lead to developmental regression (Nicotera & Mahon, 2012).

Providers at Hospital H suffered both limited agency and impotent agency. Providers, essentially, were unable to change the EMR—they were unable "to 'make a difference' to a preexisting state" (Giddens, 1984, p. 14)—consequently, they had limited agency. As noted above, providers were excluded from the EMR selection process, and administrators, largely, ignored providers' concerns and suggestions about the EMR. Whereas nurses were involved in customizing some aspects of the EMR display,

physicians had no involvement either in the CPOE customization or in the electronic TSheet design. Because the EMR exacerbated SD-nexus conditions (i.e., conflicting external and internal structures), many providers suffered impotent agency, which further fueled SD-cycle development (i.e., negative communication spirals).

Most of the providers' quotations presented in the previous section can be seen as communicating not only their immobilization and frustration but also their lack of power and agency. When asked if he believed that his comments conveyed a lack of power and/or agency, Dr. F, upon reviewing an early draft of this section, replied, "Yes, I would say I have very little power. When I read what I said, that's what comes to mind: 'This guy has no power.'"

As described in chapter two, forced organizational change (e.g., the EMR adoption at Hospital H) robs individuals of their freedom and agency, and it activates reactance (Nesterkin, 2013), which, in turn, triggers hostile or aggressive feelings (Brehm, 1966). Freedoms may be restored, symbolically, by disparaging the source of the threat or by exercising other freedoms to maximize feelings of control (Quick et al., 2013). When providers at Hospital H disparaged the EMR or circumvented order-entry processes, they also subverted the mechanics of power (i.e., they resisted constraining structural forces). Through disruptive talk and behaviors that targeted EMRs, providers also asserted "autonomy of action" (Giddens, 1984, p. 292) and attempted to regain lost agency.

Many providers adopted two strategies to regain agency: providers implored others to perform data entry and order-entry tasks for them, and/or providers searched for employment at hospitals that used EMRs that they believed were superior to the

McKesson-made Paragon system (i.e., providers then could choose which EMR to use, and, thereby, restore, indirectly, a measure of control). Both strategies allowed providers to maximize their feelings of control; however, imploring others to perform data and order-entry tasks exacerbated hierarchical differences at Hospital H, especially between physicians and nurses, which, in turn, fed recurring SD-cycles. For example, Nurse A criticized a physician who “dumped orders” routinely:

Dr. W used to make us put in orders all the time, even though we weren’t supposed to use the CPOE. He could never figure how to do it, so he would bark orders at us, literally. He would say stuff like, “I’m the doctor, so do as I command.” He was horrible.

All of the nurses complained that most of the providers “pulled rank and dumped orders” regularly, which created tension between them and physicians (see the discussion in the next section about providers’ strategies for coping with the EMR). Moreover, nurses had fewer opportunities, when compared with physicians, to dump orders, and, therefore, nurses’ symbolic restorations of freedom and agency were limited mainly to disparaging the EMR.

I observed many terse exchanges between physicians and midlevel providers, and between physicians and nurses; most of the exchanges involved dumped orders or dropped orders (see the previous discussion about technical glitches). These exchanges, typically, spiraled into increasingly negative diatribes (i.e., SD-cycles). For instance, I observed a quarrel between Dr. A and V, a midlevel provider, in which Dr. A told V to complete an order set for a patient, and V asked, “Do you want an EKG with that, too?” Dr. A sighed loudly, threw his hands up, and said, “Sure, why not? EKG, EEG, whatever you want. You go right ahead.” V replied, “Well, don’t let me pressure you or anything. Just trying to help you do *your* job.” Dr. A retorted, “How about you just do your job and

put in the orders, okay? If I wanted an EKG, I would have asked for one.” After Dr. A retreated into an examination room, V told me, “Shit like that is why doctors have a bad rap.” Nurse M attempted to diffuse the tension by telling a joke, “What’s the difference between God and a surgeon? God doesn’t think he’s a surgeon!” V laughed and nodded in the direction of Dr. A, and said, “Yup, that asshole thinks he’s God alright.” I heard someone behind me call out, “Amen, brother.”

Although the emergency room at Hospital H was an SD-nexus, I observed that SD-cycles were not always present: Certain physicians’ efforts to regain lost agency appeared to incite or enflame SD-cycles, which led Dr. Nicotera to speculate that lost agency and resulting restoration attempts may explain the SD-nexus to SD-cycle escalation. I noted that Dr. A and Dr. W became embroiled in negative communication spirals more than the other physicians did. I shared my hunches with Nurse B—namely, that order dumping was a symbolic restoration of freedom that heightened hierarchical differences and led frequently to divergent communication—and he agreed: “With certain docs, like Dr. A and Dr. W, absolutely, I think you’re right, although, in my opinion, it happens with *every* doc to some degree. For some [physicians], it is a real problem.”

To review, observational findings pointed to the presence of SD in Hospital H’s emergency room. The evidence consisted of conflicting structures, which established that Hospital H’s emergency room was an SD-nexus; providers’ dissatisfaction and burnout; “us” versus “them” language, which intensified ineffective and hostile communication patterns between emergency room nurses and floor nurses; negative communication spirals between providers and administrators; and providers’ diminished agency, which led frequently to discordant interactions between providers, which, in turn,

contributed to SD-nexus to SD-cycle escalation. Next, I present findings derived from the SD scale items that were included in the questionnaire that was administered to providers at Hospital H.

Structurational Divergence Scale Item Scores

The SD scale consists of 17 items and 3 subscales that measure immobilization/individual development, unresolved conflict, and organizational development (Nicotera et al., 2010). Summing scores across all subscales (range 17–85) determines the degree of SD present in an organization: below 20, SD is absent; a score between 21 and 35 indicates low SD conditions; a score between 36 and 50 suggests moderate SD conditions; and a score above 51 signals high SD conditions. The average SD score for respondents at Hospital H ($N = 30$) was 36, indicating that the group, as a whole, experienced moderate SD. Individual SD scores (see Table 5.6) revealed that one respondent experienced no SD, 50% of respondents ($n = 15$) experienced low SD, 37% of respondents ($n = 11$) experienced moderate SD, and 10% respondents ($n = 3$) experienced high SD. As expected, given that burnout is a surface-level manifestation of SD, respondents who experienced high SD also suffered from burnout.

Together, with the observations reported above, these data support the presence of SD at Hospital H and that SD affected providers negatively. Many providers described feeling immobilized, feeling dissatisfied with their jobs, and experiencing symptoms of burnout regularly. “Us” versus “them” interactions between emergency room nurses and floor nurses aggravated SD-nexus conditions and led to ineffective communication patterns and bullying. Providers’ interactions with administrators also were strained, leading to recurring negative communication spirals (i.e., SD- cycle). The SD-nexus to

Table 5.6
Individual Structural Divergence Scores.

ID	Σ	SD	role	ID	Σ	SD	role
1	42	mod	RN*	16	43	mod	RN*
2	42	mod	RN	17	26	low	MLP
3	28	low	MD	18	28	low	RN
4	27	low	MLP	19	39	mod	tech*
5	56	high	MD*	20	32	low	RN
6	37	mod	RN	21	47	mod	RN*
7	39	mod	RN	22	18	none	tech
8	22	low	other	23	68	high	RN*
9	31	low	tech	24	40	mod	RN
10	37	mod	MD	25	27	low	RN
11	59	high	RN*	26	28	low	RN
12	25	low	tech	27	30	low	MD
13	26	low	RN	28	29	low	MLP
14	27	low	RN	29	35	low	RN
15	46	mod	RN	30	44	mod	MD

Note. ID = respondent; mod = moderate; MD = physician; MLP = midlevel provider; RN = nurse.

* Indicates respondent also experienced burnout.

SD-cycle escalation was due, in part, to providers' efforts to regain lost agency. In response, many providers' adopted maladaptive strategies to cope with their lost agency, which, as described next, amplified hierarchical tensions between physicians and nurses.

Providers' Strategies for Coping with Electronic Medical Records Systems

Providers at Hospital H developed several strategies for coping with the forced EMR adoption. Most providers developed *workarounds*—tactics for circumventing the EMR or avoiding the EMR altogether—with the most common workaround being *order dumping*, asking and/or requiring other providers to enter data and/or orders into the EMR and/or CPOE. Gaming the system, which included ordering inconsequential and, oftentimes, unnecessary laboratory tests to stop the clock on “door-to-doc” time (see the discussion below on unintended consequences), was another common workaround that providers adopted to satisfy metrics, which were tracked by the EMR. Another workaround that was adopted widely involved employing scribes to enter data into the EMR, which left physicians more time for direct patient care. Although Hospital H did not employ scribes, providers there expressed interest in hiring scribes; consequently, I observed as Dr. C worked with a scribe at Hospital W and, later, as he recounted the experience for the providers at Hospital H. A final strategy that was adopted by some providers, which they dubbed “avoidance,” involved organized resistance that was meant to thwart the electronic TSheet implementation. The following discussions examine these coping strategies of order dumping, scribes, and avoidance.

Order Dumping

As described in the previous section, order dumping at Hospital H, generally, involved a physician asking or demanding a midlevel provider or nurse to enter orders for laboratory tests and/or procedures into the CPOE component of the EMR. I observed situations in which nurses asked or demanded that other nurses update patient notes in the EMR, but such occurrences were infrequent. As Nurse A commented, order dumping

was regarded widely as a “doc-on-nurse crime.” She explained the order dumping process, from a nurse’s perspective:

Docs are supposed to do most of the entering of tests and meds, but, often, that gets put off on nurses. Nurses have to go in through the med-ordering system under the doc’s name and put the orders in as “verbal orders.” It shows up under the doc’s action list, which they have to sign off on at some point, saying they approved the order; that it was the correct medicine, or whatever. Docs are allowed to dump a certain percentage on the nurses, but Q encourages us to push the docs to do more of the entering. They resist, especially the older ones.

When asked if order dumping added to her workload or contributed to her workplace stress, A replied:

Yeah, it doubles my workload. The EMR is easy for me to use, except when they [physicians] ask me to put in orders because I don’t really know the CPOE very well. I don’t use it [CPOE] as part of my regular job. It’s only when I get orders dumped on me that I have to go in and try to remember how to do it [use the CPOE]. If the doc is busy, genuinely busy with a code or something, then no problem, I’m happy to help. If it’s because he’s just being an asshole or doesn’t want to enter his own orders, well, that pisses me off.

Nurse M remarked that physicians “just got a \$30 an hour raise. They [physicians] do less, we do more. Why should we put their orders in for them when they’re getting paid more?”

As Nurse B mentioned, order dumping happened “with *every* doc to some degree,” but Nurse L commented that some physicians “abused the privilege” more than others:

Having nurses enter orders was a privilege that was available on a limited basis. That was explained to them [physicians] from the start, but some physicians demanded that nurses enter orders for them *all* of the time. One of those physicians is no longer here.

I learned that L was referring to Dr. W. Nurse Y told me, “Yeah, we canned Dr. W because he dumped all his orders on nurses.”

When asked about physicians' order-dumping habits, N, a midlevel provider, said, "They all do it and I have to admit, a lot of the time it's because they're busy with multiple patients." N volunteered that although he believed that a lot of order dumping was motivated likely by physicians' reactance, he thought that order dumping was an unavoidable workaround because of metrics, claiming:

It's important for all of us to help out to keep the numbers up, like "how long before seen" and "door-to-doc." Most of the docs take a while to put in orders and then we all take the hit for slow times. They [physicians] have to dump orders or administration comes down on all of us.

Nurse B pointed out that he and several other nurses had avoided the CPOE training sessions to not be targets of physicians' order dumping. As B explained, "It was a calculated move because I saw what was happening to nurses who had gone to the training. I could honestly say, 'I don't know how to use the CPOE.'" Nurse B's strategy generated ill will and affected negatively working relationships among some of the nurses. As Nurse A lamented, "Just because they skipped training they get to slack off, and now I get twice as many orders dumped on me."

I asked physicians how they viewed order dumping and, like N, most believed that it was a necessary workaround because of metrics. Dr. E said, "I don't have a choice. If I've got two patients at once and I've got a nurse sitting here, then, yes, I'm going to ask her to put something in for me." When asked if they believed that order dumping was an attempt to restore their lost agency, three out of six physicians agreed. Dr. G commented, "I hadn't thought of it that way but I can see that that might have been my motivation. 'I hate the damn thing [the EMR], so I'll make them put orders in for me.'" Dr. A said:

Maybe, but you have to understand that I'm the only physician here in the emergency room for all of those patients and I have midlevels and nurses whose job is supporting me. Yes, I hate the EMR, but do your job when I ask you to do it. Just put in the orders.

The order dumping that I witnessed was split evenly between that which was justified (e.g., physicians were busy and their requests were appropriate given the context) and that which was reactance inspired, such as the exchange between Dr. A and V described previously. I identified instances of reactance-inspired order dumping based on providers' nonverbal behaviors (including paralinguistic cues, such as tone of voice), and their apparent affective state. Using profanity, raised voices, loud sighing, and/or aggressive gestures (e.g., slamming charts onto the counter) accompanied most physicians' reactance-inspired order dumping. Additionally, reactance-inspired order dumping occurred, typically, when patient volume was low, which suggested that the context did not support justified order dumping and, hence, it was triggered by reactance. Such episodes fueled hierarchical tensions between physicians and nurses, and between physicians and midlevel providers, and, as described previously, resulted in negative communication spirals.

Scribes

Early during the EMR adoption process at Hospital H, physicians expressed interest in hiring scribes to alleviate documentation burdens that they were experiencing. According to Foppe (2014), scribes have the potential to alleviate 80% of documentation burden that falls to emergency medicine physicians, inasmuch as scribes document patients' medical histories and findings. Scribes are seen as necessary "workarounds for systems that fundamentally do not value physician time" (R. Bukata, personal communication, February 3, 2014), but scribes also are "a mixed bag," according to Dr.

C. Dr. C worked part-time at Hospital H, but partway through my study, he accepted another part-time position at a hospital that employed scribes. Dr. C agreed to share his views on scribes with the providers at Hospital H, none of whom had worked with scribes previously, to enable them to make an informed decision about pursuing scribe support at Hospital H.

I accompanied Dr. C on his first shift at Hospital W, where I observed his interactions with a scribe. The scribe, Z, pushed a COW and followed Dr. C around the emergency room. As Dr. C conducted physical examinations, he verbalized patients' histories and findings, which Z entered into the EMR. In addition to maintaining patients' electronic medical records, Z kept detailed notes about interactions that Dr. C had with specialists that he consulted, when telephone calls to consultants were returned, and consultants' recommendations. Z could amend or add to medical records only when he was in Dr. C's physical presence. Although Z assumed responsibility for charting patients' medical histories and findings, he was not allowed to enter orders; only licensed medical providers can enter orders using CPOE systems, and, consequently, despite using a scribe, Dr. C still spent a lot of time at the computer.

Because Dr. C had to review, eventually, medical records for accuracy, he, too, kept notes about patients' histories, complaints, and findings, as well as consultants' recommendations. As he explained, "I don't really know how much of what I'm saying is getting typed up, so I may need these notes later on when I look over the files." Checking the medical records for accuracy during the shift was "impossible," because, as Dr. C explained, "this place is busy, there are too many patients to manage, and if I stop to review charts, then length of stay goes up. My metrics would look horrible." When

asked if the duplicated effort of both of them keeping detailed notes rendered the scribe redundant, Dr. C replied:

Not necessarily, but it does seem silly. I'm documenting on paper just as much as I did at [Hospital H] and I'm still using the CPOE, but at least when I go in the patient room, I'm having conversations. I'm looking the patient in the eye. The real advantage, so far, is that the scribe keeps up on pages [to consultants], who has called back, and who we're waiting to hear from.

The medical director at Hospital W's emergency room, overhearing our conversation, agreed and said that scribes, "keep on top of consults, so that's one less thing you have to keep straight, plus I can talk freely to the patient without looking at a computer screen." She added:

Before the scribes, we were pushing COWs into the exam room or taking notes on scraps of paper to add [to the EMR] later. That meant that after an 8–12 hour shift, you usually spent an extra 3 hours on charting, unpaid, and away from your family. So the scribes help a lot. I don't stay nearly as long now.

A nurse chimed in, "The scribes make our docs a lot happier. Happier docs make happier nurses." When asked if the physicians at Hospital W dumped orders, the nurse replied, "Not as much as they used to! The scribes definitely helped out there."

I asked Z to describe his experience as a scribe working at Hospital W. At the time of our interview, he had been a scribe only for 4 months. He said that because he planned to become a physician assistant, the scribe program gave him "valuable experience working alongside doctors, learning medical terminology." Despite the on-the-job learning that Z valued, he complained that the work was difficult in many ways because he worked with a different physician every shift, and because many physicians with whom he worked were difficult. As he explained:

It is a real challenge because every doctor does things differently. Some docs will go slow, some hate questions, some like to teach, some try to trip you up, [and] some talk really fast just to deliberately screw with you. It would be nice if one

scribe worked with one doc. We [scribes] constantly have to adjust. The advantage for me is that I get to spend time with the doctor and watch the patient interactions. I've learned a lot.

I was told that Hospital W split the cost of the scribes' salaries with the hospital's physicians. Scribe America, the company that employed Z, charged \$20 an hour for scribe services, but Z was paid only \$8 an hour. Z said, "The pay really sucks, but you can't beat the experience. I'm kind of held hostage. It's like I'm paying for this exposure by accepting less money, but it will help my career later." Dr. C, however, was upset that Z was paid so little, exclaiming, "At least give the kid the whole \$10 an hour you're taking out of my paycheck." The emergency room medical director at Hospital W explained that hospital administrators determined scribes' pay, but she wondered if the hospital actually contributed anything to offset the cost of the scribes or if the cost was absorbed solely by physicians. She asked, "Administrators told us it cost \$20 an hour, but where's the other \$12 going?"

At the end of Dr. C's shift, he spent an hour reviewing Z's documentation and found that the medical records were complete and accurate. When asked about his first day working with a scribe, Dr. C said:

I'd always heard scribes were good to work with and could allow you to function more efficiently in the emergency room. It went well. It saved me a lot of time today, especially in this situation, [as] I'm working in a new emergency room. Although the EMR is a system I've used before, of course, it's always different in another emergency room. This one has all sorts of variations. Almost everything was different in terms of how it was organized. While I sorted things out, it was great having someone else put in the history and physical.

He added, "I'm hoping it's not just the scribe I worked with today; that this is the experience I'll have, more or less, with any scribe in the emergency room."

At the end of the week, after Dr. C had worked with several other scribes, I asked him to reflect on his experiences. He lamented, “Not all scribes are created equal, I can tell you that,” and said:

Z was thorough and conscientious. His charting looked good. I didn’t have to make many corrections. The last few days, these scribes aren’t getting it. [There were] omissions, mistakes, poor grammar, [and] misspellings. If one of those charts ever goes to court, it makes me look like an idiot. I was reviewing a chart and saw that the “unincarcerated hernia” I found was actually charted as “*incarcerated* hernia.” The difference is that one goes home and the other is a surgical emergency! Imagine if I hadn’t caught that and someone reviewed the chart? “That guy sent home an incarcerated hernia! Fire him!” Then, I had a patient with bronchiolitis and the scribe wrote down that the patient had a broken leg! How do you get a broken leg out of bronchiolitis?

I asked for Dr. C’s final assessment of whether scribes were a viable EMR workaround for the physicians at Hospital H, and he replied:

I’ve spent about 2–3 hours after each shift just fixing what they [scribes] got wrong. The scribes can make the work go faster while I’m on shift, but I’m still staying late to clean up. It’s kind of a wash at this point for me. I would have to say, “No. Don’t get scribes there [Hospital H].”

Scribes, from Dr. C’s perspective, facilitated some aspects of his work but they also constrained him in many ways, and, consequently, he did not advocate using scribes at Hospital H. Upon hearing about Dr. C’s experiences at Hospital W, Hospital H’s providers agreed that scribes would not be a worthwhile workaround, and they dismissed the idea. Dr. F and Q noted that administrators, likely, would not have approved using scribes anyway, given the added cost that scribes would have posed and Hospital H’s falling revenue.

Avoidance

Dr. F and Q believed that avoidance was the best strategy for coping with certain aspects of the EMR; namely, the generic, electronic TSheets that were being designed by

members of the IT department and that, eventually, would be installed. Q explained that avoidance involved calculated moves that were meant to slow the TSheet design and installation process:

In the beginning of this whole process, I was proactive. I lobbied to get things done. I was calling IT every day asking, “Where are the TSheets? Let me see them. Let me make suggestions.” But now, I’m not pushing for the [electronic] TSheets. I have given up on making anything happen. I realized that if I *don’t* do my job, then they won’t do theirs. If I don’t push, then it won’t happen, and that makes the docs happy. IT can’t get it done, so why should I try? This way, I’m protecting the docs.

Dr. F explained how avoidance was a matter of “calculated inactivity”:

One of our nurses is a super-user and has some computer experience, but when IT asked him to help out [with the TSheet design process], I told him to go real slow. “Take your time, no rush.” I’ve seen what IT is designing and it’s a terrible system. I’m not happy, so I’m not going to press them to get this done.

Later, he elaborated:

They [IT staff members] haven’t listened to any of our suggestions. Even with one of our guys helping out, they still don’t take our advice. They claim that whatever the real TSheets can do, they can do it better. They can’t. Excuse me if I’m underwhelmed, but I’m not going to help facilitate this process that I know for a fact will slow down charting even more and cost this hospital revenue.

When asked how the electronic TSheets would affect revenue, Dr. F clarified that because the electronic templates lacked visual reminders for such things as review of systems and social history, providers might not perform the associated billable procedures.

Both Dr. F and Q took inspiration from “upstairs docs” who had thwarted successfully installation of the EMR’s consulting notes component. As Q told me, “They didn’t like doing their consults on the computer, so they all quit using it one day and the hospital had to go back to paper.” She noted that, eventually, the consulting physicians “gave in” and resumed using the EMR, but only after a 6-month delay and several

revisions to the consulting notes component. “If our avoidance can buy a couple of months, then that’s fine by me,” she noted. “In the meantime, maybe I can get administration to reconsider buying the real TSheets.”

Dr. F also believed that the IT staff’s inability to design and implement the generic, electronic TSheets in a timely manner would give administrators reason to reconsider their decision to go with an in-house design over the proprietary system. As Dr. F claimed:

I’m building my case against IT. This is all ammunition. Taking almost a year to design one TSheet? Well, not even one. I haven’t seen it yet. What have they been doing all this time? We’ve been hearing since last November [2013], “Any day now.” What do we have to show for a year’s worth of work? Nothing. Wasted money. This is all ammunition that I’m taking to the CEO [chief executive officer].

When asked if he believed administrators would elect to purchase the proprietary system, Dr. F responded, “It might be false hope, but we’re not using their generic version yet, are we? Because they haven’t built it. Someone might wise up one day and get us the real thing.”

Although most of the other providers acknowledged that they were aware of the avoidance strategy, only Dr. F. and Q employed this strategy to cope with aspects of the EMR installation. Because Dr. F, the emergency room director, and Q, the emergency room nurse manager, were the only providers with direct ties to the hospital’s administration, they had some measure of power and, therefore, some agency. Together, they tried to “regulate system reproduction . . . to keep things as they are” (Giddens, 1984, p. 27).

In sum, providers at Hospital H developed workarounds to augment their EMR-based documentation tasks. Order dumping, the workaround used most frequently,

aggravated hierarchical tensions among providers and fueled SD-cycle development. Although providers considered employing scribes, a common workaround that has been adopted in other hospitals, providers at Hospital H took Dr. C's firsthand experience of working with scribes into account and abandoned the plan. Avoidance tactics were exercised by the emergency room management, which delayed installation of the electronic TSheet component of the EMR. Next, I describe ways in which the EMR changed communication among providers.

How the Electronic Medical Records System Affected Communication Patterns among Providers

The EMR installation at Hospital H, according to providers there, changed the communication that they had with other providers in several ways: the EMR reduced the number of face-to-face exchanges between them and the nature and topics of their conversations. These changes in communication patterns, in turn, affected providers' relational growth and/or maintenance. Here, I describe those changes using examples culled from fieldnotes, interview transcripts, and the questionnaire administered to providers.

All of the providers I spoke with—15 nurses, 9 physicians, 4 technicians, and 3 midlevel providers—said that face-to-face interactions with other providers declined after the EMR was installed. In response to the questionnaire item, “How has the EMR impacted communication between you and your coworkers,” 40% ($n = 12$) of respondents reported that they spoke with their coworkers less and 53% ($n = 16$) spent less time discussing patient care with their coworkers face-to-face (see Table 5.7). Nurse Y said that the EMR “changes how we interact with the docs. I might not even see the doc face-to-face on any of my patients now. Before, we at least discussed game plans

Table 5.7

Responses to the Questionnaire Item, “How has the EMR system impacted communication between you and your coworkers?”

Response	Percentage	Total
I talk with my coworkers more.	3%	(<i>n</i> = 1)
I haven’t noticed a difference.	7%	(<i>n</i> = 2)
I talk with my coworkers less.	40%	(<i>n</i> = 12)
We talk about fewer topics.	13%	(<i>n</i> = 4)
We don’t spend as much time chitchatting.	7%	(<i>n</i> = 2)
I spend more time clarifying/asking about orders.	47%	(<i>n</i> = 14)
We spend more time discussing patient care face-to-face.	3%	(<i>n</i> = 1)
We spend less time discussing patient care face-to-face.	53%	(<i>n</i> = 16)
We spend time complaining about the EMR.	70 %	(<i>n</i> = 21)
We spend time teaching each other how to use the EMR.	83%	(<i>n</i> = 25)

[and] treatments.” Nurse B added, “Because people are clustered around machines, we talk less. It’s to be expected.” Dr. G lamented the change, noting that when providers used a common paper chart, they interacted frequently:

We’re not a team anymore, really. We [providers] work independently of one another. With paper charts, there was more collaboration [and] more bringing things to each other’s attention, but not now. Do we talk less? Absolutely. The only time we talk is when things aren’t working or something goes wrong. Things worked better before the EMR because we talked to each other.

When asked which topics related to face-to-face patient care were rarely or no longer discussed face-to-face, providers indicated that pending orders and patients' status updates were verbalized less frequently after the EMR installation compared with when providers used paper charts. Excluding order dumping, which involved face-to-face communication, nurses complained that physicians and midlevel providers discussed orders only intermittently. For example, Nurse B complained, "I hate it when a doc puts in orders and doesn't tell anyone." He stressed that he and the other nurses wanted to be told—face-to-face—that orders were pending, because, as B explained, they preferred "verbal exchanges over flashing icons on a computer screen." Nurse A expressed sentiments similar to B's when she said:

There is a lot of aggravation because we [nurses] can't keep up with the doc in terms of where he is and where he's going next. Is he in a patient room? Is he doing a procedure? He isn't interacting with us, so we're not aware that he might have put orders in. The EMR times how long it takes for us to carry out orders once they're put in, so I'd like to be told that the doc has done something or is going to do something; otherwise, my numbers [metrics] look bad. . . . I have to keep checking the EMR, but I would prefer a courtesy heads-up, "Hey, I'm putting orders in on your patient."

Dr. E complained that he, too, "would like to be told things" more consistently, exclaiming that the nurses:

should give verbal updates, but it doesn't always happen, especially if it's busy. Just now, a new patient was brought back from triage, but no one told me. I just happened to notice a new name on the tracking board, but, by then, my door-to-doc time was already shot. It doesn't take long to say, "We're putting a patient in [room] 2."

When asked if physicians gave nurses "verbal updates," alerting them that new orders were pending, Dr. E replied, "I try to, but I'll admit, when it's busy, I don't always do it."

Providers believed that fewer face-to-face interactions took place among them because they no longer shared a common paper chart, which, previously, ensured that

they completed documentation tasks in a communal work area, usually along the counter that divided public space (i.e., hallways and patient rooms) from the space reserved for providers. When sharing paper charts, providers, naturally, would communicate with each other. After the EMR was installed, however, nurses tended to work exclusively at computer terminals that lined the left half of the emergency room's L-shaped counter; physicians and midlevel providers worked along the right half of the counter and in a small office, out of view of the nurses. Dr. O noted that many nurses gave her "verbal histories and updates" only when she stood near the bend of the L-shaped counter, adding, "I never get updates if they don't see me or if they have to look for me. If I'm in the office on the CPOE, they don't interact as much." Nurse Y explained that nurses "don't really bother docs if they're in the office. If the doc's out here [at the counter], I take that as a sign that he's willing to talk or shoot the shit." Dr. A complained that he wanted patient updates, regardless of his location (e.g., whether he was in the office at the CPOE or standing along the counter):

If something happens, find me and tell me. There isn't a door to the office; you can walk around the corner and see if I'm sitting here. Not talking is problematic in a lot ways. We need to be on the same page because when we're not, things get missed.

I observed a situation in which "things got missed" because providers did not communicate face-to-face. On March 15, 2014, I watched the dayshift physician leave, but as I recorded in my fieldnotes, "He did not handover his patients. There was no turnover communication between the physicians, so there was not an appropriate transfer of care. He simply left." Nurse M told the nightshift physician, Dr. A, that although the dayshift physician had not "completed discharge summaries," M believed that the patient in room 4 was ready to be sent home. A few hours later, Dr. A reviewed the EMR

belonging to the patient who had been in room 4 earlier. The dayshift physician had written on the paper TSheet that the patient received “a full cardiac workup,” but Dr. A could not find EKG results in the electronic record. Additionally, none of the nurses recalled having received orders to perform an EKG that day. Nurse M volunteered that the dayshift physician may have clicked “submit” versus “transmit” after he selected the cardiac order set in the CPOE. As M explained, “There’s been some confusion over which one to click, so we’ve had some dropped orders.” Nurse Y suggested that if the dayshift physician “had told somebody the plan, maybe they [sic] would have been on the lookout for an EKG [order] to come through and could have said something when it didn’t show up.” Dr. A agreed and added, “There’s always the possibility that the test was done, but the results were lost. There isn’t a medication list in here [the electronic record] either, but I know the nurse would have gotten it in triage.” I asked, “What happens now?” Dr. A replied, “Well, first, we call the patient and get him back here for the EKG, and, second, we get our asses chewed out.”

I later asked Nurse M and Nurse Y about the dropped EKG order and how the situation might have been prevented. M said, “Simple: talk. Tell someone the game plan.” Y added:

We’re not mind readers, so we don’t know [the physician] is ordering a cardiac workup. Sure, it would make sense that a patient with chest pain would get a cardiac workup, but if we’re busy with other patients, [then] we might not think to ask, “Hey, did you put in those cardiac orders?” We *should* be talking to each other for every single patient. The doc needs to take 2 minutes to say, “Here’s what I think is going on, here are the tests I want to run, and here are the meds I want.” If I know the plan, then I can help execute it.

M told me that many of the “seasoned nurses” asked regularly for physicians to communicate to them care plans for patients, but that patient volume determined

workload, and, oftentimes, limited the time that was available for such conversations. As M said, “When we’re busy, forget it. You just don’t have the time to talk sometimes.”

I observed that although the physicians and nurses spoke infrequently, especially during busy weekday shifts, nurses *did* initiate discussions with physicians and asked them questions. Most nurse-initiated conversations that I observed were about orders that physicians placed using the CPOE that the nurses did not understand fully and/or questioned. Among nurses who completed the questionnaire, 65% ($n = 11$) reported that they spent more time clarifying/asking about orders following the EMR installation than when providers used paper charts. When asked if time spent clarifying/asking about orders was indicative of providers engaging in more—not less—face-to-face communication, Nurse B replied:

Well, not really because most of the time, that’s the *only* talking we do. So, we are, in fact, talking less and when we do talk, it’s because we don’t understand why the doc has ordered a certain medication. Usually, the doc clicked the wrong dosage, the wrong preparation, or the wrong patient. That becomes a problem, in my opinion, because instead of working at the bedside, tending the patient, I’m looking for the doc to get clarification on what is essentially an EMR issue.

Providers said that many of the face-to-face conversations that did take place with other providers were not driven directly by patient care concerns but, instead, were driven by EMR-related issues (e.g., asking how to use the EMR or complaining about the EMR). Apart from spending time clarifying orders, which most providers regarded as a patient care issue, providers, like Dr. E, indicated that they spent “a ridiculous amount of time talking about the EMR.” Eighty-three percent of questionnaire respondents ($n = 25$) reported that they spent time teaching each other how to use the EMR, and 70% ($n = 21$) spent time complaining about the EMR. Complaining, or griping, about the EMR appeared to be important for building and/or maintaining rapport among providers,

especially because providers, according to Dr. F, “had very little time for chitchat” after the EMR was installed.

Chitchat is considered *everyday talk*, which, according to Schrod, Soliz, and Braithwaite (2008), also includes gossip, small talk, joking around, planning, and decision making. Relationships are created, enacted, and maintained through everyday talk; moreover, Schrod et al. found that people who engaged regularly in everyday talk were more likely to report that they were satisfied in their relationships. Dr. G lamented that the EMR, in his opinion, limited the time that was available for everyday talk and, consequently, relationship development:

The more of a conversation you have, the more comradely there is. There’s more of a mutual investment in the whole emergency room environment and culture. When you’re individuals silently ticking away on computer systems, you don’t have small talk, like “I heard your kid was in a play” or “I heard you went on vacation.” Those little connections can make you all feel like you’re in it together. There’s a lot more watching each other’s backs when that happens, whereas right now, you’re sort of isolated; you’re just data-entry clerks sitting at computers and have far less of a connection with each other.

Although the range of topics that providers discussed was limited, which affected some providers’ perceptions of their relationships with each other, as per Dr. G’s account, I saw providers’ excessive complaining about the EMR as a form of everyday talk that reinforced relational bonds. Gripping, profanity, substandard speech, and kidding, according to Giddens (1984), “reinforce the basic trust in the presence of intimates . . . [and] is a dissipation of tensions derived from the demands of tight bodily and gestural control in other settings of day-to-day life” (p. 129). For instance, I observed frequently providers complaining about and disparaging the EMR in, oftentimes, exaggerated and vulgar ways. The resulting laughter reinforced providers’ bonds and was “a dissipation

of tensions” (Giddens, p. 129) that the providers accrued during earlier constrained interactions with patients and their families.

For example, one evening I observed a nurse approach a physician and say, “The computer told me to tell you the patient is on Coumadin,¹⁴” to which he replied, “Yeah, I know. I saw it in the chart.” She said, “Well, the computer said to tell you.” The physician asked, “Did the computer tell you to do pregnancy test on him, too?” She stared at him, eyes wide, and asked, “It does *that*?” The physician explained, “Yeah, I’ve seen it happen. In fact, I was doing a pelvic [examination] on a patient once, because the computer said to, when I found a prostate [gland]! I thought, ‘Hey, this man’s not pregnant!’” Another nurse added, “But he already delivered the trunk . . . of a baby elephant!” The group howled with laughter. When asked later about the purpose of such EMR stories, the physician said, “It blows off steam. It lets us connect a little as people.”

I observed that negatively framed talk about the EMR bolstered providers’ sense of belonging by reinforcing group membership. As documented in chapter four, a nurse who, generally, was enthusiastic about the EMR complained frequently alongside other nurses about its shortcomings. When asked why she changed her mind about the EMR, she said that she enjoyed “letting off steam” with her coworkers, and that “complaining together” helped her to “feel connected to them.” Dr. E also believed that complaining about the EMR reinforced relational bonds, explaining that providers’ “small talk shifted from movies and family to the EMR. Mainly, we bitch about it, but that gives us something in common. For me, I feel like it [complaining about the EMR] brings us

¹⁴Coumadin is the generic version of the blood thinner Warfarin.

closer.” Dr. O added, “I don’t feel like I know people very well here [Hospital H], but I think we’ve bonded over how much we hate this damn thing [EMR].”

In sum, providers at Hospital H reported that, following the EMR installation, as compared to before, they talked with their coworkers less, spent less time discussing patient care face-to-face, and, generally, talked about fewer topics. Providers revealed that although they talked less, overall, they spent more time clarifying CPOE-generated orders compared with when providers used paper order sets. Providers interacted when sharing common paper charts because of their physical proximity, but after the EMR was installed, nurses worked in one area, whereas physicians and midlevel providers worked in another area; that physical separation meant that fewer verbal orders and updates were shared among providers who were out of sight of one another. Providers did, however, report that they spent time complaining about the EMR, which strengthened their relational bonds. Hence, although less time for chitchat after the EMR installation meant that the breadth and depth of providers’ exchanges were limited, griping about the EMR established commonalities and reinforced group membership. The EMR’s addition to the emergency room at Hospital H, thus, changed how providers interacted with each other, but, as described next, the EMR also changed how providers interacted with patients.

How the Electronic Medical Records System Affected Provider–Patient Interactions and Patients’ Satisfaction

The EMR’s introduction at Hospital H changed providers’ workflow and interaction habits, but the EMR also changed patients’ emergency room experiences. Although I was not present to witness pre-EMR provider–patient interactions, I did observe several providers—namely, nurses—using paper charts to expedite triage processes, which mimicked pre-EMR workflow patterns. Because I also observed nurses

using COWs when triaging patients, I compared the two processes—paper- versus COW-facilitated triage—and drew conclusions. Coupled with information obtained during in-depth interviews conducted with nurses, my observations revealed that the EMR affected negatively provider–patient interactions during triage by reducing eye contact between them and restricting their conversation to a prescribed range and sequence of topics. Moreover, because physicians and midlevel providers did not see nurses’ triage notes before they examined patients, physicians and midlevel providers repeated questions that nurses already had asked patients, and, thereby, forced patients to recount their complaints, medications, and medical histories. Additionally, results from Hospital H’s patient satisfaction questionnaires indicated that patients, generally, were displeased with providers’ communication. These issues are described below.

Triage is the brief interview and examination that is conducted by a healthcare provider—typically, a nurse—to determine the degree of urgency of a patient’s illness or injury. Given that triage is the first point of contact between providers and patients, triage sets the tone for patients’ emergency room experiences (Eisenberg et al., 2005). At Hospital H, nurses are responsible for triaging patients. After a patient signs in at the registration desk, he or she is brought into a small room that is adjacent to the emergency room, where a nurse, oftentimes with a COW (see Figure 5.4), begins the triage process by taking the patient’s temperature and vital signs. The nurse asks the patient questions, in a prescribed order, about the patient’s symptoms, medical history, and medications. If the nurse deems the patient’s condition to be “urgent,” the patient is brought into the emergency room. If the emergency room is busy and/or the patient is labeled as “nonurgent,” he or she is sent back to the waiting room until a bed becomes available.



Figure 5.4. Computer on Wheels. Nurses pushed computers on wheels (COWs) into the patient triage suite and, oftentimes, positioned the COW between themselves and patients, which impeded communication and limited eye contact.

I observed the triage process several times, and each time, I stood in the hall and watched through an open door as providers interacted with patients. Because I oftentimes could hear the patients, but I could not see them, my observations are limited to

providers' behaviors.¹⁵ On one occasion, I watched Nurse B push a COW into the triage room and position it between himself and the patient such that, from the patient's point of view, he or she would have seen the back of the COW. B asked about the patient's symptoms and typed the patient's answers, slowly, into the EMR. Although B nodded occasionally, his gaze remained fixed on the COW. Throughout the 5-minute encounter, I observed that B looked up and made eye contact, presumably, with the patient only 11 times. At one point, I heard the patient remark, "Oh, I forgot to tell you that I have asthma." B replied, "Wait, wait, wait. I have to go back to the history screen. Hold on." B clicked through a series of screens and returned to the medical history page, where he amended the patient's list of ailments. B then asked, "Did you forget anything else before we move on?" The patient said, "I've been taking prescription pain pills," to which B responded, "Nope, that's on a different page. We're not there yet, so hold on."

On another occasion, I observed an ambulance crew push a patient with chest pain into the triage room, where two nurses with COWs greeted the patient: one nurse began the triage process and the second nurse began chest pain protocols (e.g., administering aspirin and/or setting up for an EKG). As before, when I observed B triage a patient, both nurses positioned their COWs between themselves and the patient. The nurses spent most of their time engaged with or looking at their COWs. A short while later, the physician entered with his paper TSheet and asked the patient many of the same questions that the triage nurse had asked the patient a few minutes prior. The patient said, "I already told the nurse," to which the physician replied, "Well, I don't see the nurse's notes, so I need you to tell me what your symptoms are." After the physician left,

¹⁵To preserve patients' privacy, I did not record patients' names or symptoms in my fieldnotes.

a registration clerk wheeled her COW into the room and, like the nurses, she positioned it between herself and the patient. Within 10 minutes of arriving, the patient had seen the backs of three COWs and repeated his symptoms and medical history twice. I asked the triage nurse how she believed the patient regarded his emergency room stay up to that point, and she said, “Well, it *is* rude rolling in with a computer, typing and talking without even looking at the patient. Then, on top of that, he [the patient] has to repeat himself. He’s probably not too happy.”

All of the providers that I interviewed agreed that the EMR interfered with provider–patient relationships. Dr. F said, “Computers slow us down and put a barrier between us and the patients.” As Nurse B explained:

I feel that I’m not as connected to patients as I used to be. I can’t type without looking at the keyboard, and so it puts a barrier between me and the patient. I like to talk to people, eye-to-eye. Because I tend to use my COW all the time, there isn’t eye contact, and, to me, I find it’s rude. I’m busy looking at the little boxes I have to fill in, whereas if I were writing it down, it would be easy to look at them [patients]. It [the EMRs] limits the communication with patients.

During an interview at a medical conference, Dr. Ken Milne, Chief of Staff at South Huron Hospital in Ontario, Canada, said:

The EMR interferes with the doctor–patient relationship, certainly in the history and physical taking. We don’t do histories and physicals with our backs to the patient typing at a computer screen. If we do, we’re saying the computer screen is the most important thing. You make eye contact, you look up. If I have to actually remove myself to find a computer terminal to enter the data and then return to the patient, it creates breaks in the personal relationship and the therapeutic contact that would normally be there.

Nurse L concurred with Dr. Milne’s assessment of computers in examination rooms and explained that “the break in the personal relationship” with patients was why she stopped taking her COW into triage:

Instead of standing with my back to the patient and looking at the COW, I leave the COW outside. I walk in with the old paper triage form and I sit down. I look at the patient, at the patient's eye level, and we talk. Yes, it doubles my work, because I have to type up everything that I write, but I actually find that it makes triage go faster and the patient feels listened to. It sets the tone for a better overall experience.

When asked how using old paper forms expedited triage, especially given her admission that the paper forms doubled her workload, L replied:

Patients don't tell their stories organized according to the EMR screen. They bounce around, they add stuff, [and] they forget things. They're all over the place. With the paper, I can bounce around with them; with the computer, no. It took me longer having to stop the patient, click on another tab, wait for the page to load, and then resume documenting. I was constantly interrupting patients and asking them to wait. It was aggravating for me, and it took longer. When I'm frustrated, the patients can tell and they get frustrated, too.

I observed Nurse L, from the hallway, as she triaged a patient using paper forms. She maintained eye contact with the patient for most of the encounter, and compared with Nurse B's COW-facilitated triage, described previously, Nurse L completed triage more quickly. Several other nurses also reported that they found using the paper forms allowed them to make eye contact with patients and shortened the triage process. Nurse A said, "If I'm the patient, do I want to look at a computer or a person? I think patients feel cared about when it's just us, without the COWs." She added: "Plus, because the COW takes so much longer to use, I find that the longer I'm in the room, the more the patients say, and that means there's more for me to type. With paper, I get in and get out."

Several nurses mentioned that patients did not connect providers' use of COWs to healthcare delivery. For instance, as Nurse Y mentioned, "Patients think we're playing games or surfing the web. They think we're *not* working, so I try to show them the screen and say, 'No, that's your chart here, not some website.'" Patients' perceptions that COW use was not meaningful work, meant, oftentimes, that patients became upset during

triage, especially when they experienced long wait times. Nurse L explained that to combat the illusion “that we’re playing with computers,” she rarely sat down at work:

I stand up at the COW. I only sit with the patient, at the bedside. If we’re sitting in front of a computer, then we have time to check on patients, or that’s how they [patients] see it. They get upset because they look out here and see a bunch of nurses sitting down in front of computers. No wonder they think we’re not working! Unfortunately, they complain and our satisfaction numbers end up looking pretty bad.

Nurse J added that nurses’ performance reviews are based on patient satisfaction questionnaires, and that scores had deteriorated consistently since the EMR was installed: “Patients get frustrated because everything takes so much longer now. They can tell we’re frustrated with the EMRs, and it just feeds back on itself. Everybody’s frustrated.” Nurse B told J, “Well, don’t give surveys to pissed off patients! That’s your problem. I only give surveys to the happy ones.”

I reviewed a summary analysis of results from all of the patient satisfaction questionnaires that were administered in 2014, and the report indicated that patient satisfaction, overall, had declined over the course of that year. Although previous years’ summaries were unavailable to me, and, thus, I could not make comparisons or draw conclusions, Q assured me that “scores fell sharply after the EMR.” She pointed to length of stay metrics, which increased steadily over 2014, as the main reason that patients were dissatisfied.

As Nurse J pointed out, “Everything takes so much longer,” and, consequently, it appeared that patients were displeased. The average length of stay in January 2014 was 153 minutes, but, by December 2014, the average length of stay climbed to 186 minutes. In the same period, average “door-to-doc” times climbed from 17 minutes to 31 minutes, and patients’ satisfaction fell. Although the decline in patient satisfaction was slight,

from an overall satisfaction score of 84.6% to 78.5%, two key dimensions that measured patients' perceptions of providers' emotional support received "failing" scores. For the item, "If you had any anxieties or fears about your condition or treatment, did a doctor discuss them with you?" the average score was 60.8%. The same item measuring nurses' emotional support garnered a score of 56.3%. When asked how the scores affected providers, Q replied, "We don't like that patients aren't happy, plus, we catch shit from administration over it, and some people might be let go if scores don't improve."

In sum, COWs limited eye contact between nurses and patients during triage, and it forced their discussions to unfold in a prescribed order; patients who deviated from the prescribed order lengthened the triage process and frustrated providers. Providers who used paper triage forms instead of COWs doubled their workload, but shortened the triage process and increased their eye contact with patients. Physicians and midlevel providers repeated regularly questions that nurses had asked, which forced patients to recount their complaints, medications, and medical histories, which nurses believed contributed to patients' poor perceptions of emergency room communication. Results from Hospital H's patient satisfaction questionnaires indicated that patients' satisfaction declined from 84.6% to 78.5%. The EMR installation, as described in the next section, also led to other unexpected changes in provider–patient interactions.

Unintended and Perverse Consequences of Electronic Medical Records Systems

As discussed in chapter three, an *unintended consequence*, is "an outcome of an aggregate of acts . . . each of which is intentionally carried out. But the eventual outcome is neither intended nor desired by anyone" (Giddens, 1984, p. 10). Unintended consequences are a regular feature of institutionalized practice because "action

continually produces consequences which are unintended by actors” (Giddens, 1984, p. 27). Unintended consequences can “systemically feed back to be the unacknowledged conditions of further acts” (Giddens, 1984, p. 8), potentially creating an infinite cycle of unintended consequences. Many well-documented, unintended consequences that are associated with EMR adoptions include: increased waiting times, longer lengths of stays, decreased provider productivity, lower patient satisfaction scores, and employees’ reactance (see chapter two). Hospital H experienced these and other intended consequences.

The administrators and providers at Hospital H knew that their EMR adoption would trigger certain unintended consequences, such as those described above and in chapter two, but I observed that there were additional unintended—and unexpected—consequences associated with Hospital H’s EMR adoption, as well as *perverse consequences*, intended but contradictory acts that “are perverse in such a way that the very activity of pursuing an objective diminishes the possibility of reaching it” (Giddens, 1984, p. 313). For instance, metrics were intended to alleviate emergency room overcrowding by making patient care more efficient, but, instead, providers’ maladaptive strategies for coping with metrics (e.g., “gaming the system”) cheated the clock and added to healthcare costs, but they did not reduce overcrowding or patients’ lengths of stay (see the discussion of conflicting structures above and metrics below). Perverse outcomes are likely when agents are immobilized in “circumstances of structural contradiction” (Giddens, 1984, p. 317) and/or SD. Below, I describe six unintended consequences and/or perverse consequences related to EMR use that I observed at Hospital H: (a) patients’ truncated narratives, (b) billing issues that contributed to

declining revenue and staff redundancies, (c) EMR-enabled metrics tracking and surveillance, (d) older providers' difficulties adapting to EMR-induced workflow changes, (e) increased malpractice risk, and (f) wage theft.

Patients' Truncated Narratives

As described in chapter two, EMRs have affected how information is solicited from patients in such a way as to almost eliminate their illness stories altogether. For patients, "Stories are a way of making sense of an uncertain or chaotic set of circumstances and . . . enable control in the face of disorder" (Sharf et al., 2011, p. 38), but truncated storytelling increases patients' uncertainty and feelings of helplessness. Even before EMRs were used widely, Eisenberg et al. (2005) found that emergency room providers reduced patients' stories to "actionable lists" (p. 390) that prioritized physicians' goals, but that such lists, generally, "fail to capture the whole meaning" (Real & Poole, 2011, p. 110). EMRs in emergency rooms compounded the problem of truncated stories by limiting the amount of free text available for generating *either* lists *or* stories.

Eight of the nine physicians at Hospital H I interviewed believed that the EMR removed patients' narratives from electronic records, leaving, according to Dr. G., "numbers that, without a story or a timeline, don't mean diddly squat." During an interview, Dr. Viccellio, Clinical Professor and Vice Chair of Emergency Medicine at Stony Brook School of Medicine, explained how "context-lacking records" were emblematic of EMR-using hospitals:

If a patient complained about their [sic] care in the days of the paper charts, when we recorded what happened as a time sequence, you could pull the chart and there was a rich story of what happened, "The patient came in, there was the history and physical." Then you'd look at the nursing notes and it may say, "The patient

was angry, blah, blah, blah.” You would actually get a story. Now, we’re so busy checking boxes, there’s no more story associated with the patient. It’s very hard to reconstruct the sequence of events that happened with the patient. Chart reviewers incessantly complain about the difficulty of extracting information because you can’t recreate a story from boxes and numbers. You would think that an electronic medical record would make that a given, but, instead, it has created, sometimes, insurmountable obstacles.

Dr. F said that the lack of patients’ stories in electronic health records contributed to providers’ perceptions of those records being incomplete (see the earlier discussion in this chapter on appropriation moves), which, in turn, led providers to regard the records as “useless for anything but checking past lab results.” “Even then,” he added, “we usually can’t make much of the labs.” As Dr. F explained:

There won’t be a story explaining why the doc ordered the test, what he suspected, or how the patient responded to treatment. There isn’t a story, not even a paragraph that sums up what happened during the visit. Nothing. Numbers without a story can’t tell me anything. I’m just going to start from scratch and make sense of the story the patient is telling me today, right now, and what I click in the EMR won’t tell that story for the doc who sees the patient next week or next month.

Dr. Milne said that a patient’s “evolving narrative” was an important “communication tool” on which physicians in Canada relied:

When we hand off care from one physician to another, how do we handoff that care? We tell the narrative. “Here’s a 45-year-old-man who presents with a one-week history of upper respiratory track-like infections and symptoms that has been associated with exertional chest pain. I’m a bit concerned, so I got an ECG and a cardiac workup.” As opposed to, “Here’s the click box list.” A patient isn’t a checkbox. In America, you don’t have a choice. How well do those checkboxes tell the story? They don’t.

Q noted that the EMR-induced shift in the medical record from mostly narrative data to mostly numerical data was somewhat unexpected: “I knew the record would change, but not *this* much.” When asked how that change affected patient care at Hospital H, she replied:

It just means that every visit is new. The docs are going to repeat tests that might have been run last week or even last night, because they're not going to look at the record. They can't take the chance that they'll miss something and get sued, so they start fresh.

Q added that the providers' "start fresh" approach increased healthcare costs, but noted that Hospital H's billing department was unlikely to capture those increased charges.

Billing Issues

As noted in chapter two, one of the most common economic consequences associated with EMRs is higher healthcare costs (Fernando et al., 2009; Georgiou et al., 2013; Hoffmann, 2009; Kellermann & Jones, 2013; Ward et al., 2013). Increased laboratory and radiology tests, which are a result of predetermined CPOE order sets (see Ward et al., 2013), lead to increased healthcare costs, in part, because of better *charge capture* associated with EMRs: the recording, and later billing, of the full range of medical services, medical supplies used, and medications administered during patients' emergency room visits (Bukata, 2011, 2014). Dr. Viccellio, Clinical Professor and Vice Chair of Emergency Medicine at Stony Brook School of Medicine, told me that the point of EMRs was never "to improve documentation but to improve billing." As he said:

The first EMRs were designed strictly for financial reasons. The original message was: "These things improve billing, improve billing, improve billing." We've [at Stony Brook] increased our billing by 20%. That's what EMRs are designed for. They were clearly not designed for medical reasons.

As Q explained, administrators at Hospital H expected that billing would increase after they installed the EMR, but much to everyone's surprise, revenue fell sharply. The unexpected decline in revenue was blamed, in part, on incompatible software systems (e.g., the EMR did not generate billing codes in a format that the billing department's computers could read easily). Lost charges also were blamed on providers, who,

according to administrators, failed to capture adequately the breadth of services that they offered to patients. Nurse M told me that nurses received, routinely, memoranda that reminded them to record “billable procedures.” As he explained:

Things like urine tests can be billed for much more than it costs to perform, so urine tests are kind of encouraged. Checking patients’ vitals at least three times means the emergency room can bill for a higher level of care. These sorts of things get casually mentioned in memos or meetings. The problem is that a lot of the billables [billable items and procedures] aren’t getting billed because people [nurses] forget to click on the right box because they’re tired or in a rush.

Nurse Y explained that capturing charges were easier when nurses used paper charts:

It was easier to capture charges on paper because there was a visual reminder right in front of you to check the box if you did the exam. It’s not as obvious with the computer; you have to click through multiple screens and sometimes things or procedures get missed or overlooked. It might have been done, but it didn’t get documented.

As described in chapter three, Hospital H’s falling revenue was associated with administrators’ decision to sever ties with Company S and to manage billing and collections in-house. The EMR exacerbated what Q described as “sloppy billing by people who don’t know what they’re doing.” Q volunteered to meet with the billing department and to share what she knew about Company S’s billing strategies, but she was rebuked. She said, “Under [Company] S, we billed \$600,000 a month. I could get us close to that, but no one listens. The EMR, unless they [administrators] fix it, won’t let us get back to that but we could get close.” In late 2014, upon hearing rumors that the electronic TSheets would worsen the EMR–billing department incompatibility issues, Q claimed that she “kicked avoidance [strategy] into high gear” to escape additional “staff cuts and layoffs.” She added, “If we lose any more money, I’m not sure how we’ll manage. I heard the hospital might even close.”

In January 2015, Q lamented that, despite increased patient volume, a result of television, radio, and print advertisements that were meant to stimulate the emergency room's revenue, the emergency room, in fact, was "still hemorrhaging money." Monthly revenue had fallen below \$100,000, which did not cover physicians' salaries. Q met with administrators several times to address the EMR–billing department incompatibility, but she told me that she was admonished by administrators, who decided the problem "was with lazy nurses and docs who didn't chart thoroughly enough." Administrators' solutions included cutting nurses' pay further, eliminating Christmas bonuses, scaling back paid time off, limiting overtime pay, capping salaries, cutting technicians' hours, and reducing nursing coverage at night. Nurse B, who worked night shifts, described the cuts:

They [administrators] scaled back at night to save money, so that puts even more work on the nurses. Since they cut the techs' hours, now, in addition to patient care, nurses are answering phones, taking patients to X-ray, and up to the floor. We should have four nurses, but usually it's just three. We're already understaffed and they reduce nursing on top of that? It doesn't make sense. If it slows us down, then we can't move patients quickly. That means patients are sitting in the waiting room and some of them, eventually, decide to go somewhere else. Then we've just lost a customer, so efforts to save money end up costing us money.

The EMR also led to staff redundancies (e.g., physicians entered orders using the CPOE, whereas, previously, unit secretaries and technicians processed paper order sets), and because of falling revenue, which triggered cost-cutting measures, unit secretaries and technicians became dispensable. When asked about unit secretaries' duties after the EMR installation, a physician replied, "I'm not really sure since we do the orders ourselves now. I think maybe they page the consulting docs."

Unit secretaries' hours were reduced and, increasingly, technicians absorbed many of the unit secretaries' duties. As of May 2015, only technicians remained. When asked about staff reductions, Nurse B commented that he and the other "senior nurses" were worried:

They [administrators] are always going to need nurses, but I am concerned because I'm at salary cap. I am one of the more experienced and expensive nurses. If they can find a way to get rid of the more expensive nurses and bring in two new graduates, who are a lot cheaper than I am, then I think that may be their next move. I'm seriously questioning my long-term future here.

Physicians and midlevel providers also were "gently reminded" in memoranda to document thoroughly billable tests and procedures that they performed. Administrators decided that a profit-sharing plan might improve physicians' and midlevel providers' compliance with billing strategies. As Q explained, "I wouldn't call it a commission but they [physicians and midlevel providers] are incentivized to run the bill up." Dr. E, however, said that profit-sharing was irrelevant because physicians

do our jobs regardless and we have no idea how much a certain test costs. I'm not changing how I practice medicine because I might now suddenly get a \$5 commission on that urine pregnancy test. It's a little offensive to me that administrators think I'll chase that carrot.

Dr. O further explained that emergency medicine physicians "don't chase carrots; they run from sticks"; in other words, physicians ordered additional tests to avoid metrics-related reprimands, which are described next.

Metrics and Surveillance

Described previously (see the discussion on SD), *metrics* are time-based performance measures that are instituted and monitored by CMS. The EMR at Hospital H tracked metrics on every physician, midlevel provider, and nurse, which, according to Dr. O, meant that "we get watched every second of our shifts." According to Giddens

(1984), surveillance is common when “superordinates have an interest in harnessing the activities of those subject to their authority to the enactment of designated tasks” (p. 157). Because CMS could cut Hospital H’s Medicare and Medicaid reimbursement if providers did not meet metrics goals, Hospital H’s administrators attempted “to coax a certain level of performance from workers” (Giddens, p. 157), by instituting surveillance tactics that recorded metrics violations each day. As Dr. O explained:

We get an e-mail every day that shows your numbers. At the end of the month, if your numbers are out of whack or too far from the average, you get called on it. They’re really hot on door-to-doc times. The goal is 30 minutes, but, for January [2015], our average was 43 [minutes]. All I know is one day, the average was 67 minutes and that guy’s not on the February schedule. My advice: don’t go to the bathroom, because if a new patient shows up, you won’t be there to click on it.

Gaming the system (e.g., ordering inconsequential and/or unnecessary laboratory tests) enabled providers to meet metrics goals by stopping artificially the clock on door-to-doc times. Q encouraged physicians to “get creative” and game the system by “seeing patients in triage and in the waiting room.” A midlevel provider, V, explained that gaming the system was “institutional practice”:

We’re all playing the system and the real focus gets lost. We should be focused on patients’ well-being; instead, we’re strategizing which test to order so that administration doesn’t catch on. Come on, do they [administrators] really think all those patients needed their blood sugar checked? Not everybody needs a UPT [urine pregnancy test]. At what point does it cross over from gaming the system to committing fraud? CMS set this up, but if we don’t comply, we lose CMS money. We’re playing along, but, someday, someone is going to get accused of frauding CMS. It’s a vicious cycle.

Dr. F commented that both providers and patients were “better off” before the use of metrics that were intended to ensure faster and more efficient healthcare. He added, “EMRs just make it worse; without EMRs, metrics wouldn’t be an issue.” Moreover, providers believed that metrics, which failed to improve patient outcomes, contributed to

providers' dissatisfaction, burnout, and impotent agency. Thus, EMR-enabled metrics led to a perverse outcome, which, according to Giddens (1984), "are likely to generate resentment . . . and things are worse than they were before in circumstances in which all or the majority of those involved could expect them to be better" (p. 317).

Following the EMR adoption at Hospital H, administrators instituted strict metrics surveillance and enforcement policies, which, for providers, were unexpected. This unintended, and, seemingly, perverse consequence of the EMR adoption contributed to providers' dissatisfaction and immobilization, and it worsened SD-nexus conditions (see the SD discussion earlier in this chapter). Moreover, as described next, the EMR adoption also affected some providers' employment at Hospital H.

Providers' Ages and Implications for Electronic Medical Records Systems Use

After the EMR installation at Hospital H, Nurse M told me that the nurses started a betting pool on "which of the old docs would go or be let go." Nurses also bet on physicians' metrics, and, according to Nurse Y, "the older docs always have the worst numbers." Nurse J explained that poor metrics, primarily, was "an older doc problem, [because] younger docs grew up using computers, but the old ones can't even see the tabs or type very well." Dr. O, who, at age 30, was the youngest physician at Hospital H, agreed with Nurse J's assessment and replied, "All of those old docs are all paper, all the way." Several nurses pointed out that, in addition to poor metrics, older physicians dumped orders regularly and played up hierarchical differences, but as Nurse M observed, those physicians "will age out in 5–10 years, and then we won't have to worry about it." Nurse Y added, "Or they'll get canned, like Dr. W."

Although the nurses assumed that Dr. W was “canned” because he dumped orders on them, one of the physicians explained to me that Dr. W’s firing was because he was too old to work the EMR. The physician, who asked not to be identified, said that Dr. W

was an old-fashioned emergency physician and he had a preset way of doing things. He was pushing 70 [years of age] and trained when docs had dictation and secretaries. The man didn’t know how to type. He didn’t even have e-mail! He was horrible with the EMR, truly horrible. Nurses *had* to put all his orders in for him because he literally couldn’t do it. His metrics were crap, because he didn’t know how to game it. If we had had electronic TSheets back then, he would have fallen apart. I hate to say it, but he was asked to leave because he was basically too old to function. Medically, he was spot on, but he couldn’t work the computer.

The physician lamented that, oftentimes, he, too, saw himself as becoming outdated in an emergency room that, increasingly, was reliant on “doodads and gizmos.” As he explained:

I’m almost 60 years old and I have no idea what these nurses and residents are talking about. They go on Twitter, they’re texting people on their phones, or they have apps to look up doses and side effects. I still look stuff up in books and they laugh at me. I guess I’ll be the next one let go.

Most of the physicians in their 50s expressed similar concerns that they would become outdated, but the physicians in their 40s were secure in their ability to adapt to new technologies. As Dr. F, one of those 40 year olds, explained, “I’m young enough to cope, but the older docs do struggle a bit.”

I reached out to Dr. W and asked him why he no longer worked at Hospital H. He said that although he was not fired, the decision to leave was not entirely his. When asked if the EMR factored into the decision, he replied, “Well, the EMR wasn’t my choice. I’d still be there if they didn’t have it.” When asked if he believed that his age was a contributing factor that led to the dissolution of his professional affiliation with Hospital H, he replied, “Officially, no, but I’m sure it was a factor. I was the oldest doc

there.” He mentioned that he still worked in a handful of emergency rooms and urgent care centers that used paper charts to document patient care.

Dr. Milne said that the trend in Canada was for older physicians to gravitate away from EMR-using facilities and to urgent care centers:

As urban centers are adopting EMRs, the physicians in those centers seem to have the lowest satisfaction. Unfortunately, it seems the older physicians are suffering the most in this transition. They’re being shifted into lower acuity facilities or urgent care clinics. There is clearly a generational divide with regards to adaptation to this technology.

In sum, an older physician’s inability to adapt to EMR-induced changes in workflow and documentation patterns led to his departure from Hospital H. Other older physicians questioned their longevity and ability to adapt to new technologies, whereas younger physicians were confident that they would adapt their practice habits as new technologies dictated. Next, I describe an unintended consequence of EMR adoption that affected all providers, irrespective of their ages: increased malpractice risk.

Increased Malpractice Risk

In 2003, a malpractice case, *Breeden v. Anesthesia West*, found that physicians were responsible for information contained in electronic health records, regardless of who entered the data, and, moreover, that nurses were not culpable for damages if they documented, but did not verbalize, pertinent findings in cases that resulted in medical malpractice (Reyes, 2014). In the Breeden case, according to Reyes (2014), a nurse documented that a patient’s condition had deteriorated in the hours after a preoperative medical screening examination, but the anesthesiologist did not read the nurse’s update. Relying on results from the earlier preoperative examination, the anesthesiologist proceeded with the scheduled procedure and the patient died from complications.

Five of the physicians at Hospital H cited the Breeden case and pointed to a similarity in the Dallas Ebola case involving Thomas Duncan: nurses documented—but did not verbalize—Mr. Duncan’s travel history. Additionally, nurses’ electronic notes were part of an EMR component that physicians could not access. As Dr. E noted:

In both cases, you have a nurse entering something in the record but not telling the physician. In Breeden, the physician was liable. Mark my words, the same thing is going to happen in Dallas. That doctor is getting sued by somebody. I wouldn’t be surprised if it happens here, eventually.

Dr. Viccellio explained that EMRs were “a field day for plaintiffs’ lawyers” for several reasons:

The biggest part of it is because of the checkbox thing. You come in because of a sprained ankle and I go “check, check, check” and now the lawyer is saying, “Why did you do a pelvic exam on this patient? Why did you do a fundoscopic exam¹⁶ for a sprained ankle?” “Well, you know, I checked those boxes by accident.” “Well if you did that by accident, is the rest of the chart an accident? What’s real here and what’s not?” It’s very easy for lawyers to demonstrate to a jury that a lot of what’s in that record is garbage. “If some of it’s garbage, then how am I to believe anything else that you write there? You claim that this is normal, but you also claim that this pelvic exam is normal and you didn’t even do a pelvic exam.”

Dr. Viccellio noted that boxes “checked by accident” were commonplace:

If I look at any record in my department, I can easily identify stuff that’s in that chart that clearly nobody did, but they checked off. Maybe by mistake, someone was in a hurry. This is where medically, legally, I think we’re digging a deep hole for ourselves.

Several physicians at Hospital H complained that they were liable not only for nurses’ additions to electronic health records and boxes “checked by accident” but also for EMR design errors that resulted in medical malpractice. For example, Dr. A showed me a tip sheet distributed by his malpractice insurance carrier that read, in part, “The

¹⁶A fundoscopic exam is an eye exam that gauges the integrity of the retina and iris.

provider is the covered entity responsible for maintaining the integrity of the patient's electronic record, not the [EMR] vendor." Dr. A said:

The bottom line is that if one of these glitches or bugs that mixes up which patient is allergic to which medication leads me to administer medication to a patient who then has an allergic reaction, I'll be sued, but not the company that made the faulty product.

When asked if there had been any malpractice claims made against any of the providers at Hospital H that, in any way, were connected to the EMR, Dr. A replied, "Not yet but it's a real worry. It adds to my stress level and I know a lot of the other physicians worry about it, too." All of the physicians agreed that the EMRs increased malpractice risk and, subsequently, their fear of being sued. As Dr. G noted, "I don't think EMRs were designed for the benefit of lawyers but it's turned out that way. I don't think anyone envisioned that these [EMRs] would become doctor traps."

Wage Theft

The last unintended consequence that resulted from Hospital H's EMR installation was *wage theft*, uncompensated work and/or documentation completed by providers before and/or after their scheduled shifts. I first observed instances of what providers dubbed wage theft in late 2013, when nurses arrived several minutes before their scheduled shifts to set up their COWs. When asked if nurses were paid for their time, Nurse A replied:

No, we don't get paid until the shift actually starts but we have to be ready to see patients the minute the shift starts, or we get written up for slow times or taking too long, so we have to set up early. I wish we were paid extra because this [setting up the COW] is a necessary component of our jobs.

Whereas nurses came early, physicians, generally, stayed late. Seven of the nine physicians interviewed reported that they stayed, on average, 1–2 hours after each shift to

finish documenting patient care that they were unable to complete during their shifts. Dr. E explained that physicians had little choice because “incomplete charts” could result in physicians having their salaries withheld “until all their charts were current.” Dr. A added that wage theft may not happen every shift but it happens often enough that I do feel cheated. Keep in mind that I’m already working a 12-hour shift and I don’t get any breaks, so, after a half-hour drive to get here, a 12-hour workday, an extra hour, unpaid, and a half-hour commute home, I’m looking at a 14-hour day. It’s exhausting. Would I like to be paid for that extra hour? Why not? I did the work!

Midlevel providers, usually, dedicated the last hour of their shifts to completing documentation, and, thus, they avoided wage theft. X, a midlevel provider, explained that midlevel providers’ shifts overlapped with physicians’ shifts, and, as he noted, that meant “midlevels are not the only ones seeing patients, so we *can* hand off care.” He added:

We usually work noon to midnight, and there’s always a doc here, so we [midlevel providers] can stop seeing patients and start catching up on charting. The docs can’t really do that, especially the night doc, because there is no one else here to see patients when his shift winds down. He sees patients right up to 7:00 a.m. He can’t stop and catch up until the day-time doc comes on.

As the EMR adoption process wore on and physicians’ documentation burdens grew, in part, because of increased patient volume that was fueled by advertisements, physicians became more incensed at the wage theft that they experienced. Dr. A complained that once the electronic TSheet was installed, their documentation times would fall ever further, meaning that physicians would spend “even more unpaid time catching up.” Dr. F and Q acknowledged that the electronic TSheets would add to

documentation times, which was one of the reasons that they were fighting actively against electronic TSheets.

In September 2014, a physician from Hospital H emailed me an article that he read in *The New York Times*, entitled “More Workers are Claiming ‘Wage Theft,’” in which Greenhouse (2014) described a lawsuit in California “that accused employers of violating minimum wage and overtime laws, erasing work hours and wrongfully taking employees’ tips” (para. 4). Greenhouse also wrote about an appeals court ruling that found “FedEx had in effect committed wage theft by insisting that its drivers were independent contractors rather than employees . . . [but] did not pay them overtime, which is required only for employees” (para. 7).

I shared the article with the other physicians at Hospital H and asked for their feedback. Dr. G and Dr. A pointed out that they, like the FedEx drivers mentioned in the article, were independent contractors, and, consequently, they were not entitled to overtime pay, paid leave, or benefits. Dr. E wrote a note and left it for me in the emergency room. In part, the note read:

I have personally been a victim of this [wage theft]. With these crappy EMRs, along with greater expectations of patients seen per hour, the “move the flesh policies” or you lose your job, I, and many others, have spent many countless hours doing charting after the shift (and reimbursement) have ended. The only way these corporations can bill on this is with the extensive, nonmedical “pencil-pushing” physicians must now put in the charts, and it can no longer be completed in a normal 12-hour shift. I’m all for an EMR that facilitates my work. I use them at other facilities, but Paragon is not a good EMR. This is a bad system that is bad for patients and bad for providers.

In sum, the EMR adoption at Hospital H resulted in several unintended consequences. Patients’ narratives were truncated by a checkbox-laden system that diminished context in electronic records, which contributed to providers’ perceptions that

electronic records were incomplete and of limited value. Hospital H experienced a decline in revenue, in part, because the EMR was not compatible with the billing department's computer system, and, consequently, charges were not captured consistently. The decline in billing set off a series of events, each with a series of consequences: to stimulate patient volume and revenue, an advertising campaign promised short wait times, which contributed to increased patient volume, but prior staffing reductions, necessary because of poor revenue, contributed to increased patients' lengths of stay and longer door-to-doc times, which, in turn, led to violations in providers' metrics and patients' dissatisfaction. Metrics and EMR-enabled surveillance policies, consequently, led to sanctions and contributed to providers' dissatisfaction and immobilization, which worsened SD-nexus conditions. An older physician left Hospital H because he was unable to adapt to EMR-induced workflow and documentation changes. EMR use increased providers' perceptions of their malpractice risk, which added to their workplace stress. Increased documentation time after the EMR installation meant that many providers completed documentation tasks after their shifts ended, which led them to complain of wage theft. Although some consequences, such as changes in billing and metrics-induced surveillance, were not altogether unexpected by providers, for many providers, the ramifications of the EMR (discussed in the next chapter) were more dire than anticipated.

Conclusion

This chapter presented data derived from fieldwork, in-depth interviews, and document analysis, as well as questionnaire data, that attested to structural changes experienced by providers who worked in the emergency room at Hospital H during and

after the installation of an electronic medical records system. Findings were grouped into seven major themes: (a) electronic medical records system training for providers, (b) appropriation moves, (c) structural divergence, (d) providers' strategies for coping with the electronic medical records system, (e) communication between providers, (f) how electronic medical records system affected patients' experiences, and (g) unintended consequences.

Formal electronic medical records system training sessions triggered dissonance and reactance in physicians. Hierarchically imbalanced relationships exacerbated role-reversal tensions for physicians during formal training sessions, but not during informal training episodes; instead, nurses and midlevel providers reported that they experienced feelings associated with dissonance when they trained physicians in the emergency room. Peer-to-peer training delayed patient care and aggravated tensions among providers. Moreover, poor practice habits were passed on in peer-to-peer sessions, which diminished users' satisfaction with many of the electronic medical records system's features.

A microanalysis of speech acts that accompanied providers' appropriation moves indicated that providers' attitudes about the electronic medical records system were negative. Providers' relating moves, which compared the electronic medical records system with other structures, revealed that the electronic medical records system changed workflow patterns, lengthened documentation time, doubled work for some providers, and changed how providers thought about and/or planned patient care. Four themes surfaced in providers' constraining and judging moves: (a) the electronic medical records system changed workflow patterns (e.g., longer documentation times, duplicated effort,

delayed work, and interrupted train of thought); (b) providers viewed the medical record as being incomplete; (c) the electronic medical records system's spirit, largely, was incoherent because of poorly designed features (e.g., multiple tabs, small text, and numerous password prompts); and (d) the electronic medical records system's performance was problematic because of hardware and software issues that, in some instances, increased the risk of medication errors.

Structurational divergence existed in Hospital H's emergency room as evidenced by the presence of conflicting external and internal structures (i.e., government policies, mandates, and legislation, as well as hospital policies), which contributed to providers' immobilization; providers' dissatisfaction and burnout; "us" versus "them" language, which intensified ineffective and hostile communication patterns among providers; negative communication spirals between providers and administrators; and providers' diminished agency. Providers' attempts at regaining lost agency contributed to the structurational divergence nexus-cycle escalation.

Providers developed and/or employed several strategies to cope with workflow changes that were brought on by the electronic medical records system. Order dumping aggravated hierarchical tensions among providers and fueled structurational divergence cycle development. Providers considered employing scribes, a common workaround adopted in other hospitals, but they abandoned that plan because of reported difficulties (e.g., documentation errors) associated with scribe support. Avoidance tactics were employed by the emergency room management, which delayed installation of the electronic TSheet component of the electronic medical records system.

The electronic medical records system also changed providers' communication patterns. Providers reported that they talked with their coworkers less, spent less time discussing patient care face-to-face, and, generally, talked about fewer topics, compared to the time before the system was employed. Providers revealed that although they talked less, overall, they spent more time clarifying orders compared with when they used paper order sets. After the electronic medical records system was installed, nurses worked in one area, whereas physicians and midlevel providers worked in another area; the physical separation meant that fewer verbal orders and updates were shared among providers, who were out of sight of one another. Providers reported that they spent time complaining about the electronic medical records system, which strengthened their relational bonds.

Patients were affected substantially by electronic medical records system as well. Computers on wheels limited eye contact between nurses and patients during triage, which, from nurses' perspectives, affected negatively patient–nurse relationships. Physicians and midlevel providers repeated regularly questions that nurses had asked, which forced patients to repeat their answers. Results from Hospital H's questionnaires indicated that patients' satisfaction declined in the first full year following the electronic medical records system installation, and, during the same period, that patients' length of stay and time spent waiting to see physicians increased.

Six unintended consequences and/or perverse consequences related to electronic medical records system use were observed at Hospital H: (a) patients' truncated narratives, (b) billing issues that contributed to declining revenue and staff redundancies, (c) EMR-enabled metrics tracking and surveillance, (d) older providers' difficulties adapting to EMR-induced workflow changes, (e) increased malpractice risk, and (f) wage

theft. Patients' stories were condensed or eliminated by the electronic medical records system, which contributed to providers' perceptions that electronic records were incomplete. The electronic medical records system contributed to a decline in revenue at Hospital H, which led to staffing and salary cuts. Metrics and EMR-enabled surveillance policies contributed to providers' dissatisfaction. An older physician left Hospital H because he was unable to adapt to electronic medical records system-induced workflow changes. The electronic medical records system increased providers' perceptions of their malpractice risk. Increased documentation time linked to the electronic medical records system forced many providers to complete documentation tasks after their shifts ended, which led to complaints of wage theft.

In closing, as the results presented in this chapter show, there were important effects that resulted from the introduction of an electronic medical records system into this hospital. The more general conceptual/theoretical and application implications of these findings are discussed in the next chapter.

CHAPTER SIX: DISCUSSION

This chapter begins with a discussion of the research goals for this study, followed by a review of the research questions that were posed, the major findings that addressed those research questions, and a discussion detailing how the findings contribute to the scholarly literature about electronic medical records systems (EMRs) and emergency rooms. The implications of the study then are addressed, starting with a discussion of the study's conceptual/theoretical implications for structuration theory, adaptive structuration theory (AST), and structurational divergence (SD) theory. The chapter concludes by identifying some methodological and practical implications of the findings, followed by a discussion of some limitations that characterized this study and directions for future research.

Research Goals

The purpose of this research was to extend communication scholarship conducted on the effects of EMRs on healthcare providers working in a community hospital-based emergency room. More specifically, this study sought to accomplish three goals. First, the study sought to enhance scholarly understanding of communication in emergency rooms by examining the effects of EMRs on providers' social interactions and system reproduction. Second, the study employed ethnographic methods in an understudied environment (i.e., a community hospital's emergency room), because, "despite its applicability and value," there has been "little [such] research in the emergency medicine care field" (Cooper & Endacott, 2007, p. 818). Ethnographic methods, in particular, which are "designed to account for action and interaction in real contexts," are uniquely situated "to explain how emergency clinicians manage workflow" (Nugus et al., 2011, p.

1046), and, therefore, those methods can, in comparison to large-scale survey methods, produce “deeper understanding of emergency medicine as a social practice” (Paltved & Musaeus, 2012, p. 773). Third, because health communication research “often lacks theoretical underpinnings” (Nazione et al., 2013, p. 22), this study tested the relevance of structuration theory and its derivatives for explaining an EMR’s influence on providers in an emergency room setting.

To accomplish these aims, I spent 162 hours over 18 months in a community hospital (Hospital H) emergency room, collecting data through participant observation, in-depth interviews, document analysis, and a questionnaire. The study was conducted in line with Giddens’s (1984) three guidelines for social-scientific research. Giddens’s first caveat was that “social science research has a necessary cultural, ethnographic or ‘anthropological’ aspect to it,” which requires researchers “getting to know what actors already know, and have to know, to ‘go on’ in the daily activities of social life” and, then, describing “the frames of meaning within which actors orient their conduct” (p. 284). Resulting social analysis should be “written with the aim of describing a given cultural *milieu* to others who are unfamiliar with it,” and it should make use of thick description, especially in “research . . . of a more ethnographic kind” (Giddens, p. 285); hence, this analysis provided ample thick description of the structuration processes enacted at the hospital that was studied. Second, because Giddens believed that social research should “be sensitive to the complex skills which actors have in co-ordinating the contexts of their day-to-day behavior” (p. 285), I was attentive to providers’ authoritative resources and power. Third, researchers, according to Giddens, should be “sensitive to the time–space constitution of social life,” which means studying not only actors’ social

interactions but also “the contextual features of locales through which actors move in their daily path” (p. 286), which is why participant observation was employed “to study medical work *in situ*” (Paltved & Musaeus, 2012, p. 773), in addition to other data-collection methods.

Barley (1986) extended Giddens’s (1984) axioms and recommended that researchers studying technology adoption should conduct longitudinal analyses of ways in which users incorporate technology into their daily lives, but he cautioned that “it becomes unsound practice to lump together organizations with radically different institutional histories and ecological milieu” (p. 81). Because technology adoption, inevitably, “reflects the situational context, it is quite likely that identical technologies used in similar contexts can occasion different structures” (Barley, p. 81). Although numerous studies have examined communication technology adoption in academic medical center-based emergency rooms (e.g., Callen et al., 2013; Eisenberg et al., 2005; Farhan et al., 2012; Hill et al., 2013; Kessler et al., 2012; McCarthy et al., 2012, 2013; Morgan et al., 2011; Park et al., 2012; Rhodes et al., 2003; Stephens et al., 2012; Ward et al., 2013; Wei et al., 2012), those findings are not generalizable to community hospital emergency rooms because, as described in chapter one, there are major differences between academic medical centers and community hospitals, such as academic medical centers employing both physicians and medical residents, which lowers the physician–patient ratio, and having specialty and subspecialty consultants available 24 hours a day, whereas community hospitals have fewer physicians on staff and, generally, very limited specialty support. Although the only naturalistic “before, during, and after” analysis of an emergency room’s EMR adoption is valuable (Park et al., 2012), the findings from

that study are applicable only to academic medical centers, and, therefore, they are not generalizable to the majority of emergency room settings. Hence, in keeping with Barley's advice, I have not "lumped together organizations" (p. 81) by using findings from studies to explain EMR-induced structural changes that I observed at the hospital studied but, instead, I conducted a study that contributes to scholarly understanding of EMR adoption in a community hospital emergency room setting.

In sum, this study set out to accomplish three things: (a) enhance scholarly understanding of EMR-induced changes in a community hospital emergency room, (b) contribute an ethnographic study to the emergency room literature, and (c) test the relevance of structuration theory and its derivatives for explaining the effects of an EMR adoption. I tried to be sensitive to the skills that agents used as they coordinated their day-to-day behavior and to what Giddens (1984) called "the time-space constitution of social life" (p. 286), which meant studying both agents' interactions and the locale that housed those interactions. I, thus, conducted a longitudinal analysis of an EMR adoption in a community hospital emergency room to produce a document rich with thick description. To address the broader goals of this study, I posed four research questions (see chapter three), with the next section summarizing the study's major findings with regard to those research questions.

Summary of Major Findings that Addressed the Research Questions and Contributed to the Scholarly Literature

My preliminary research and my reading of structuration theory and its derivatives (see chapter three) led to posing four research questions for this study: (a) How do EMRs influence social interactions among providers working in the emergency room at Hospital H? (b) How does the EMR impact structures, agents, and systems in the

emergency room at Hospital H? (c) What, if any, unintended consequences emerge during and after EMR adoption at Hospital H? and (d) Do providers working in the emergency room at Hospital H experience SD? To answer these questions, findings culled from participant observational fieldwork, in-depth interviews, document analysis, and questionnaire data were grouped into seven major themes: (a) EMR training for providers; (b) providers' appropriation moves; (c) SD, which included immobilization and negative communication spirals; (d) providers' strategies for coping with the EMR; (e) changes to providers' communication patterns, (f) how the EMR affected provider--patient interactions and patients' experiences; and (g) unintended consequences associated with the EMR. In answering each of the research questions, the themes are revisited in the sections below.

Findings for Research Question One: Electronic Medical Records Systems and Providers' Social Interactions

Findings from themes (a) and (e) answer the question, "How do EMRs influence social interactions among providers working in the emergency room at Hospital H?" In line with other studies (Brooks & Grotz, 2010; Granlien & Hertzum, 2012; Top & Gider, 2011), formal EMR training ignited dissonance and reactance in physicians, and, moreover, it hindered their learning (see, e.g., Robinson et al., 2003). Hierarchical tensions also were aroused in formal EMR training, as Nambisan et al. (2013) found, but, in the present study, those tensions were exacerbated when physicians' trainers were nonmedical, information technology (IT) department staff members as opposed to nurses or midlevel providers. Interactions between physicians and IT staff, largely, were ineffective and negative, but physicians' reliance on nurses and midlevel providers who were designated as "super-users" also was problematic because their exchanges created

role-reversal tensions for super-users. Given results from earlier studies, role-reversal tensions were expected to aggravate dissonance in physicians (see Nambisan et al. 2013; Robinson et al., 2003), but, instead, nurses and midlevel providers were more likely to report dissonance when they trained physicians than were the physicians being trained. The unease that super-users felt, in many instances, impeded communication between them and physicians. No study to date, that I am aware of, has identified training-induced cognitive dissonance in nurses and midlevel providers, pursuant to their training physicians. This is an important finding, because identifying and eliminating sources of dissonance, which manifest as resentment, anger, unease, annoyance, frustration, and/or discomfort (Sweeny et al., 2000) and which contribute to nurses and midlevel providers feeling dissatisfied in their work, can lower providers' risk of burnout.

In accordance with studies conducted by Hill et al. (2013) and Park et al. (2012), EMR adoption was found to limit providers' face-to-face interactions. Although providers at Hospital H, by their accounts, spoke less, they spent more time clarifying orders after, as compared to before, the EMR and CPOE components were installed. Although this finding seemed contradictory, providers did speak less overall after those technologies were installed, and much of what they did discuss involved clarifying CPOE orders that nurses found confusing. The result, according to providers, was that they spent less time with patients, which, in turn, delayed patient care. This finding corroborates research that suggests EMRs decrease the time that providers spend with patients (Hill et al., 2013; Park et al., 2012; Person et al., 2013).

Similar to the EMR that was used at the Texas Health Presbyterian Hospital where the Dallas Ebola case unfolded (see chapter one), the EMR at Hospital H divided physicians' and nurses' notes into separate programs (see, e.g., Frazao, 2014; Giblom & Chen, 2014; Jones, 2014). Many providers at Hospital H indicated that the separate workflows made them feel isolated from one another's clinical work and decision making, and, consequently, providers reported that they felt less like members of a team. Additionally, in line with other findings (see Hill et al., 2013; Park et al., 2012; Person et al., 2013), the EMR abolished paper charts, which, previously, stimulated interactions among providers as they shared charts in common work areas. After the EMR installation, providers' designated EMR workstations isolated nurses from both midlevel providers and physicians, which, consequently, reduced further providers' face-to-face encounters (see, e.g., Hill et al., 2013; Park et al., 2012; Person et al., 2013). Fewer interactions led to dropped orders, and they increased the likelihood of medical mistakes occurring. Both dropped orders and medical mistakes were uncovered when studying providers' appropriation moves, described next.

Findings for Research Question Two: Electronic Medical Records Systems and Structuration

Findings linked to themes (b) and (f) helped to answer the question, "How does the EMR impact structures, agents, and systems in the emergency room at Hospital H?" This study of providers' appropriation moves showed that the EMR was an allocative resource (i.e., tool) that providers used and talked about regularly, and, thereby, made the EMR part of Hospital H's social context and system (i.e., the patterning of social relations across time and space). Microanalysis of providers' speech acts, however, showed that the EMR was perceived negatively, which corroborates findings that EMRs,

generally, are not well liked by providers (see Fernando, Georgiou, Holdgate, & Westbrook, 2009; Feufel, Robinson, & Shalin, 2011; Francis, 2013; Georgiou et al., 2013; Lee, Kuo, & Goodwin, 2013; Makam et al., 2013; Ward et al., 2013).

Relating moves showed that the EMR changed, fundamentally, structures at Hospital H in several ways. The EMR altered workflow patterns (e.g., increased workload and documentation tasks), changed providers' thought processes (e.g., interrupted their train of thought and/or reorganized their mental checklists for examination procedures), and changed providers' perceptions of the completeness of medical records. Nurses, when compared with physicians, found electronic health records to be more complete than paper records, and, generally, nurses were more accepting of the EMR, which supports other findings (see Lærum, Karlsen, & Faxvagg, 2004; Likourezos et al., 2004; Otieno, Toyama, Asonuma, Kanai-Pak, & Naitoh, 2007; Weiner et al., 1999).

Providers' constraining moves revealed that the EMR inhibited their agency; mainly, by limiting the time that providers could spend with patients. Whereas relating moves indicted that changes in workflow patterns occurred, constraining moves showed that providers regarded the workflow changes negatively. In line with Park et al.'s (2012) findings, the EMR duplicated workflow (e.g., multiple providers documented the same thing in separate portions of the health record), led to delayed work, interrupted providers' cognitive processes (e.g., train of thought), increased documentation time, and doubled work for providers who relied on paper notes as memory aids. Moreover, the EMR's incoherent spirit meant that software glitches dropped orders frequently, which increased the likelihood of mistakes occurring. In line with many of the EMR studies

that were reviewed in chapter two (see Fernando et al., 2009; Feufel al., 2011; Georgiou et al., 2013; Ward et al., 2013), the EMR's effects in this study, largely, were negative.

Patients, who, like providers, are agents in emergency rooms, also appeared to be affected adversely by the EMR. For instance, nurses who used computers on wheels (COWs) during triage looked at patients less than did nurses who used the old paper triage forms. COWs were a physical barrier between nurses and patients, and, as Pearce et al. (2013) observed, the EMR forced patient-provider interactions to unfold in a prescribed fashion that shifted exchanges toward data gathering and away from patients' narratives. Providers reported that they believed the EMR affected negatively their relationships with patients (in line with research conducted by Callen et al., 2013 and Frankel, 2005) and patients' emergency room experiences (see Ward et al., 2013), with patient satisfaction, as measured by questionnaires administered to them by Hospital H representatives, falling after the EMR was installed.

In sum, the EMR introduction was "an exogenous shock" (Barley, 1986, p. 80) that altered radically the structures and systems at Hospital H, by limiting providers' agency, altering workflow, impeding communication among agents, and worsening patients' experiences. Providers' efforts to "subvert the mechanics of disciplinary power" (Giddens, 1984, p. 292) and regain lost agency led to some of the unintended consequences that are described next.

Findings for Research Question Three: Electronic Medical Records Systems and Unintended Consequences

Findings associated with themes (d) and (g) helped to answer the question, "What, if any, unintended consequences emerge during and after EMR adoption at Hospital H?" Several unintended consequences emerged during Hospital H's EMR adoption. As

expected, patients' narratives were cut short frequently (see Pearce et al., 2013), which contributed to physicians' perceptions that electronic health records lacked context and, thus, usability. Contrary to research that showed EMRs increased healthcare costs and, thus, hospitals' revenue (see Bukata, 2014; Callen et al., 2013; Fernando et al., 2009; Feufel et al., 2011; Georgiou et al., 2013; Kellerman & Jones, 2013; Ward et al., 2013), billing declined at Hospital H because of conflicting structures (e.g., the EMR and accounting software were incompatible), and because billable charges were not checked off regularly in the electronic record by providers. Metrics, legislated by an external structure (i.e., the Centers for Medicare and Medicaid Services [CMS]), were monitored more closely once the EMR was installed, which led providers to "game the system," a maladaptive strategy for stopping the clock on door-to-doc times. Metrics increased providers' workplace stress, which substantiated other accounts (Bukata, 2011; Leep, 2014; "Metric Madness," 2014). Older physicians, in particular, compared with younger physicians, did not acclimate quickly to EMR-induced workflow changes, which, as Berger (2012) noted, signals a generational divide in providers' adaptability when it comes to new technologies being introduced into emergency rooms. Moreover, the results of this study showed that physicians believed that an unintended consequence of EMR adoption was increased malpractice risk (see Reyes, 2015), which increased their self-reported stress and contributed to their workplace dissatisfaction. Additionally, providers cited increased wage theft as contributing to their dissatisfaction.

In sum, the EMR introduced many unintended consequences, which, oftentimes, fed "the unacknowledged conditions of further acts" (Giddens, 1984, p. 8), setting off an infinite cycle of unintended consequences. For example, metrics, which were meant to

ensure faster and more efficient care, actually led providers to game the system, which, for patients, led to increased wait times, longer lengths of stay, unnecessary tests, increased costs, and diminished satisfaction. Additionally, metrics increased providers' dissatisfaction, added to their workplace stress, and contributed to order dumping, which exacerbated hierarchical tensions between providers, and, as explained next, set off negative communication spirals that were associated with SD.

Findings for Research Question Four: Electronic Medical Records Systems and Structural Divergence

Findings from theme (c) answered the question, “Do providers working in the emergency room at Hospital H experience SD?” Questionnaire results showed that providers at Hospital H experienced moderate SD and that many providers experienced burnout, a hallmark symptom of SD (Nicotera & Clinkscales, 2010; Nicotera & Mahon, 2013). In accordance with other research (Nicotera & Clinkscales, 2010; Nicotera & Mahon, 2013; Nicotera et al., 2010; Nicotera et al., 2014), conflicting structures contributed to providers' immobilization and created an SD-nexus. SD-nexus conditions were amplified by “us” versus “them” interactions between floor and emergency room staff, which also led to some instances of workplace bullying (see Nicotera & Clinkscales, 2010; Nicotera & Mahon, 2013). Negative communication spirals (i.e., SD-cycles) among providers oftentimes were triggered by physicians' dumping orders on subordinates, which, for many physicians, were attempts to regain their lost agency. This observation suggested that agency-restorative steps escalated an SD-nexus into an SD-cycle. This finding is especially important because what pushes an SD-nexus into an SD-cycle had not been established empirically (A. Nicotera, personal communication, April

7, 2015). As explained next, the findings presented here, and in previous sections, have important conceptual/theoretical, methodological, and practical implications.

Conceptual/Theoretical, Methodological, and Practical Implications of the Findings

The findings from this study have several important conceptual/theoretical, methodological, and practical implications. Below, I describe the conceptual/theoretical implications for structuration theory, AST, and SD theory. Methodological implications then are discussed, followed by this study's practical implications, which includes recommendations for healthcare administrators, providers, and patients.

Conceptual/Theoretical Implications

As noted above and in chapter three, because health communication research “often lacks theoretical underpinnings” (Nazione et al., 2013, p. 22), this study tested the relevance of structuration theory and its derivatives for explaining an EMR's influence on healthcare providers in an emergency room setting. Giddens's (1984) structuration theory is an ontological theory of social organization (Jones et al., 2004), but it seldom has been employed in empirical health communication research (Heracleous, 2013), with one notable exception being Barley's (1986) analysis of technology adoption and resulting systemic changes experienced by members of a radiology practice. Extensions of structuration theory, however, have been used in medical and health communication research. Schwieger et al. (2004, 2006) used a modified adaptive structuration model to analyze a family practice clinic's medical billing system integration, and Nicotera and Clinkscales (2010) expanded Giddens's (1984) work on contradictory structures and devised SD theory to explain discordant communication patterns among nurses. This study used structuration theory, AST, and SD theory to explain aspects of the EMR

adoption at Hospital H, and, as discussed next, the findings showed that structuration theory and its derivatives can be applied successfully to emergency room communication. Moreover, the findings reflected the conceptions and expectations of structuration theory and AST, and, importantly, they advance SD theory.

Conceptual/theoretical implications for structuration theory. Because structuration theory has been used widely in organizational communication research since the 1980s (McPhee, Poole, & Iverson, 2014), using it to frame a study of a hospital undergoing a critical organizational change (e.g., EMR adoption) made sense. Moreover, MCPhee et al. (2014) wrote that structuration theory “focuses especially on systems of human practices or meaningful patterns of activity that range from narrow micro-level activities . . . to broader arrays of processes, such as project management or medicine” (p. 76). In fact, emergency room and hospital studies have highlighted relevant structuration concepts, such as structures, structural constraint, and agency (see Nugus et al., 2011; Xiao et al., 2007), but they have stopped short of employing structuration theory as a critical lens through which interactions or processes were viewed and analyzed. This study, therefore, is unique in its application of structuration theory to frame an analysis of emergency room system reproduction, and, as described next, the theory proved to be a valuable lens for examining agents and systems experiencing change.

Structuration theory provided a useful language for describing what providers experienced during their EMR adoption and how their day-to-day practices were changed. Moreover, using the theory primed me, as a researcher, to investigate what agents thought and felt *over* time, and, thus, the theory extended this analysis beyond the

typical variables studied (e.g., length of stay or number of laboratory tests ordered; see Han et al., 2005; Koppel et al., 2005; Linder et al., 2007; Walsh et al., 2006; Ward et al., 2013). In so doing, I examined deeper structuration processes and uncovered patterns of behavior that the theory predicted would emerge during structural constraint and/or hierarchically imbalanced exchanges. For example, structuration theory predicts that when their agency is suppressed, agents, in general, and subordinates, in particular, will “subvert the mechanics of disciplinary power [and] assert their autonomy of action” (Giddens, 1984, p. 292). These behaviors appeared at Hospital H in the form of “order dumping” and “gaming the system,” both of which allowed physicians and midlevel providers to sidestep disciplinary forces that required EMR use, and, in so doing, they reasserted some measure of their autonomy.

Giddens (1984) predicted that “the greater the convergence of contradictions . . . the more likely that open conflict will develop along the ‘fault line’ of those contradictions” (p. 318). Structural contradictions between groups of organizational members (e.g., administrators, physicians, midlevel providers, and nurses) led frequently to conflict, which disrupted routines at Hospital H. This study revealed how providers coped with fractured routines (e.g., order-entry processes), and the findings validated aspects of structuration theory; namely, Giddens’s predictions about how routines are restored.

For Giddens (1984), routines are “a fundamental concept of structuration theory . . . [and] curb the sources of unconscious tension that would otherwise preoccupy most of our waking lives” (pp. xxiii, xxiv). Routines are the “basic elements of [agents’] day-to-

day social activity,” and, hence, they make up “the recursive nature of social life”

(Giddens, p. xxiii). Additionally, as Giddens claimed:

Routinization is vital to the psychological mechanisms whereby a sense of trust or ontological security is sustained in the daily activities of social life. Carried primarily in practical consciousness, routine drives a wedge between the potentially explosive content of the unconscious and the reflexive monitoring of action which agents display. (p. xxiii)

Giddens (1984) suggested that the psychological nature of routines could be elucidated by “considering the results of situations where the established modes or accustomed daily life are drastically undermined or shattered—by studying what may be called ‘critical situations’” (p. 60). The EMR’s introduction at Hospital H initiated a *critical situation*, “a circumstance of radical disjuncture of an unpredictable kind which affects substantial numbers of individuals [or] situations that threatens or destroys the certitude of institutionalized routines” (Giddens, p. 61). Giddens explained that, even in critical situations, routines are resurrected in a predictable fashion through a series of stages. To illustrate, Giddens described how the actions of many who were held in concentration camps could be interpreted as “reroutinization.” Following a critical situation (e.g., expulsion to a concentration camp), according to Giddens, there is an expected breakdown of social order, with hierarchically superior agents (e.g., wealthy or privileged individuals) experiencing the greatest shock. All agents experience increasing anxiety, followed by regressive behaviors (e.g., name-calling and bullying). For many agents, there follows a period of “resocialization” and identification with authority figures, and, finally, reconstruction of typical behaviors that mimic the lost routines. On

this last point, Giddens wrote that “old prisoners” who had survived the camps for several years

reconstituted themselves as agents by integrating themselves into camp life as participants in the very rituals of degradation which, as new prisoners, they had found so offensive. . . . The end result, found in most but not all prisoners, was a reconstructed personality based upon identification with the oppressors themselves, the camp guards. Old prisoners aped the activities of their captors, not merely to curry favor with them but also . . . because of an introjection of the normative values of the SS. (p. 63)

Giddens concluded that “such a sequence of heightened anxiety, regression, followed by a reconstruction of typical patterns of action, appears in a range of critical situations in otherwise very different contexts” (p. 64).

The reroutinization pattern that Giddens (1984) theorized unfolded at Hospital H. Following the critical situation studied in this research (i.e., the installation of the CPOE), hierarchically superior agents (e.g., physicians) experienced the greatest shock and loss of agency, which led regularly to their heightened anxiety, ill tempers, and foul moods. Regressive behavior, such as name-calling, was commonplace, with insults directed, typically, at the CPOE (e.g., calling the CPOE “crappy” and “a piece of shit”). Although not every provider acclimated to the change (e.g., Dr. W, who, depending on the viewpoint, either left or was let go), many providers adapted to the CPOE or adopted strategies (e.g., order dumping) to restore familiar patterns of action. Some providers, such as Q, “resocialized” and identified with administrators, even finding value in the EMR’s potential. Q’s resocialization was surprising because she and Dr. F had been instrumental in deploying avoidance strategies that slowed the electronic TSheet implementation. In April 2015, Q told me that she had withdrawn her resignation, in part, because she had come to see administrators “in a new light.” As Q said:

I think they [administrators] are in a tough place. They're being told what to do, too, so they are just as powerless as I am in some ways. I feel sorry for them. I see that they're trying to do their jobs and that means pushing the EMRs. I think the EMR will get better, with time. At this point, I guess you could say this is my "new" normal.

Several other providers echoed Q's assertions that the EMR ushered in a "new normal" at Hospital H, and they accepted it, albeit reluctantly (see chapter five). Thus, this study's findings validated Giddens's predictions about routinization during critical situations.

In sum, structuration theory contains several concepts that are valuable when applied to the study of communication in healthcare organizations. The theory's core concepts, as Giddens (1984) noted, are "sensitizing devices . . . useful for thinking about research problems and the interpretation of research results" (p. 326). For instance, as described here and in chapters three and five, structuration theory promotes consideration of agents, resources, agency, routines, social interaction, critical situations, front and back region distinctions, structural contradiction, and unintended and perverse consequences, which, when taken together, can yield rich data for analysis and elucidate EMR adoption processes in emergency room settings. Next, I describe how this study's findings reflect tenets of AST.

Conceptual/theoretical implications for adaptive structuration theory. As noted in chapter three, DeSanctis and Poole (1994) proposed AST to study "the role of advanced information technologies in organization change" (pp. 121). DeSanctis and Poole proposed that during technology adoption, there always is a "dialectic of control" (p. 131), which is a phrase that Giddens (1984) used to describe "the two-way character of the distributive aspects of power" (p. 374). During technology adoption, the dialectic of control, according to DeSanctis and Poole, means that

technology structures shape the group, but the group likewise shapes its own interaction, exerting control over use of technology structures and the new structures that emerge from their use. Organizational change occurs gradually, as technology structures are appropriated and bring change to decision processes. Over time, new social structures may become a part of the larger organizational life. (p. 131)

Thus, the theory poses two key questions: (a) “What changes do these [technology] systems actually bring to the workplace?” and (b) “What technology impacts should we anticipate, and how can we interpret the changes that we observe?” (DeSanctis & Poole, p. 122).

To answer those questions, this study examined providers’ appropriation moves, revealing how the EMR at Hospital H was brought into social interaction and how it changed system reproduction. Findings showed, as DeSanctis and Poole (1994) predicted, that “if group interaction processes are inconsistent with the structural potential of the technology, then the outcomes of group use of the structures will be less predictable and, on the whole, less favorable” (p. 131). Providers’ interaction habits varied across user groups, and the patterns, largely, were inconsistent with the EMR’s structural potential (e.g., physicians circumvented order-entry tasks by dumping orders), and, consequently, the EMR was not viewed favorably. Furthermore, the EMR had an incoherent spirit from providers’ perspectives, demonstrated by its poor design, lack of usability, and limited features. Technologies with incoherent spirit, according to McPhee et al. (2014), “fail to deliver intended benefits . . . [or] lead to unexpected effects” (p. 85), and, hence, they are harder to incorporate into group practices (DeSanctis & Poole). Thus, this study confirmed what DeSanctis and Poole had theorized with respect to incoherent technologies: An incoherent spirit impedes adoption practices, even, in this case, in forced adoption scenarios.

Although AST has been applied, mainly, in free-adoption scenarios where agents can chose to use or disregard a technology (see DeSanctis & Poole, 1994), applying AST to a forced-adoption scenario, as this study did, was useful because it showed that even when direct use of a technology (i.e., freely chosen use) was out of the question, relating and constraining moves, in particular, demonstrated important ways in which the EMR was integrated into the system. For example, analysis of providers' relating and constraining moves showed that the EMR changed workflow patterns, lengthened documentation times, led to duplicated and delayed work, and changed providers' thinking about healthcare delivery (e.g., interrupted their train of thought).

When DeSanctis and Poole (1994) proposed AST, they stressed that "technology-triggered changes at micro, global, and institutional levels can be studied," but they noted that "individual studies tend to target one level of analysis, rather than multiple levels" (p. 144). They called for more multilevel analyses, and this study answered that call by analyzing microlevel, global, and institutional interactions across user groups and units. By documenting providers' appropriation moves over a period of 18 months, important themes emerged that, likely, would have remained undetected had the analysis been contained to microlevel interactions. This study, consequently, validates the utility of AST for deepening scholarly understanding of the effects of EMRs on emergency medicine practice. Furthermore, the findings demonstrated that AST is useful for examining free and forced EMR-adoption scenarios.

Conceptual/theoretical implications for structurational divergence theory.

SD theory expanded on Giddens's (1984) work by addressing structural contradiction, and, specifically, "what happens to agency under contradictory structures" (Nicotera &

Mahon, 2013, p. 94). Nicotera and Clinkscales (2010) theorized that SD exists when incompatible rule systems and unresolvable conflict (i.e., SD-nexus) lead to negative, ineffective, or aggressive communication spirals (i.e., SD-cycle). SD immobilizes agents, impinges agency, and manifests, often, as bullying, stress, dissatisfaction, and intention to quit (Nicotera et al., 2010). The theory has been used in research conducted in hospitals; primarily, to study discordant interactions among nurses (see Nicotera & Clinkscales, 2010; Nicotera & Mahon, 2013; Nicotera et al., 2010; Nicotera et al., 2014). The theory's utility in that setting is evident given that hospitals are at "the intersection of multiple institutional, professional, community, and other cultural meaning systems" (Nicotera et al., 2010, p. 364), and, accordingly, they are vulnerable to SD.

Given the presence of so many conflicting internal and external structures in the emergency room at Hospital H, by default, it was an SD-nexus. Consequently, SD theory provided an angle for exploring structural contradictions that the EMR exacerbated at Hospital H and ramifications for its agents, which were immobilization and diminished agency. Because SD theory has not been used to study technology adoption, this study's application of the theory was novel. Moreover, this study used SD theory to analyze interaction patterns among physicians, midlevel providers, and nurses, which marked the first time that SD theory had been applied to a heterogeneous sample of healthcare providers.

As SD theory predicts, this study's findings showed that providers in the SD-compromised emergency room reported surface-level manifestations of SD, such as dissatisfaction, burnout, and intention to quit. Moreover, there was evidence of an increased likelihood of medication errors, as the theory predicts (see Nicotera et al.,

2010). Moreover, in line with other reports (see Nicotera & Clinkscales, 2010; Nicotera & Mahon, 2013; Nicotera et al., 2010, 2014), this study demonstrated that providers' agency, largely, was impotent because they could not change structures in a transformative way. Findings revealed that a pattern of attempted restoration of agency (e.g., order dumping) led to negative communication spirals, which suggested that lost agency and efforts to restore it tipped the SD-nexus into the SD-cycle. Given that why or how the SD-cycle emerges had not been explained empirically, this study provided valuable insight into the SD-nexus to SD-cycle escalation (A. Nicotera, personal communication, April 7, 2015), and, thereby, this study advanced that theory.

To review, this study tested the relevance of structuration theory, AST, and SD theory for explaining an EMR's influence on emergency medicine providers. The findings supported Giddens's (1984) theorized reroutinization processes following critical situations. Findings also demonstrated the utility of AST in forced-adoption scenarios and supported predictions that incoherent technologies constrain agency and are not well liked. SD theory's predictions regarding SD manifestations also were substantiated by this study; furthermore, the findings advanced the theory by suggesting an explanation for the SD-nexus to SD-cycle escalation. In addition to these conceptual/theoretical implications, as explained next, this study had important methodological implications.

Methodological Implications

This study has important methodological implications. First, it used proven ethnographic techniques to address researchers' calls for more in-depth, observational research to be conducted in emergency rooms (e.g., Cooper & Endacott, 2007; Nugus et

al., 2011; Paltved & Musaeus, 2012). Second, it is the only naturalistic study of an EMR adoption in a community hospital's emergency room. Additionally, as described next, the study's methodological approach enhances understanding of communication in emergency rooms by addressing gaps in the emergency room literature.

When studying social interactions and specific communicative acts, “quantification and the use of a statistical method pose a fixity of social life that it does not in fact have” (Giddens, 1984, p. 330). Studies about EMR adoptions in emergency rooms have relied, mainly, on quantifying relevant phenomena (e.g., number of medication errors, number of mouse clicks per order-entry task, or how providers' minutes are allocated), and although such studies are valuable (see Han et al., 2005; Koppel et al., 2005; Linder et al., 2007; Walsh et al., 2006; Ward et al., 2013), according to Nugus and Forero (2011), numerical studies tell only part of the story. Paltved and Musaeus (2012) explained that observational researchers “can help to unpack the processes surrounding EM [emergency medical] care and explain ‘how, why and what’ is going on” (p. 772). Thus, more observational work is needed in emergency rooms to illuminate processes pertaining to providers' thinking, feeling, and acting, and to capture organizational and team processes amid medical and social practices; such research may lead to the development of theory that has important clinical and/or organizational implications (Paltved & Musaeus, 2012). Ethnographic research, in particular, “can advance the understanding and delivery of emergency care [by] capturing the moment-to-moment action of life when and where it happens, and in the context of, reflecting and amending, broader social patterns” (Nugus et al., 2011, p. 69).

Much of the observational research conducted in emergency rooms, however, lacks methodological rigor (Cooper & Endacott, 2007); hence, this study employed proven techniques, such as saturation, triangulation, and member checks (Cooper & Endacott, 2007), to increase the accuracy of the findings. Over 18 months, data were collected via participant observations, in-depth interviewing, a questionnaire, and document analysis. Findings were validated through triangulation, which involved identifying convergent data “in fieldnotes, interviews, [and] documents” (Lindlof & Taylor, 2011, p. 274). Following open and in vivo coding, themes were identified using Owen’s (1984) criteria, which posit that themes emerge when there are recurring descriptions using similar phrases and with the same forcefulness of expression. Seven major themes answered the four research questions posed, and, hence, the themes contributed to the scholarly understanding of communication in emergency rooms, generally, and in community hospital-based emergency rooms, specifically. Moreover, this study is the only one to date to employ ethnographic techniques to analyze an EMR adoption and its ramifications in a community hospital’s emergency room. The findings, then, may be generalizable to some of the 5,724 community hospitals (Dunn & Becker, 2013)—more than 90% of the hospitals—in the United States and yield important practical applications that may prove useful as more community hospitals adopt federally mandated EMRs in the coming years.

Despite this study’s utility, however, it is important to note that ethnography, similar to other methodologies, “has its strengths and weakness” (Perlmutter, 2015, para. 1). Perlmutter (2015) identified five potential weaknesses that characterize ethnographic research: (a) the problem of witnessed truth, (b) researchers’ lack of objectivity, (c)

researchers' credibility, (d) replicability of findings, and (e) valorization of the observed community. Below, I describe how I grappled with each of these issues.

First, with respect to the potential issue of witnessed truth that characterizes ethnography, Perlmutter (2015) argued that “human beings are terrible at accurately understanding, remembering, and recounting what happened at an unexpected, fast-moving event” (para. 9). The emergency room at Hospital H, indeed, was a fast-paced, hectic environment, but even amid the chaos, typically, there were moments of calm during which I asked healthcare providers to explain and clarify events and interactions. During those and other times, I took copious notes, conducted frequently member checks, and elicited on-the-fly commentary from the site’s inhabitants about their interactions. Moreover, by triangulating fieldnotes with interview transcripts, questionnaire data, and document analysis, I achieved a measure of descriptive validity and, thus, overcame, in part, the problem of witnessed truth. There is, however, “no way of seeing, hearing, or representing the world of others that is absolutely, universally valid or correct” (Van Maanen, 2011, p. 35).

Second, the perceived lack of “objectivity,” as Perlmutter (2015) pointed out, is not exclusive to ethnography but is evident in all other methodologies as well. Researchers who have employed positivistic methods, such as experiments, surveys, and content analysis, have long been, as Perlmutter noted, “concocting data sets, suppressing negative findings, and embellishing positive results” (para. 11); hence, “the idea that ethnography is especially flawed is absurd” (para. 11). However, because researcher subjectivity “is an inherent part of research,” and, especially, ethnography, researchers should “contextualize [their] own positionality, thereby making it accessible, transparent,

and vulnerable to judgment and evaluation” (Madison, 2012, pp. 10, 11). To that end, I have acknowledged at various places in this dissertation my researcher subjectivity, such as my relationship with Dr. C influencing my view of emergency medicine practice, physician–nurse and provider–administrator dynamics, and EMRs. Such researcher subjectivity, however, was counterbalanced both by my formal training in conducting research and by use of numerous methodological procedures to achieve intersubjective understanding and interpretation of events and interactions that occurred at Hospital H.

My positionality on three key points—physician–nurse interactions, provider–administrator relationships, and EMRs—warrants further discussion. First, as noted in chapter three, I began preliminary research by identifying with physicians, but, gradually, I gravitated to the nurses’ camp. My identification with nurses intensified over the course of the study, to the extent that by the end of the study, nurses, almost exclusively, reviewed, critiqued, and evaluated my work during routine member checks. Hence, this report did not privilege physicians’ perspectives and experiences over those of nurses. As Nurse B believed, my strong identification with nurses resulted in “a fairly balanced study, overall, especially considering it was written by a doctor’s wife. To be honest, we [nurses] thought you’d make us look bad while glorifying the docs. You make some of them [physicians] look like assholes.”

Moreover, as Nurse B noted, this dissertation “paints administrators in a pretty bad light, at times.” With regard to Hospital H’s administrators, I am, decidedly opinionated, as apart from granting me access to the site, administrators were uninvolved in my research and, generally, unresponsive to my requests for interviews. Admittedly, I could have been more persistent in my requests for interviews with administrators, but as

the study wore on and the electronic TSheet implementation stalled, I feared losing access to the site if I “rocked the boat,” and, consequently, I would have missed an opportunity to observe the electronic TSheet aftermath that I wanted to document.¹⁷ Still, my reticence to pursue the administrators’ perspective is an important limitation of this study.

Lastly, my position on EMRs, unquestionably, is negative. Despite Dr. C’s incessant complaining in recent years about EMRs, I began this study, more or less, with an open mind about them. Dr. C is not technologically savvy, and I assumed that his complaints about EMRs were indicative of his typical complaints when confronted with a new technology that he does not like (e.g., a new television remote control or a new computer operating system). I soon discovered, however, in the early stages of preliminary research that Dr. C was not alone in his dislike of EMRs, as the majority of providers I observed and/or interviewed did not like EMRs. Although many providers preferred some EMRs (e.g., Epic) over other EMRs (e.g., McKesson’s Paragon), overwhelmingly, providers railed against EMRs and CPOEs. Moreover, in reading the scholarly literature for this dissertation (see chapter two), it was apparent that most studies about EMRs, especially studies appearing in the emergency medicine literature, were negative. Those studies were in line with the findings from this study, which also pointed to negative consequences of EMRs (e.g., increased risk of medical mistakes occurring and diminished provider satisfaction in light of increased workload, workplace stress, and likelihood of burnout). Moreover, during a formal EMR training session, I was allowed to engage with the EMR and its medication-ordering platform, and despite

¹Although not documented in this dissertation, my work at Hospital H is ongoing and I will observe the electronic TSheet’s implementation and its aftermath during Fall 2015.

being adept technologically¹⁸, I found the EMR cumbersome and very hard to use. Thus, over the course of this study, my view of EMRs shifted from “undecided” to “squarely against” them. I do, however, see the potential for EMRs to improve healthcare delivery and health information exchange, but, similar to most of the informants in this study, I do not believe that current EMR technology is poised to deliver such improvements.

Third, with respect to the issue of researcher credibility (Perlmutter, 2015), this report is credible to the extent that my positionality is “accessible, transparent, and vulnerable to judgment and evaluation” (Madison, 2012, p. 11). Moreover, as Perlmutter (2015) attested, ethnography is “very hard to fake outright,” because the “volume of work required to produce credible ‘thick description’ . . . is immense” (para. 12). The many hours that I spent at Hospital H can be corroborated by informants and gatekeepers, and, furthermore, many of the people who participated in this study member-checked my work, and, thereby, ensured an added measure of credibility. Additionally, my fieldnotes and interview transcriptions are available for review, and they may be used to validate findings that are described in this dissertation.

Fourth, replicability of findings is no more guaranteed in any other methodology than it is in ethnography (Perlmutter, 2015). “Furthermore,” according to Perlmutter (2015), “the lack of replicability inherent in ethnography is a guidepost to reliability, not a fundamental flaw” (para. 14). Although “no two ethnographers can study the same community” (Perlmutter, para. 14), typically, that is the case for other methodologists as well (e.g., experimental researchers). As Frey et al. (2000) contended, “There is, of course, no way to ever replicate someone’s study exactly, since every investigation

¹⁸I have spent 20 years as a videographer and film editor, and use, regularly, advanced editing, special effects, and compositing software; hence, I am adept technologically.

involves a different researcher and different research participants” (p. 135). Nonetheless, other ethnographers, certainly, can replicate some of the findings from this study by examining the use of EMRs in other emergency rooms, just as this study replicated other researchers’ findings (e.g., Park et al.’s, 2012, finding that EMRs reduce face-to-face interactions among providers) by using “different procedures, measurement instruments, sampling procedures, and data-analytic techniques” (Frey et al., 2000, p. 136).

Fifth, there is “a longstanding criticism that ethnographers tend to valorize the communities they are immersed in . . . [and] to turn the people [they] aren’t studying into a stereotype” (Perlmutter, 2015, para. 19, 21). Although I valorized, to a large extent, the community of emergency medicine providers I studied, I was, oftentimes, critical of providers’ behaviors; additionally, I did not reduce patients and administrators to simplistic stereotypes. Although my descriptions of patients and administrators are not drawn as richly as are those of providers, such descriptions are individualized and true to my experience. Moreover, as Perlmutter (2015) noted, ethnographers “give voice to people who aren’t necessarily otherwise heard” (p.), and although I would take exception with the concept of “giving voice to people,” I did offer many opportunities to hear the voices of emergency medicine physicians, midlevel providers, and nurses, whose views on EMRs have been, largely, ignored by policy makers, EMR makers, and hospital administrators.

In sum, although this study may have some important limitations due to the methodology employed—specifically, ethnography—the study attempted to address those limitations. In particular, (a) the problem of witnessed truth was offset by the use of triangulation of procedures, including member checks; (b) my subjectivity was

acknowledged and made available for judgment by readers, which, in part, addressed (c) my, and this report's, credibility; (d) the lack of complete replicability, and the need for additional replication, was acknowledged; and (e) the people studied were valorized, to an extent, but much of that valorizing emerged from opportunities to hear their voices and to respect their views, but also by engaging in some criticism of their views. Next, the practical applications arising from the findings of this study for administrators, providers, and patients are described.

Practical Implications

This study identified a number of problems that (a) plagued the EMR installation at Hospital H, and, ultimately, derailed its full implementation; (b) affected negatively providers' experiences and workflow; and (c) impeded effective communication among providers. Below, I offer suggestions for improving EMR adoption processes, generally, and for Hospital H, in particular. First, I offer recommendations to healthcare administrators for improving providers' receptivity to EMRs, improving EMR training, encouraging providers' autonomy, addressing EMR-induced workflow changes, and cultivating an environment of inclusion. I then offer recommendations to providers for improving their communication with one another. Lastly, I offer suggestions for patients and their companions for improving their emergency room experiences and interactions with healthcare providers.

Suggestions for administrators. Forced EMR adoptions, as this and other studies have demonstrated, are problematic and invite providers' reactance (see Brooks & Grotz, 2010; Estrada & Dunn, 2012; Farley et al., 2013; Francis, 2013; Huryk, 201; Nambisan et al., 2013; Tones, 2010). As Bukata (2009) noted, "Resistance is

fundamental and doctors, more than most, seem not to like being told what to do” (p. 2). Kellermann and Jones (2013) cautioned that successful and widespread EMR adoption is possible only when providers are engaged “early in the health IT development process” (p. 65). In their white paper on facilitating change in emergency rooms, Lozano, Biehl, and Organ (2011) wrote that “workers will always find excuses to forestall a process change” (p. 5). Fittingly, then, this study uncovered providers’ maladaptive avoidance strategies, which delayed the electronic TSheet implementation. According to Lozano et al. (2011), “To obtain complete buy-in of any process change, the ED [emergency department] staff and providers must feel that they had a say and fully agree with the new approach” (p. 5). Hence, the first recommendation emerging from the findings of this study is that administrators should solicit providers’ input at the start of the EMR selection process, and, generally, they should communicate more with providers during the process by offering providers updates regularly and requesting providers’ feedback about the EMR.

The second recommendation is that following an EMR installation, administrators should seek providers’ feedback about the EMR’s performance and address providers’ concerns. As Xiao et al. (2007) noted, administrators should allow “physicians and nurses to tailor an electronic system appropriately to meet their needs” (p. 394). Providers’ suggestions for improvements to the EMR at Hospital H, largely, were ignored. For instance, changing the EMR’s interface and electronic TSheet template to reduce the number of checkboxes and to increase the space available for free-text entries, and, thereby, allow providers to capture patients’ narratives, would have enhanced many providers’ perceptions of the completeness and utility of the EMR. This suggestion,

however, was ignored by administrators, which triggered reactance in providers and contributed to negative communication spirals between providers and administrators.

The third recommendation for administrators is that they avoid “homegrown IT systems” (Kellermann & Jones, 2013, p. 65). Although designing EMR components in-house can afford some advantages, such as customizable features, “most healthcare organizations lack the in-house technical expertise and resources to develop and maintain them” (Kellermann & Jones, 2013, p. 65). True to Kellermann and Jones’s (2013) predictions, Hospital H’s IT department failed—for nearly 2 years—to design, unveil, and launch its “homegrown” electronic TSheet, which exacerbated providers’ uncertainty and dread. Thus, for the administrators at Hospital H, the recommendation is that they abandon plans to design and install a generic, electronic TSheet system, and, instead, purchase the proprietary TSheet system.

The fourth recommendation for administrators, generally, and administrators at Hospital H, specifically, is to examine and improve formal EMR training programs. Formal training sessions at Hospital H ignited dissonance and reactance in physicians, because, essentially, the designated trainers were nonmedical, IT department staff members—one of the trainers was especially insensitive to physicians’ concerns amid the forced adoption, and her insensitivity fueled physicians’ reactance. A suggestion for lessening physicians’ reactance and dissonance is that persons well known to physicians, or who, themselves, are medical providers, should lead EMR formal training sessions. Alternatively, physicians’ EMR training could be self-taught via handouts or through the use of online- and/or video-training modules, which would allow physicians to complete the training at their leisure. Furthermore, self-guided training would curb some of the

reactance and/or dissonance that this study demonstrated was associated with in-person training that impeded physicians' learning.

Any overhaul of an EMR training program also must take into account the role of super-users. This study leads to three recommendations for improving informal training that relies on super-users. First, because this study showed that informal training dependent on super-users stimulated role-reversal tensions and dissonance for nurses and midlevel providers, super-users should self-select rather than be forced to learn EMR components and then made to train physicians, as they were at Hospital H. Moreover, nurses and midlevel providers who volunteer to train as super-users, presumably, would feel less reactance than would nurses and midlevel providers forced to learn how to use EMR components (e.g., CPOE) that they do not employ regularly in the course of their work. Second, super-users should be offered additional compensation for their added work. At Hospital H, additional compensation for the extra work that being a designated super-user entailed may have alleviated some of the hard feelings that providers harbored against administrators, which only fueled the SD-nexus conditions. Third, because many of the physicians at Hospital H could not always identify the designated super-users, super-users could wear a special name badge to ensure that physicians directed their inquiries to those who were equipped to offer assistance using the EMR. This simple solution could have saved time and alleviated frustration for the nurses, who, repeatedly, were asked for help using the EMR and CPOE, despite their inability to provide the requested help.

Peer-to-peer training exacerbated “us” versus “them” tensions between emergency room nurses and floor nurses, who were sent to the emergency room to cover

staffing shortages. Peer-to-peer training was made worse because the EMR interface in the intensive care unit did not resemble the EMR interface in the emergency room. A single EMR interface at Hospital H would cut down on problems, as would giving emergency room staff and the nurse manager, in particular, more autonomy in deciding appropriate staffing levels. Thus, the fifth recommendation is that administrators give emergency room personnel more autonomy to make staffing decisions. At Hospital H, nursing managers regularly sent floor nurses down to the emergency room to assist during perceived staff shortages or during high patient volume, but, oftentimes, decisions were made without input from the emergency room staff. As several emergency room nurses pointed out, the “extra help” often made them less productive because their time was spent training floor nurses how to use the EMR instead of treating patients.

The EMR’s introduction at Hospital H changed many workflow patterns for providers, and although some changes (e.g., to providers’ perceived cognitive processes) cannot be addressed easily, other changes, such as where work takes place, can be addressed. The sixth recommendation, therefore, is that administrators and providers examine ways to encourage collaborative work and face-to-face communication among providers by developing common workspaces and/or reconfiguring where computer terminals are placed, such that nurses, midlevel providers, and physicians are not isolated physically from one another. Additionally, administrators may consider replacing COWs with smaller, handheld devices or tablets, which could alleviate providers’ perceptions that EMRs interfere with provider–patient interactions.

The seventh recommendation is that administrators consider ways to alleviate additional EMR-induced workflow changes that affect providers negatively, such as

increased documentation time. Lengthy documentation processes at Hospital H ran counter to CMS-mandated metrics, which, oftentimes, led providers to delay documentation chores until after their shifts ended. This delayed work affected the completeness and utility of the electronic health record, especially for providers who cared for admitted patients, such as floor nurses and specialists. Heeding providers' suggestions for EMR improvements, such as incorporating voice-recognition software to limit the amount of typing that providers must do, may shorten the time needed for completing documentation tasks. Additionally, charting tasks completed after providers' shifts ended led many providers to complain of wage theft. Administrators, therefore, should reexamine how physicians' reimbursable time is measured, which could alleviate physicians' dissatisfaction. Better training also could mitigate the problem of delayed work and perceived wage theft: If providers were trained better, they could use EMRs more efficiently during their shifts, and, consequently, they could limit the number of documentation chores that they completed after their shifts.

The eighth recommendation is that administrators foster an environment of inclusion, which should involve regular communication between administrators and providers about managing emergency room operations and the EMR installation. For Hospital H's administrators, initiating regular feedback sessions in which they listen to providers' concerns would help providers to feel integrated into hospital practices and supported in their work. Because providers and IT staff department members disagreed routinely on what was said in their shared exchanges, meeting minutes should be distributed to everyone to ensure agreement among and between administrators and providers. Additionally, developing an employees' lounge would allow nurses to feel

supported, as their exclusion from physicians' and paramedics' lounges contributed to their dissatisfaction and eroded their organizational identity.

The last recommendation is that administrators and policy makers should reexamine metrics. Many metrics are incompatible ("Metric Madness," 2014), which has forced providers to adopt strategies, such as "gaming the system," to satisfy door-to-door and patient greet times. Gaming the system adds to healthcare costs, increases providers' work-related stress and burnout, adds to patients' lengths of stay, and diminishes patients' satisfaction with the care process.

To review, this study proposed nine recommendations that administrators should take into account: administrators should (a) involve providers at the start of the EMR selection process; (b) solicit and then act on providers' suggestions; (c) avoid "homegrown" EMR systems; (d) improve EMR training processes and, simultaneously, be attentive to role-reversal tensions that nurses and midlevel providers experience; (e) give emergency room leaders autonomy over staffing decisions; (f) address EMR-induced workflow changes by maintaining or creating spaces for collaborative work, and acquiring handheld devices and/or tablets; (g) devise ways to lessen providers' documentation time; (h) foster an environment of inclusion by listening to and supporting providers; and (i) review the utility of metrics, which lead to unintended and perverse consequences.

Suggestions for providers. Because many healthcare providers are powerless to decide which EMR they use, the recommendations emerging from this study focus on ways in which providers can (a) improve communication, especially face-to-face communication, with their coworkers after EMRs are installed; (b) reduce the frequency

of negative communication spirals, which are exacerbated by EMRs; (c) enhance collegial relationships with coworkers; and (d) improve their interactions with patients by changing how they use COWs.

The first recommendation is that providers make time to communicate, face-to-face, about each of their shared patients. After an EMR is installed, typically, providers no longer share common charts, and, consequently, physically isolated workspaces reduce face-to-face encounters among nurses, midlevel providers, and physicians. All of the providers involved in this study admitted the need for frequent verbal updates, but they also acknowledged that during high patient volume, face-to-face interactions did not occur, which, oftentimes, led to dropped orders and/or mistakes. A solution may be implementing nurse–midlevel provider and/or nurse–physician rounds, whereby providers converge at appointed times and discuss care plans for their patients.

The second recommendation is that physicians examine their order-dumping habits and limit the practice. Moreover, physicians should be sensitive to hierarchical tensions that order dumping may incite in midlevel providers and nurses, and, when order dumping is necessary, physicians should pose their requests politely. As this study demonstrated, the emergency room at Hospital H, inherently, is an SD-nexus, and, consequently, it is prone to ineffective, aggressive, and negative communication spirals. Order dumping tips the SD-nexus into an SD-cycle, which inhibits collaborative work and diminishes providers' workplace satisfaction. To curb SD tensions, according to Nicotera et al. (2014), providers must regard those with whom they are locked in SD-cycles not as enemies but as persons with a common problem. Thus, the third recommendation is that providers at Hospital H try to reframe perceptions of themselves

from hierarchically and diametrically opposed providers, to providers who are burdened equally by the EMR.

Because EMR-induced changes to workflow patterns limit the time for small talk among providers and, hence, their relational growth, the fourth recommendation is that providers look for opportunities outside of the emergency room to encourage relational growth and maintenance with their coworkers. This study found that many providers at Hospital H viewed themselves as being less connected with their coworkers after, as opposed to before, the EMR was installed; consequently, planned activities may stimulate bonding and cut across nurse–physician–midlevel lines. Moreover, improved interpersonal relationships may curb SD-cycle development.

The final recommendation is that providers should rethink how they use and position COWs in examination rooms. This study found that nurses, typically, place the COW between themselves and patients during triage, and, thereby, create a physical barrier between them. The practice appeared to limit eye contact between nurses and patients. Positioning COWs next to patients may improve eye contact between nurses and patients, as well as nurses' perceptions of their provider–patient interactions.

In sum, this study offers five recommendations for providers: (a) make time for regular face-to-face interactions; (b) examine order-dumping habits and be sensitive to hierarchical tensions; (c) regard themselves as colleagues with a common problem, which would reduce SD; (d) create opportunities outside of the emergency room for bonding with coworkers; and (e) reposition COWs such that they are not barriers between themselves and patients.

Suggestions for patients. Although this study did not assess directly patients' perspectives about emergency medical care or ways that EMRs affected their interactions with healthcare providers, many of the providers' comments, as featured throughout this dissertation, centered on their perceptions of patients' experiences, providing the basis for offering some suggestions for patients. Thus, I offer the following recommendations on ways that patients and their companions can improve their experiences in emergency rooms and their interactions with providers.

First, emergency rooms should be reserved for medical emergencies (e.g., injuries sustained in major motor vehicle crashes, heart attacks, strokes, and other traumatic injuries). Thirty-seven percent of emergency room visits are for nonurgent conditions—conditions not requiring immediate attention, and for which a delay of several hours does not result in adverse outcomes (Uscher-Pines, Pines, Kellermann, Gillen, & Mehrotra, 2013). Nonurgent conditions (e.g., upper respiratory infections, sinusitis, and/or toothaches) can be treated more effectively by primary care physicians (PCPs) or by urgent care providers, with better health outcomes for patients, and for less cost (Weinick, Burns, & Mehrotra, 2010; Mehrotra, Wang, Lave, Adams, & McGlynn, 2008). Emergency rooms, typically, charge two to five times more than do PCPs to address minor medical problems (Mehrotra et al., 2008; Weinick et al., 2010). For instance, PCPs charge, on average, \$160 to diagnose and treat a urinary tract infection, whereas a similar diagnosis and treatment in an emergency room can cost \$570 or more (Mehrotra et al., 2008). Continued reliance on emergency rooms for primary and nonurgent care, thus, is a problem that contributes both to overcrowding in the emergency room and

spiraling healthcare costs (Overton, in press-b). Hence, people should exercise caution in going to the emergency room for healthcare.

Second, because most emergency rooms are overcrowded, patients and their companions should anticipate long waits. EMRs exacerbate the problem of long wait time because they slow providers' documentation chores and medication-administration processes. Moreover, patients and their companions should note that "advertised wait times," appearing most frequently on billboards for emergency room services, usually refer to the time that it takes for a patient to be triaged and not the total time that it takes for a patient to be evaluated by a physician, diagnosed, and released or admitted. As Dr. F explained:

We advertise 15 minutes, but that's not the whole truth; that's the typical wait for getting to triage, but, afterward, they [patients] might wait another 1 or 2 hours to see a doc. Average visits from start to finish, on a good day, last about 4–5 hours. Some days, it might be 6 or 7 hours.

Thus, patients and their companions should be prepared to wait and, furthermore, because emergency medical care is not administered on a "first come, first serve" basis, patients and their companions should be prepared to wait even longer if persons with critical health problems (e.g., heart attack or stroke) present to the emergency room.

Third, EMRs are not interoperable; consequently, patients and their companions should not assume that emergency medicine providers can access patients' pertinent medical records, histories, and/or medication lists. Even within the same hospital system, patients' medical records often are not accessible from within the emergency room. Consequently, patients and their companions, should, when possible, bring a list of their medical issues and medications, including over-the-counter medications and dietary supplements (e.g., vitamins), noting dosages and frequency of use; legal documents (e.g.,

medical power of attorney); health insurance provider information; and, if applicable, their physicians' names and contact information. Moreover, because electronic health data stored on portable hard drives, usually, will not be accessed because of security concerns (e.g., portable drives may contain malware), it is important that patients and their companions bring hardcopies of patients' health data.

Fourth, patients and their companions should anticipate that COWs and/or other technologies will be used during triage, and throughout the medical examination process, and that these technologies will affect their interactions with providers. In particular, generally, there will be less eye contact between them and providers, compared with provider–patient interactions in non-EMR settings, and that many of their interactions with providers will flow according to prescribed data-gathering tasks. Normal conversational turn taking, oftentimes, will be suspended to satisfy EMR-induced changes to triage and examination processes. To facilitate efficient triage interviews, patients should answer questions as they are posed by providers, avoid volunteering information out of turn (e.g., stating allergies or past surgeries before asked), and speak slowly to allow providers to type accurate information into the medical record. Additionally, it is important for patients and their companions to remember that providers looking at and using these technologies *are* engaged in healthcare delivery and are not otherwise “goofing off.” Patients should keep in mind that providers, frequently, are just as frustrated as patients by the barriers that EMRs introduce to provider–patient interactions.

Lastly, patients and their companions should ask questions about the purpose and utility of the medical tests and procedures that providers order. Because emergency

medicine providers, oftentimes, order tests that are not medically necessary to satisfy performance metrics, which increase healthcare costs, patients and their companions should understand and consent to tests and procedures, and, thereby, to some extent, co-construct the medical interaction

In sum, this study offers five recommendations for patients involved in emergency care: (a) avoid seeking emergency medical care for nonurgent conditions, which can be treated more efficiently in other healthcare settings and cost less; (b) be prepared to wait a long time to see a physician; (c) know that EMRs are not interoperable and, therefore, when possible, bring printed copies of their health data, medical conditions, and medications; (d) understand that EMRs and other technology will affect providers' eye contact with them and limit spontaneity during the medical interview; and (e) ask questions about the necessity of medical tests and procedures. Next, the limitations of this study are addressed and suggestions for future research are offered.

Limitations of the Study and Directions for Future Research

Despite the important findings and conceptual/theoretical, methodological, and practical implications of this research, there are several limitations that merit discussion. First, although I intended to study the EMR adoption process during and after installation of key components, such as the CPOE and the electronic TSheets, the installation was delayed repeatedly because of IT staff's difficulty designing and building the TSheets, which was exacerbated by providers' avoidance strategies; thus, I could comment only on a partial, stalled adoption. Moreover, because nurses had been using aspects of the EMR for 5 months before I arrived on the scene, I was unable to make "before, during, and after" comparisons of their interactions and workflow habits; instead, I had to rely

exclusively on nurses' accounts of changes that they believed the EMR introduced to their emergency room operations.

Second, I interviewed only two administrators and would have preferred input from additional members of Hospital H's executive staff. Efforts to schedule interviews, largely, were unsuccessful because many administrators did not respond to my requests. The absence of administrators' voices from this study is unfortunate, as it was not possible to corroborate the many claims made by providers about administrators' intentions and actions.

Third, although I did not set out to capture how patients' emergency room experiences and interactions with providers would change because of the EMR, many of the findings from this study centered on providers' perceptions of patients' experiences; however, I do not know what patients, themselves, experienced. Talking with patients about how they viewed the EMR and its effects, thus, would have produced a more robust reading of the EMR installation process.

Fourth, the questionnaire administered to providers was potentially problematic in two ways. First, the questionnaire should have teased out and/or separated providers' satisfaction with their workplace and satisfaction with their careers, which are two separate things. Second, because the questionnaire was not administered before the CPOE installation, I was unable to measure changes in physicians' and midlevel providers' self-reports of burnout and career satisfaction before and after the installation.

Fifth, I was the only researcher collecting and analyzing data, which, according to Lindlof and Taylor (2011), can affect the validity of findings, whereas "multiple researchers can be used to overcome the biases of other short comings of a lone

researcher” (p. 275). To mitigate potential errors or misunderstandings due to being the sole researcher, I conducted member checks regularly to ensure that my interpretations of events and conversations were accurate. I also shared early drafts of this research with key respondents for feedback to make certain that my reporting was correct.

Sixth, my husband is an emergency medicine physician and served as a key informant in this study, which, as describe above, influenced my view of EMRs and emergency room operations. To mitigate partiality on my part, I limited his participation in this study to formal EMR training and working with scribes; otherwise, I did not observe him during the course of my regular fieldwork.

Lastly, this study’s findings may have only short-term implications. For instance, many older physicians experience reactance when forced to abandon paper-based charting systems, but most younger physicians, whose training on healthcare documentation, largely, is EMR-based, appear to adapt easily to new and changing EMR systems. Thus, the reactance-inspired behaviors that were identified in this study (e.g., order dumping and negative communication spirals) may not appear in future studies, especially when younger healthcare providers are studied. Moreover, as EMR technologies evolve, the incoherent spiritual properties (e.g., lack of usability, multiple tabs, small text, and slow performance) that were identified in the EMR used at Hospital H and in EMRs that were described in the literature (see chapter two), undoubtedly, will improve, and, consequently, prevent—not contribute to—medical errors. This study’s findings and other findings on EMR use in emergency rooms, however, have long-term implications and point to a continuing decline in the frequency of face-to-face interactions among healthcare providers, providers’ growing dissatisfaction, strained

provider–patient interactions, and increased healthcare costs (see Bukata, 2014; Callen et al., 2013; Fernando et al., 2009; Feufel et al., 2011; Georgiou et al., 2013; Hill et al., 2013; Kellerman & Jones, 2013; Park et al., 2012; Person et al., 2013; Ward et al., 2013).

Future research should address the limitations noted above by: (a) following an EMR adoption in a community hospital’s emergency room from start to finish, (b) including more administrative figures as participants, and (c) incorporating patients’ perspectives. Future research also could explore several of the practical implications and recommendations that this study advanced. For instance, a study comparing a forced adoption with an adoption in which providers are active participants may inform understanding of EMR adoption outcomes, providers’ acceptance and/or rejection of EMRs, and providers’ workplace satisfaction after adoption of an EMR. Testing alternative EMR training methods, such as online and/or video modules, could produce findings that may alleviate training-induced dissonance and reactance in providers, and, thereby, enhance providers’ learning. Additionally, studies could examine the utility of common workspaces for enhancing face-to-face communication after EMRs are installed.

Some of this study’s conceptual/theoretical implications also should be examined in future research. For instance, this study suggested that there are, likely, relationships among EMR adoption, SD, and burnout, but those relationships have not been demonstrated empirically; establishing whether such relationships exist, thus, would be worthwhile. Additional research should test relationships among providers’ agency, restoration attempts, and SD-nexus to SD-cycle escalation. Although this study explained the nexus to cycle escalation in providers at Hospital H, the relationship

between agency-restorative efforts and negative communication spirals may not manifest in other agents and contexts.

Conclusion

This study investigated the effects of electronic medical records systems in an emergency room setting to extend what is known about forced adoptions of those systems in a community hospital and subsequent changes to providers' social interactions and workflow patterns. The findings were in accordance with tenets of structuration theory and adaptive structuration theory, respectively, that predicted reroutinization following critical situations, and that technology adoptions are impeded by incoherent structural features. The findings also advanced structurational divergence theory by identifying a trigger for SD-nexus to SD-cycle escalation. Because this study used sound ethnographic methods and, to date, is the only naturalistic study of an electronic medical records systems adoption in a community hospital's emergency room, the study is an important methodological extension of the research literature. Finally, the findings suggest ways that administrators and providers can improve communication and workflow during and after electronic medical records systems adoptions. In sum, this study invites careful consideration of electronic medical records systems, because, as Giddens (1984) wrote, "Once all those in a given sector of the economy have introduced the same technological innovation, they may all be worse off than they were before" (p. 312).

Although this research contributes to a richer understanding of emergency room work and communication among providers during and after an electronic medical records systems adoption, there is much more to be explored by communication scholars. Future research that extends this study's findings, hopefully, will result in collaborative efforts

of communication scholars and healthcare providers to integrative electronic medical records systems adoptions that incorporate providers' wishes and perspectives; enhance communication among emergency medicine providers and between providers and their patients; improve workflow for providers in ways that contribute to their workplace and career satisfaction, and, consequently, decrease their risk for burnout; and improve patients' safety, health outcomes, and experiences with the emergency medical care system. The Dallas Ebola case demonstrated that flawed electronic medical records systems have deadly consequences, and this study explains some of the systemic changes that electronic medical records systems introduce that put patients in harm's way. This and future studies, hopefully, facilitate improvements to the design and usability of electronic medical records systems by eliminating design flaws that inhibit collaborative work and face-to-face communication among and between providers, and, consequently, reduce risks for patients. The very best medical care must be provided to people and to do so requires effective communicative practices among healthcare providers in emergency room and hospital settings that are facilitated—not inhibited—by health information technology.

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APPENDIX A INTERNAL REVIEW BOARD EXEMPTION

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/ projects using living humans as subjects, or samples, or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

– Applicant, Please fill out the application in its entirety and include the completed application as well as parts A-F, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at <http://research.lsu.edu/CompliancePoliciesProcedures/InstitutionalReviewBoard%28IRB%29/Item24737.html>

– A Complete Application Includes All of the Following:

(A) Two copies of this completed form and two copies of parts B thru F.

(B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)

(C) Copies of all instruments to be used.

*If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.

(D) The consent form that you will use in the study (see part 3 for more information.)

(E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: (<http://phrp.nihtraining.com/users/login.php>)

(F) IRB Security of Data Agreement: (<http://research.lsu.edu/files/Item26774.pdf>)



Institutional Review Board
Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu
lsu.edu/irb

1) Principal Investigator: Prof. Tracy Stephenson Shaffer, PhD Rank: Associate Professor
Dept: CMST Ph: 225-578-4172 E-mail: tsteph3@lsu.edu

2) Co Investigator(s): please include department, rank, phone and e-mail for each
*If student, please identify and name supervising professor in this space

Barbara Cook Overton
Doctoral Student with work supervised by Prof. Tracy Stephenson Shaffer
Department of Communication Studies
225-578-4172 / bcCook22@lsu.edu

IRB# E8458 LSU Proposal # _____
☒ Complete Application
☒ Human Subjects Training

3) Project Title: Emergency Room Electronic Medical Records Systems, Job Satisfaction, and Communication

STUDY EXEMPTED BY:
Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
130 David Boyd Hall
225-578-8692 / www.lsu.edu/irb

4) Proposal? (yes or no) ☐ no If Yes, LSU Proposal Number _____

Also, if YES, either

☐ This application completely matches the scope of work in the grant

OR

☐ More IRB Applications will be filed later

Exemption Expires: 10/6/2016

5) Subject pool (e.g. Psychology students) Adult volunteers working in emergency rooms.

*Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI Signature Tracy Stephenson Shaffer Date 10-3-2013 (no per signatures)

** I certify my responses are accurate and complete. If the project scope or design is later changes, I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU Institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

Screening Committee Action: Exempted ☒ Not Exempted _____ Category/Paragraph _____
Signed Consent Waived?: Yes / No
Reviewer James Honeycutt Signature James Honeycutt Date 10/7/2013
ROM

Interview Informed Consent

Dear Participant,

Researchers in the Department of Communication Studies at Louisiana State University are conducting interviews to examine emergency room workers' use of and satisfaction with electronic medical records systems (EMRs) and whether EMRs impact job satisfaction and/or communication in the emergency room. This interview will take no more than 60 minutes to complete.

1. Title of Study: Emergency Room Electronic Medical Records Systems, Job Satisfaction, and Communication.
2. Performance Site: Interviews will be conducted at a location agreed upon by both researcher and participant.
3. Contact: Barbara Cook Overton, bcook22@lsu.edu.
4. Purpose: To identify patterns in communication and/or job satisfaction among emergency room workers who use electronic medical records systems versus those who use paper charts.
5. Participants: Adult volunteers who work in emergency rooms and are responsible for charting/documenting patient care.
6. Benefits: The information will examine if EMRs impact job satisfaction and communication in emergency rooms, while isolating specific aspects of EMR adoption that may be problematic.
7. Risks: The interview is designed to be nonthreatening. If you experience emotional discomfort, please stop the interview.
8. Right to refuse: All participation is voluntary. Participants are free to stop at any time or skip any questions.
9. Privacy: All responses stemming from this interview and appearing in written analysis will be attributed to a pseudonym of the participant's choosing. Data, recordings, notes, and images will be kept confidential and stored by the researcher. Participants *may* allow their images, likenesses, and voice to appear in published research and/or videotape findings if they sign a separate

photographic release form. Signing the photographic release form is optional.

By signing below, you acknowledge "I understand the nature of this study and may direct questions regarding its specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert C. Matthews, Chairman, LSU Institutional Review Board, (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb."

Signature of person agreeing to take part in the interview

Date

Printed name of person agreeing to take part in the interview

Preferred pseudonym for attributed statements appearing in written analysis

Name of authorized person obtaining informed consent

Date

STUDY EXEMPTED BY:

Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
130 David Boyd Hall
225-578-8692 / www.lsu.edu/irb

Exemption Expires: 10/6/2016

STANDARD PHOTOGRAPHIC RELEASE FORM

I hereby consent to allowing my photograph, likeness, and voice to be recorded and referenced as it relates to the terms of this research study.

I hereby release in perpetuity, the producer(s), their agents, successors, assigns and clients from all claims and demands arising from the use of my photograph (motion picture, video tape, still or television) and recordings of my voice in any manner whatsoever for.

Participants hereby release, indemnifies and hold the producer(s), sub-contractors and client from any claims, liabilities, damages or cost of whatsoever nature (including attorney's fees) and whether by reason of death of or injury to any person or loss of or damage to any property arising out of or in any way associated with this contract (including traveling to and from locations), the services provided by talent and/or model hereunder or any related act or failure to act by participants, its employees or sub-contractors.

NAME: _____

SIGNATURE: _____ DATE: _____

PRODUCER(S): _____

PRODUCTION DATES: _____

TITLE OF PROJECT: _____

APPENDIX B
HIPAA AGREEMENT

HIPAA – Confidentiality of Protected Health Information

Attachment 'E'

Student/Intern/Resident/Fellow Confidentiality Agreement

IMPORTANT: Please read all sections. If you have any questions, please ask before signing.

1. Confidentiality of Patient Information

I understand and acknowledge that: (i) services provided to patients are private and confidential; (ii) to enable such services to be performed, patients provide personal information with the expectation that it will be kept confidential and used only by authorized persons as necessary; (iii) all personally identifiable information provided by patients or regarding medical services provided to patients, in whatever form such information may exist, including oral, written, printed, photographic and electronic formats (collectively, the "Confidential Information") is strictly confidential and is protected by federal and state laws and regulations that prohibit its unauthorized use or disclosure; and (iv) in the course of my association with [REDACTED] may be given access to certain Confidential Information.

2. Disclosure, Use and Access

I agree that, except as authorized in connection with my assigned duties, I will not at any time use, access or disclose any Confidential Information to any person (including but not limited to co-workers, friends and family members). I understand that this obligation remains in full force during the entire term of my employment and continues in effect after such association terminates.

3. Confidential Policy

I agree that I will comply with confidentiality policies that apply to me as a result of my association.

4. Return of Confidential Information

Upon the termination of my association for any reason, or at any other time upon request, I agree to promptly return to [REDACTED] all copies of Confidential Information then in my possession or control (including all printed and electronic copies).

5. Periodic Certification

I understand that I am required to certify each year that I have complied in all respects with this Agreement.

6. Remedies

I understand and acknowledge that: (i) the restrictions and obligations I have accepted under this Agreement are reasonable and necessary in order to protect the interests of patients and [REDACTED] I therefore understand that [REDACTED] may prevent me from violating this Agreement by any legal means available, in addition to corrective measures, which may result in accordance with applicable policies and collective bargaining agreements.

[REDACTED Signature]

SEP 26 2013
Date

BARBARA COOK OVERTON
Printed Name

APPENDIX C
QUESTIONNAIRE ADMINISTERED DURING PRELIMINARY RESEARCH

How Do EMRs Impact Job Satisfaction and Communication in the ER?

Dear Participant,

Researchers in the Department of Communication Studies at Louisiana State University are conducting a survey to examine emergency room workers' use of and satisfaction with electronic medical records systems (EMRs) and whether EMRs impact job satisfaction and/or communication in the emergency room. This survey will take about 15 minutes to complete.

1. Title of Study: Emergency Room Electronic Medical Records Systems, Job Satisfaction, and Communication.
2. Performance Site: Online survey conducted by researchers at Louisiana State University; concurrently, paper surveys distributed to emergency room workers in southeastern Louisiana.
3. Contact: Barbara Cook Overton, bcook22@lsu.edu.
4. Purpose: To identify patterns in communication and/or job satisfaction among emergency room workers who use electronic medical records systems versus those who use paper charts.
5. Participants: Adult volunteers who work in emergency rooms and are responsible for charting/documenting patient care.
6. Benefits: The information will examine if EMRs impact job satisfaction and communication in emergency rooms, while isolating specific aspects of EMR adoption that may be problematic.
7. Risks: The survey is designed to be nonthreatening. If you experience emotional discomfort, please discontinue.
8. Right to refuse: All participation is voluntary. Participants are free to stop at any time or skip any questions.
9. Privacy: All responses are anonymous.

By clicking next: "I understand the nature of this study and may direct questions regarding its specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert C. Matthews, Chairman, LSU Institutional Review Board, (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb."

1. Do you currently work or train in an emergency room?

- ☐ yes
- ☐ no

How Do EMRs Impact Job Satisfaction and Communication in the ER?

2. What is your job title?

- ☐ medical resident
- ☐ tech
- ☐ unit secretary
- ☐ nurse
- ☐ nurse practitioner
- ☐ physician assistant
- ☐ physician
- ☐ other

Other (please specify)

3. How long have you worked in emergency rooms?

- ☐ 1 year or less
- ☐ between 1 and 3 years
- ☐ between 3 and 5 years
- ☐ between 5 and 10
- ☐ more than 10 years

4. Which shifts do you work?

- ☐ mostly day shifts
- ☐ mostly night shifts
- ☐ a mix of days and nights
- ☐ mostly swing shifts

5. How many emergency rooms do you work in?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 or more

How Do EMRs Impact Job Satisfaction and Communication in the ER?

6. How many different charting/documentation systems do you use across all of the emergency rooms where you work?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 or more

7. In the emergency room where you spend most of your time, how is patient care documented?

- ☐ paper charts
- ☐ electronic medical records system (EMR)
- ☐ dictation
- ☐ both paper charts and EMR
- ☐ both EMR and dictation
- ☐ both paper charts and dictation
- ☐ a combination of paper, EMR, and dictation

8. Which paper charting system does your emergency room use?

- ☐ Evolve Med
- ☐ T-System
- ☐ Xpress Charts
- ☐ Peer Charts
- ☐ Smart Notes
- ☐ EC Forms

Other (please specify)

9. Does your emergency room plan to introduce an EMR in the next year?

- ☐ yes
- ☐ no
- ☐ not sure

How Do EMRs Impact Job Satisfaction and Communication in the ER?

10. How do you feel about your emergency room adopting this EMR system?

- ☐ I'm looking forward to the change
- ☐ I don't care one way or the other
- ☐ I'm not looking forward to the change
- ☐ I'm not sure

Other (please specify)

11. What do you think the biggest advantage might be for using an EMR?

12. What do you think the biggest drawback might be for using an EMR?

13. What is the name of the EMR used in your emergency room?

- ☐ EC Forms Digital Solution
- ☐ Emergisoft ED
- ☐ T-Sheets
- ☐ CMR
- ☐ Epic
- ☐ Paragon
- ☐ Wellsoft
- ☐ Meditech

Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

14. How long has your emergency room used this system?

- ☐ less than 3 months
- ☐ between 3 and 6 months
- ☐ between 6 and 9 months
- ☐ between 9 months and 1 year
- ☐ between 1 and 3 years
- ☐ more than 3 years
- ☐ not sure

15. Regarding the emergency room you work in the most, were you directly involved in deciding which EMR would be used?

- ☐ yes
- ☐ no

16. Which EMRs did you consider?

Select all that apply.

- ☐ EC Forms Digital Solution
- ☐ Emergisoft ED
- ☐ T-Sheets
- ☐ CMR
- ☐ Epic
- ☐ Paragon
- ☐ Wellsoft
- ☐ Meditech

Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

17. Did administration ask for your input when deciding which EMR would be used in your emergency room?

- ☐ yes
- ☐ no
- ☐ not applicable (EMR was chosen before I came to the ER)

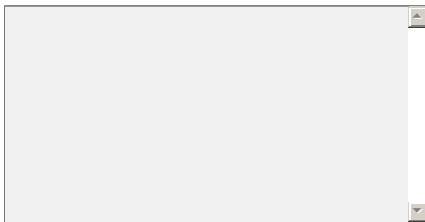
Comments:



18. Do you believe administration took your input into consideration when choosing which EMR to install?

- ☐ yes
- ☐ no
- ☐ not sure

Comments:



How Do EMRs Impact Job Satisfaction and Communication in the ER?

19. Generally speaking, how do you view administration?

- ☐ very favorably
- ☐ somewhat favorably
- ☐ neither favorably nor unfavorably
- ☐ somewhat unfavorably
- ☐ very unfavorably
- ☐ no opinion

20. How would you describe the amount of EMR training you received?

- ☐ extensive
- ☐ adequate
- ☐ insufficient
- ☐ none

Comments:

21. From whom did you receive the most training?

- ☐ an EMR company representative
- ☐ a member of the hospital's IT staff
- ☐ a nurse "super user"
- ☐ a mid-level provider "super user"
- ☐ a physician "super user"
- ☐ another staff member

Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

22. Please indicate how much you agree or disagree with each of the following statements that begin "When it comes to the EMR system I use in the emergency room..."

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
I am confident in my abilities to use it effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with the quality of training I received.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with the amount of training I received.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with the technical support available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like asking my co-workers for help using it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like having to explain to my co-workers how to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel paper charts and/or dictation were more efficient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I resent having to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel listened to when I voice my concerns about it to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like more input when it comes to modifying the EMR, like updating order sets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like administration takes my complaints and/or suggestions about the EMR under consideration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Are you a designated "super user?"

- ☐ yes
- ☐ no

24. Generally speaking, who are the "super users" in your emergency room?

- ☐ mostly nurses
- ☐ mostly mid-level providers
- ☐ mostly physicians
- ☐ there are no "super users" in my ER
- ☐ I'm not sure

How Do EMRs Impact Job Satisfaction and Communication in the ER?

25. Please indicate how often the following occurrences happen during a typical shift.

	always	often	sometimes	rarely	never
my co-workers ask for my help when they're using the EMR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask others for help using the EMR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the EMR crashes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my co-workers ask me to put orders into the EMR for them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask others to put in orders for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. How often do you take computers on wheels/COWs or tablets into patient rooms?

- ☐ always
- ☐ often
- ☐ sometimes
- ☐ rarely
- ☐ never
- ☐ not applicable/don't have COWs or tablets

27. In your experience, how would you describe the typical patient's reaction to the COWs or tablets?

Please select all that apply.

- ☐ impressed
- ☐ suspicious
- ☐ indifferent
- ☐ curious
- ☐ annoyed

Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

28. In your experience, do you believe COWs or tablets influence the typical patient's expectations or beliefs regarding the following points?

Please select all that apply.

- ☐ they expect faster care
- ☐ they believe your EMR can access all of their medical and pharmacy records, including those from private physicians
- ☐ they don't believe that you're working hard because you spend a lot of time at a computer
- ☐ they expect computer glitches and anticipate slower care
- ☐ the EMR doesn't seem to impact patients' expectations or beliefs

Other (please specify)

29. Please indicate how much you agree or disagree with each of the following statements that begin "The EMR system I use in the emergency room..."

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
is user friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
makes documentation easier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has decreased patient wait and through-put times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
is hard to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
means I have less time to spend with patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
makes documentation faster.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
makes my emergency room function more efficiently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has made my job more difficult.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has changed how I communicate with my co-workers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has a steep learning curve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
has impacted patient satisfaction scores.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
makes my job easier.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How Do EMRs Impact Job Satisfaction and Communication in the ER?

30. What do you think the biggest advantage is for using this particular EMR?

31. What do you think the biggest drawback is for using this EMR?

32. Generally speaking, would you say EMRs have made patient care...

- ☐ a lot better
- ☐ somewhat better
- ☐ a little better
- ☐ no change
- ☐ a little worse
- ☐ somewhat worse
- ☐ a lot worse
- ☐ not sure

Comments:

How Do EMRs Impact Job Satisfaction and Communication in the ER?

33. How has the EMR system impacted communication between you and your co-workers?

Please select all that apply.

- ☐ I talk with my co-workers more
- ☐ I haven't noticed a difference
- ☐ I talk with my co-workers less
- ☐ we talk about fewer topics
- ☐ we don't spend as much time chitchatting
- ☐ I spend more time clarifying/asking about orders
- ☐ we spend more time discussing patient care face-to-face
- ☐ we spend less time discussing patient care face-to-face
- ☐ we spend time complaining about the EMR
- ☐ we spend time teaching each other how to use the EMR

Other (please specify)

34. Overall, how satisfied are you with the EMR that your emergency room uses?

- ☐ very satisfied
- ☐ satisfied
- ☐ somewhat satisfied
- ☐ somewhat dissatisfied
- ☐ dissatisfied
- ☐ very dissatisfied
- ☐ not sure

35. Would you recommend the EMR for use in another facility?

- ☐ yes
- ☐ no
- ☐ not sure

How Do EMRs Impact Job Satisfaction and Communication in the ER?

36. Is there another EMR that you would rather use in your emergency room?

- ☐ yes
- ☐ no
- ☐ not sure

If so, which system would you prefer?

37. In light of the advantages and disadvantages of EMRs, would you rather use paper charts or dictation instead?

- ☐ yes
- ☐ no
- ☐ not sure

38. Please indicate how much you agree or disagree with each of the following statements that begin "Since I've begun using EMRs..."

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
I am more satisfied with my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered quitting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered changing jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered retiring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered changing careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How Do EMRs Impact Job Satisfaction and Communication in the ER?

39. Thinking about the emergency room where you currently spend most of your time, which aspects are you MOST satisfied with?

Select all that apply.

- ☐ interactions with patients and their families
- ☐ availability of support staff and/or on-call providers
- ☐ support from hospital administration
- ☐ collegiality of ER co-workers
- ☐ collegiality of other hospital workers and admitting physicians
- ☐ patient documentation system(s)
- ☐ how well medicines and supplies are stocked
- ☐ the physical environment (cleanliness, organization, sufficient space for documenting, etc.)
- ☐ availability of private "backstage" areas (away from patients' view)
- ☐ opportunity for eating meals, taking bathroom breaks, etc.
- ☐ balance of day and night shifts
- ☐ amount of time off between blocks of shifts
- ☐ availability of food and beverages while working
- ☐ salary
- ☐ Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

40. Still thinking about the emergency room where you currently spend most of your time, which aspects are you LEAST satisfied with?

Select all that apply.

- ☐ interactions with patients and their families
- ☐ availability of support staff and/or on-call providers
- ☐ support from hospital administration
- ☐ collegiality of ER co-workers
- ☐ collegiality of other hospital workers and admitting physicians
- ☐ patient documentation system(s)
- ☐ how well medicines and supplies are stocked
- ☐ the physical environment (cleanliness, organization, sufficient space for documenting, etc.)
- ☐ availability of private "backstage" areas (away from patients' view)
- ☐ opportunity for eating meals, taking bathroom breaks, etc.
- ☐ balance of day and night shifts
- ☐ amount of time off between blocks of shifts
- ☐ availability of food and beverages while working
- ☐ salary
- ☐ Other (please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

41. Thinking about a typical shift, with whom do you talk?

Please rank your answers with "1" being the people you spend most of your time talking with, and "7" the people you talk with the least.

<input type="text"/>	patients
<input type="text"/>	patients' families
<input type="text"/>	nurses
<input type="text"/>	physicians
<input type="text"/>	mid-level providers
<input type="text"/>	techs
<input type="text"/>	other staff

How Do EMRs Impact Job Satisfaction and Communication in the ER?

42. Aside from patient care, think about what you and your co-workers talk about during a typical shift.

Please select all of the topics you routinely discuss.

- ☐ family
- ☐ how you spend time off
- ☐ sports
- ☐ other co-workers
- ☐ interactions with patients and/or their family members (complaining or joking about, etc.)
- ☐ internet sites
- ☐ food
- ☐ vacation plans
- ☐ health concerns, injuries, or illnesses that you've experienced
- ☐ news or current events
- ☐ dating/love life
- ☐ movies, tv shows, or music
- ☐ swap ER stories about interesting or difficult cases
- ☐ job satisfaction
- ☐ medical research, trends, and current practices
- ☐ other

(please specify)

How Do EMRs Impact Job Satisfaction and Communication in the ER?

43. I feel burned out from my work.

- ☐ never
- ☐ a few times a year or less
- ☐ once a month or less
- ☐ a few times a month
- ☐ once a week
- ☐ a few times a week
- ☐ daily

44. I have become more callous toward people since I took this job.

- ☐ never
- ☐ a few times a year or less
- ☐ once a month or less
- ☐ a few times a month
- ☐ once a week
- ☐ a few times a week
- ☐ daily

45. Overall, how satisfied are you with your career in emergency medicine?

- ☐ very satisfied
- ☐ satisfied
- ☐ somewhat satisfied
- ☐ somewhat dissatisfied
- ☐ dissatisfied
- ☐ very dissatisfied
- ☐ not sure

46. If you had it to do over, would you still chose a career in the emergency room?

- ☐ yes
- ☐ no
- ☐ not sure

How Do EMRs Impact Job Satisfaction and Communication in the ER?

47. What is your gender?

- ☐ Male
- ☐ Female

48. What part of the country do you live in?

- ☐ Northeast
- ☐ Southeast
- ☐ Midwest
- ☐ Northwest
- ☐ Southwest
- ☐ Alaska or Hawaii
- ☐ Outside of the US

49. How old are you?

- ☐ 18-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ 61-70
- ☐ over 70

50. What is your relationship status?

- ☐ Single, never married
- ☐ Married
- ☐ Divorced
- ☐ Separated
- ☐ Widow/Widower

Thank you for your participation in this survey.

APPENDIX D PHYSICIANS' TSHEET



*2ER

04

EMERGENCY PHYSICIAN RECORD ♦ Neck or Upper Back Injury / Pain ♦

DATE: _____ TIME SEEN: _____ ☐ pt arrived by EMS

HISTORIAN: patient spouse paramedics _____

Specific history elements taken from historian _____

____ HX / ____ EXAM LIMITED BY: _____

HPI

chief complaint: injury / pain to: back neck _____
hx of chronic: neck / back pain _____

onset / duration: started just PTA yesterday continues in ED better
today _____ min / hrs / days ago gone now worse
sudden / gradual onset _____ lasted _____

recent injury? no yes possibly _____

***context:** _____

(*be specific about what patient was doing when complaint occurred)
lifting what? _____ turning / bending fall / near-fall post MVC _____

severity of pain: mild moderate severe (1/10) _____

quality: burning sharp dull similar to prior back pain(s) _____
location of pain: _____
radiation show radiation R

associated symptoms: fever / chills sweating headache chest pain weakness numbness / tingling _____

modifying factors: exacerbated by: nothing sitting position movement (of trunk / of neck) cough / deep breaths relieved by: nothing supine upright position remaining still lying on side (R / L) _____

injury details: When? as above _____ Where? home work _____
other injuries neck head back other _____

Similar symptoms previously _____

Recently seen / treated by doctor / hospitalized / nursing home pt / other extended care _____

ROS

CONST recent illness _____ GI nausea / vomiting _____
NEURO difficulty with speech _____ MS low back pain _____
EYES problems with vision _____ SKIN rash _____
ENT sore throat _____ LYMPH swollen glands _____
CVS palpitations _____ RESPIR ankle swelling _____
GU shortness of breath / cough _____ PSYCH anxiety / depression _____
incontinence _____ problems urinating _____
LNMP _____ preg post- menop _____
☐ except as marked positive, all systems above reviewed and found negative

* CONST / NEURO / CVS components also addressed in HPI

PAST HX _____ no chronic diseases *cardiac risk factors
*cardiac disease Afib CAD CHF MI CVA / TIA deficit _____
*diabetes Type 1 Type 2 DVT / PE _____
diet / oral / insulin hepatitis / HIV _____
*hypertension *hyperlipidemia _____
arthritis peptic ulcer disease _____
compression fracture(s) _____
intervertebral disc disease _____
neck / back injury _____
neck / back pain _____
episode(s) chronic _____
old records reviewed / summary: _____

Surgeries / Procedures _____ none appendectomy _____
neck / back surgery _____ cholecystectomy _____
laminectomy fusion discectomy cardiac bypass / stent _____
CT / MRI _____

Tetanus immun. UTD / given in ED _____
Medications _____ none med list reviewed _____
did not bring / cannot name _____
aspirin within 24 hrs coumadin clopidogrel _____
NSAID acetaminophen _____

Allergies _____ NKDA
see nurses note _____

SOCIAL HX smoker _____ ppd / past / quit _____ days / mos / yrs ago
smoking cessation counseling provided time spent _____ (> 3 mins)
discussed plan / triggers / challenges / risk / Rx given _____
counseling tools distributed and completed _____
completed Nicotine Dependence Assessment _____
drugs _____ alcohol (recent / heavy / occasional) _____
occupation _____ living situation alone family friend group care facility _____

FAMILY HX aortic disease *cardiac disease DVT / PE _____

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+ Circle positives, backslash negatives, check normals +

☐ Vitals Reviewed Abnmls Noted: BP _____ HR _____ RR _____ Temp _____
☐ Nursing Assessment Reviewed

PHYSICAL EXAM

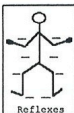

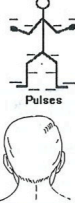
CONSTITUTIONAL
 ___ no acute distress
 ___ alert
EENT
 ___ nml ENT inspection
 ___ pharynx nml
LYMPH / NECK
 ___ nml inspection
 ___ non-tender
 ___ painless ROM
 ___ thyroid nml

___ c-collar / backboard (PTA / in ED)
 ___ mild / moderate / severe distress
 ___ anxious / lethargic
 ___ scleral icterus / pale conjunctivae
 ___ pharyngeal erythema
 ___ facial petechia
 ___ see diagram
 ___ muscle spasm / decreased ROM
 ___ lymphadenopathy / thyromegaly
 ___ pain with axial compression
 ___ subcutaneous emphysema

___ Nexus criteria neg
 ___ midline tenderness / distracting injury
 ___ altered mental status / recent ETOH
 ___ focal neuro deficit

BACK
 ___ nml inspection
 ___ non-tender
 ___ painless ROM

___ see diagram
 ___ vertebral point / CVA tenderness
 ___ muscle spasm / decreased ROM

RESPIRATORY
 ___ chest non-tender
 ___ breath sounds nml
 ___ no resp. distress

CVS
 ___ heart sounds nml
 ___ bilateral pulses nml

ABDOMEN / GU
 ___ non-tender
 ___ no organomegaly

SKIN
 ___ color nml, no rash
 ___ warm, dry
 ___ intact

EXTREMITIES
 ___ non-tender, full ROM
 ___ no pedal edema

NEURO / PSYCH
 ___ oriented x4
 ___ CN's nml (2-10)
 ___ motor nml
 ___ sensation nml
 ___ grips normal / symmetrical
 ___ reflexes nml
 ___ mood / affect nml

___ see diagram
 ___ tenderness / ecchymosis / abrasions
 ___ splinting / paradoxical movements
 ___ decreased breath sounds
 ___ wheezes / rales / rhonchi
 ___ tachycardia / bradycardia
 ___ asymmetrical pulses
 ___ see diagram
 ___ hepatomegaly / splenomegaly / mass
 ___ catheter present
 ___ cyanosis / diaphoresis / pallor
 ___ rash / embolic lesions
 ___ pressure ulcer location
 ___ pedal edema
 ___ calf tenderness
 ___ ROM limited by pain
 ___ disoriented to
 ___ person place time situation
 ___ motor / sensory deficit
 ___ abnormal gait
 ___ depressed mood / affect

EKG
 EKG ___ NML Reviewed at _____ (time) Rate _____
 ___ NSR ___ nml intervals ___ nml axis ___ nml QRS ___ nml ST/T
 not / changed from: _____ repeat EKG- unchanged /

LABS & XRAYs

CBC
 normal except
 WBC
 Hgb
 Hct
 Platelets

Chemistries
 normal except
 Na
 K
 Cl
 CO2
 Gluc

BUN
 Creat
 UA
 normal except

HCG
 serum / urine
 POS NEG
 ETOH
 TOX

XRAYs Interp. By ☐ me ☐ radiologist ☐ Visualized by me ☐ Discsd w/ radiologist
C-spine T-spine LS-spine
 ___ nml / NAD ___ no fracture ___ nml alignment ___ soft tissues nml

CXR ___ nml / NAD ___ no infiltrates ___ nml heart size ___ nml mediastinum

CT Scan head C-spine
 Interp. By ☐ me ☐ radiologist ☐ Visualized by me ☐ Discsd w/ radiologist
 ___ nml / NAD

PROGRESS

Time _____ re-examined pain reassessed improved unchanged
 Notes: _____

◆ AMI - EKG / ASA / Thrombolytics / to cath lab / PCI / transfer
 ___ measure exclusions: refused / not available / contraindicated

Discussed hx, exam, results, dx & plan with Dr. _____
 at _____ (time) response _____
 will see patient in: ED / hospital / office
 Rx given _____
 Counseled patient / family regarding: _____ Additional history from: _____
 lab / rad. results, diagnosis, need for follow-up, family, caretaker, paramedics

CLINICAL IMPRESSION

Back Pain - acute cervical thoracic Aortic Dissection
 Abrasion / Contusion - cervical thoracic Cervical Radiculopathy R / L
 Degenerative Disc Disease Epidural Abscess / Mass
 Herniated Disc - acute at _____ Fracture
 Hematoma
 Myofascial Strain - acute ◆ Myocardial Infarction - acute
 cervical thoracic NSTEMI STEMI (location) _____
 Strain / Sprain - neck back
 ligaments- cervical joint tendon

DISPOSITION DECISION TIME- ☐ admit ☐ general ☐ tele
☐ ICU ☐ OR ☐ transfer ☐ Observation ☐ ED Observation ☐ home
☐ AMA due to: patient refused / other _____ / patient left prior to disposition
☐ POA pressure ulcer / UTI (foley) _____

CONDITION- ☐ unchanged ☐ improved ☐ stable
☐ I (NP / PA) have discussed the patient's case with Dr. _____

PHYSICIAN ATTESTATION (use when care is provided by physician with NP/PA).
☐ For this patient encounter, I reviewed the NP or PA documentation, treatment plan, and medical decision making; and I had face-to-face time with this patient. All procedures were done by me except:
 crit care (time excluding separately billable proceed.) ☐ 30-74 min ☐ > 74 min ☐ < 30 min ☐ no crit care

MD / DO Sig _____ Date _____ Time _____
 transferred care to _____ at _____

MD / DO Sig _____ Date _____ Time _____
 assumed care _____

NP / PA _____ Date _____ Time _____
☐ Template Complete ☐ See Addendum (Dictated / Template # _____)

◆ Reportable Measure



Patient Label

[illegible]

DO NOT USE ABBREVIATIONS: • IU (international unit) • Q.D., QD, q.d., qd (daily) • Q.O.D., QOD, q.o.d., qod • Trailing zero (X.0 mg)
• Lack of leading zero (.X mg) • MS, MSO4 • MS, MgSO4

Admit Location:	<input type="checkbox"/> M/S	<input type="checkbox"/> TELE	<input type="checkbox"/> ICU	Physician:
Admit Status:	<input type="checkbox"/> In-Patient	<input type="checkbox"/> Observation		

[illegible]

APPENDIX F NURSES' NOTE



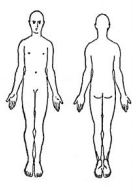
4ERN

EMERGENCY DEPARTMENT NURSING RECORD

Date: _____ Acuity Level: ☐ L5 (Non-Urgent) ☐ L4 (Urgent) ☐ L3 (Emergent)
Time of ED Arrival: _____ Time of Triage: _____ ☐ L2 (Critical) ☐ L1 (Crisis)

Vital Signs: BP _____ (RA/LA) P _____ R _____ T _____ (oral/rectal/ax) Sat _____ % <input type="checkbox"/> RA <input type="checkbox"/> O2@ _____ L per: _____ BP _____ (RA/LA) Ht. _____ Wt. _____ (<input type="checkbox"/> Actual <input type="checkbox"/> Stated) <input type="checkbox"/> LMP: _____					
Mode of Arrival: <input type="checkbox"/> Walk <input type="checkbox"/> W/C <input type="checkbox"/> Carried <input type="checkbox"/> LHH Stretcher <input type="checkbox"/> Helicopter <input type="checkbox"/> EMS: _____ <input type="checkbox"/> Police: _____		Pre-Hospital Care: <input type="checkbox"/> None <input type="checkbox"/> Transfer in from: _____ CBG _____ <input type="checkbox"/> Monitor <input type="checkbox"/> IV: _____ <input type="checkbox"/> O2: _____ L per _____ <input type="checkbox"/> Meds: _____ <input type="checkbox"/> CPR <input type="checkbox"/> ETT/Ambu <input type="checkbox"/> Ice <input type="checkbox"/> Collar <input type="checkbox"/> LSB <input type="checkbox"/> Splint: _____		Private MD: _____ Cardiologist: _____ Specialty MD: _____	
TRIALGE <input type="checkbox"/> 24-72 HR Return (<input type="checkbox"/> Same complaint <input type="checkbox"/> New complaint) <input type="checkbox"/> Called Back to ED <input type="checkbox"/> SEE CODE SHEET					
Chief Complaint	(Time of event: _____) _____ _____ _____				
	<input type="checkbox"/> None <input type="checkbox"/> See Attached List Food, Meds, Latex, Tape, Iodine, Other _____ Reaction _____				
Allergies	<input type="checkbox"/> None <input type="checkbox"/> See Home Med Form Rx Drugs, OTC Meds, Herbs, Dose _____ Route _____ Freq. _____				
	<input type="checkbox"/> None <input type="checkbox"/> See Home Med Form Rx Drugs, OTC Meds, Herbs, Dose _____ Route _____ Freq. _____				
Home Medications	<input type="checkbox"/> None <input type="checkbox"/> See Home Med Form Rx Drugs, OTC Meds, Herbs, Dose _____ Route _____ Freq. _____				
	<input type="checkbox"/> None <input type="checkbox"/> See Home Med Form Rx Drugs, OTC Meds, Herbs, Dose _____ Route _____ Freq. _____				
PMH	<input type="checkbox"/> None <input type="checkbox"/> Afib <input type="checkbox"/> Angina <input type="checkbox"/> Anxiety <input type="checkbox"/> Arthritis <input type="checkbox"/> Asthma <input type="checkbox"/> CAD <input type="checkbox"/> tChol <input type="checkbox"/> CHF <input type="checkbox"/> Cancer: _____ <input type="checkbox"/> COPD <input type="checkbox"/> CVA <input type="checkbox"/> DVT/PE <input type="checkbox"/> Diabetes <input type="checkbox"/> Diverticulitis <input type="checkbox"/> ESRD <input type="checkbox"/> Gout <input type="checkbox"/> HTN <input type="checkbox"/> GERD/Ulcers <input type="checkbox"/> Kidney Stones <input type="checkbox"/> MI <input type="checkbox"/> Migraine/HA <input type="checkbox"/> Seizures <input type="checkbox"/> Thyroid <input type="checkbox"/> Psychiatric: _____ <input type="checkbox"/> Other: _____ Family History: _____				
	<input type="checkbox"/> None <input type="checkbox"/> Angiogram <input type="checkbox"/> Angioplasty/Stent <input type="checkbox"/> AAA <input type="checkbox"/> CABG <input type="checkbox"/> Carotid <input type="checkbox"/> Pacer/AICD <input type="checkbox"/> Appy <input type="checkbox"/> Chole <input type="checkbox"/> Hernia <input type="checkbox"/> Tonsils <input type="checkbox"/> C-Sect <input type="checkbox"/> Hysterectomy <input type="checkbox"/> Tubal <input type="checkbox"/> Hemorrhoidectomy <input type="checkbox"/> Back <input type="checkbox"/> Neck <input type="checkbox"/> <input type="checkbox"/> Knee (R/L) <input type="checkbox"/> Cataract (R/L) <input type="checkbox"/> Lithotripsy <input type="checkbox"/> Orthopedic: _____ <input type="checkbox"/> Other: _____				
PSH	<input type="checkbox"/> None <input type="checkbox"/> Angiogram <input type="checkbox"/> Angioplasty/Stent <input type="checkbox"/> AAA <input type="checkbox"/> CABG <input type="checkbox"/> Carotid <input type="checkbox"/> Pacer/AICD <input type="checkbox"/> Appy <input type="checkbox"/> Chole <input type="checkbox"/> Hernia <input type="checkbox"/> Tonsils <input type="checkbox"/> C-Sect <input type="checkbox"/> Hysterectomy <input type="checkbox"/> Tubal <input type="checkbox"/> Hemorrhoidectomy <input type="checkbox"/> Back <input type="checkbox"/> Neck <input type="checkbox"/> <input type="checkbox"/> Knee (R/L) <input type="checkbox"/> Cataract (R/L) <input type="checkbox"/> Lithotripsy <input type="checkbox"/> Orthopedic: _____ <input type="checkbox"/> Other: _____				
	<input type="checkbox"/> None <input type="checkbox"/> Angiogram <input type="checkbox"/> Angioplasty/Stent <input type="checkbox"/> AAA <input type="checkbox"/> CABG <input type="checkbox"/> Carotid <input type="checkbox"/> Pacer/AICD <input type="checkbox"/> Appy <input type="checkbox"/> Chole <input type="checkbox"/> Hernia <input type="checkbox"/> Tonsils <input type="checkbox"/> C-Sect <input type="checkbox"/> Hysterectomy <input type="checkbox"/> Tubal <input type="checkbox"/> Hemorrhoidectomy <input type="checkbox"/> Back <input type="checkbox"/> Neck <input type="checkbox"/> <input type="checkbox"/> Knee (R/L) <input type="checkbox"/> Cataract (R/L) <input type="checkbox"/> Lithotripsy <input type="checkbox"/> Orthopedic: _____ <input type="checkbox"/> Other: _____				
Vaccines	Last Tetanus: <input type="checkbox"/> NA <input type="checkbox"/> less than 5 yr <input type="checkbox"/> greater than 5 yr <input type="checkbox"/> Unsure Influenza: <input type="checkbox"/> Yes: Date _____ <input type="checkbox"/> No <input type="checkbox"/> Unsure Pneumococcal: <input type="checkbox"/> Yes: Date _____ <input type="checkbox"/> No <input type="checkbox"/> Unsure Pediatric Immunizations UTD?: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure Infection Control Screen: <input type="checkbox"/> NA <input type="checkbox"/> Hx of TB: last PPD _____ <input type="checkbox"/> Recent exposure to TB <input type="checkbox"/> MRSA <input type="checkbox"/> HIV <input type="checkbox"/> Hepatitis (A/B/C) <input type="checkbox"/> Recent travel out of US				
	<input type="checkbox"/> None <input type="checkbox"/> Copy not available <input type="checkbox"/> Living Will <input type="checkbox"/> Power of Attorney <input type="checkbox"/> Brought forms - Copy placed on ED chart <input type="checkbox"/> States copy in LHH Medical Record from past visit <input type="checkbox"/> Wishes discussed <input type="checkbox"/> Materials provided (Admit Forms)				
Subst Use	<input type="checkbox"/> None <input type="checkbox"/> Tobacco (<input type="checkbox"/> Quit x _____ yrs.) Type _____ Amount _____ <input type="checkbox"/> Alcohol <input type="checkbox"/> Recreational Drugs				
	<input type="checkbox"/> Calm <input type="checkbox"/> Cooperative <input type="checkbox"/> Anxious <input type="checkbox"/> Agitated <input type="checkbox"/> Crying <input type="checkbox"/> Depressed <input type="checkbox"/> Flat Affect Lives: <input type="checkbox"/> Alone <input type="checkbox"/> with Family/Friends <input type="checkbox"/> NH <input type="checkbox"/> Assisted Living Primary Lang: _____ <input type="checkbox"/> Interpreter (Present / Needed) Other Communication Needs: _____ <input type="checkbox"/> N/A Victim of abuse/domestic violence: <input type="checkbox"/> No <input type="checkbox"/> Yes Social Service need identified: <input type="checkbox"/> No <input type="checkbox"/> Yes Spiritual/Cultural beliefs that impact care? <input type="checkbox"/> None <input type="checkbox"/> Yes Describe: _____				
Psychosocial	<input type="checkbox"/> Calm <input type="checkbox"/> Cooperative <input type="checkbox"/> Anxious <input type="checkbox"/> Agitated <input type="checkbox"/> Crying <input type="checkbox"/> Depressed <input type="checkbox"/> Flat Affect Lives: <input type="checkbox"/> Alone <input type="checkbox"/> with Family/Friends <input type="checkbox"/> NH <input type="checkbox"/> Assisted Living Primary Lang: _____ <input type="checkbox"/> Interpreter (Present / Needed) Other Communication Needs: _____ <input type="checkbox"/> N/A Victim of abuse/domestic violence: <input type="checkbox"/> No <input type="checkbox"/> Yes Social Service need identified: <input type="checkbox"/> No <input type="checkbox"/> Yes Spiritual/Cultural beliefs that impact care? <input type="checkbox"/> None <input type="checkbox"/> Yes Describe: _____				
	<input type="checkbox"/> Calm <input type="checkbox"/> Cooperative <input type="checkbox"/> Anxious <input type="checkbox"/> Agitated <input type="checkbox"/> Crying <input type="checkbox"/> Depressed <input type="checkbox"/> Flat Affect Lives: <input type="checkbox"/> Alone <input type="checkbox"/> with Family/Friends <input type="checkbox"/> NH <input type="checkbox"/> Assisted Living Primary Lang: _____ <input type="checkbox"/> Interpreter (Present / Needed) Other Communication Needs: _____ <input type="checkbox"/> N/A Victim of abuse/domestic violence: <input type="checkbox"/> No <input type="checkbox"/> Yes Social Service need identified: <input type="checkbox"/> No <input type="checkbox"/> Yes Spiritual/Cultural beliefs that impact care? <input type="checkbox"/> None <input type="checkbox"/> Yes Describe: _____				
Educ	Suicide Risk Assessment: (see SR Tool if "yes" to below) History of depression: <input type="checkbox"/> No <input type="checkbox"/> Yes Suicidal: <input type="checkbox"/> No <input type="checkbox"/> Yes Recent change of sleep/weight: <input type="checkbox"/> No <input type="checkbox"/> Yes Homicidal: <input type="checkbox"/> No <input type="checkbox"/> Yes Highest Grade _____ Learning Barriers: <input type="checkbox"/> None <input type="checkbox"/> Language Level Completed <input type="checkbox"/> Literacy <input type="checkbox"/> Religious <input type="checkbox"/> Cognitive <input type="checkbox"/> <HS <input type="checkbox"/> HS <input type="checkbox"/> Cultural <input type="checkbox"/> Financial <input type="checkbox"/> Visual <input type="checkbox"/> >HS <input type="checkbox"/> Hearing <input type="checkbox"/> Physical <input type="checkbox"/> Emotional				
	<input type="checkbox"/> None <input type="checkbox"/> Copy not available <input type="checkbox"/> Living Will <input type="checkbox"/> Power of Attorney <input type="checkbox"/> Brought forms - Copy placed on ED chart <input type="checkbox"/> States copy in LHH Medical Record from past visit <input type="checkbox"/> Wishes discussed <input type="checkbox"/> Materials provided (Admit Forms)				
Advance Directives	<input type="checkbox"/> None <input type="checkbox"/> Copy not available <input type="checkbox"/> Living Will <input type="checkbox"/> Power of Attorney <input type="checkbox"/> Brought forms - Copy placed on ED chart <input type="checkbox"/> States copy in LHH Medical Record from past visit <input type="checkbox"/> Wishes discussed <input type="checkbox"/> Materials provided (Admit Forms)				
	<input type="checkbox"/> None <input type="checkbox"/> Copy not available <input type="checkbox"/> Living Will <input type="checkbox"/> Power of Attorney <input type="checkbox"/> Brought forms - Copy placed on ED chart <input type="checkbox"/> States copy in LHH Medical Record from past visit <input type="checkbox"/> Wishes discussed <input type="checkbox"/> Materials provided (Admit Forms)				

EMERGENCY DEPARTMENT NURSING RECORD

INITIAL ASSESSMENT		RN Signature:																																																																																																																																																																																
NEUROLOGICAL: AAO x: _____ (<input type="checkbox"/> Person <input type="checkbox"/> Place <input type="checkbox"/> Time) Pupils/Reaction: Rt _____ mm / (<input type="checkbox"/> R <input type="checkbox"/> NR) Lt _____ mm / (<input type="checkbox"/> R <input type="checkbox"/> NR) <input type="checkbox"/> Trauma: <input type="checkbox"/> Denies LOC <input type="checkbox"/> + LOC x _____ mins <input type="checkbox"/> HA <input type="checkbox"/> Dizziness <input type="checkbox"/> Blurred vision <input type="checkbox"/> Photophobia Speech: <input type="checkbox"/> Clear <input type="checkbox"/> Slurred <input type="checkbox"/> None <input type="checkbox"/> Gait: <input type="checkbox"/> Steady <input type="checkbox"/> Unsteady (new) Weakness: <input type="checkbox"/> None <input type="checkbox"/> Noted <input type="checkbox"/> RUE <input type="checkbox"/> RLE <input type="checkbox"/> LUE <input type="checkbox"/> LLE		GU: <input type="checkbox"/> NA <input type="checkbox"/> Denies c/o <input type="checkbox"/> Burning <input type="checkbox"/> Frequency <input type="checkbox"/> Urgency <input type="checkbox"/> Hematuria <input type="checkbox"/> Retention <input type="checkbox"/> Dysuria <input type="checkbox"/> Incontinent <input type="checkbox"/> Urostomy <input type="checkbox"/> Foley present on admit <input type="checkbox"/> Suprapubic catheter present on admit <input type="checkbox"/> Urine Color: _____ <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Penile Discharge (color: _____)																																																																																																																																																																																
ADULT GCS: TOTAL: <table border="1"> <tr> <th>Eyes</th> <th>Verbal</th> <th>Motor</th> </tr> <tr> <td>4) spontaneous 3) voice 2) pain 1) no response</td> <td>5) oriented 4) confused 3) inappropriate 2) incomprehensible 1) no response</td> <td>6) obey commands 5) localized pain 4) withdraws 3) flexion 2) extension 1) no response</td> </tr> </table>		Eyes	Verbal	Motor	4) spontaneous 3) voice 2) pain 1) no response	5) oriented 4) confused 3) inappropriate 2) incomprehensible 1) no response	6) obey commands 5) localized pain 4) withdraws 3) flexion 2) extension 1) no response	Pupils: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 •																																																																																																																																																																										
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	2.F - Pincer grasp	<input type="checkbox"/>	<input type="checkbox"/>	2.F - Draw head & 2 parts of person	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	3.L - Plays pat-a-cake	<input type="checkbox"/>	<input type="checkbox"/>	3.L - Name 4 different colors	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	4.S - Imitates sounds	<input type="checkbox"/>	<input type="checkbox"/>	4.S - Play board games	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
12 MONTHS	1.G - Walks with one hand held	<input type="checkbox"/>	<input type="checkbox"/>	1.G - Can child skip	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	2.F - Releases objects on command	<input type="checkbox"/>	<input type="checkbox"/>	2.F - Copy a square	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	3.L - Comes when called	<input type="checkbox"/>	<input type="checkbox"/>	3.L - Says 5 numbers in sequence	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	4.S - Says momma, dad	<input type="checkbox"/>	<input type="checkbox"/>	4.S - Able to model/imitate	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
18 MONTHS	1.G - Walks upstairs w/assist	<input type="checkbox"/>	<input type="checkbox"/>	1.G - Hop, skip, jump in sequence	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	2.F - Feeds from spoon	<input type="checkbox"/>	<input type="checkbox"/>	2.F - Utilizes appropriate computer keys	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	3.L - Can child say 3 words	<input type="checkbox"/>	<input type="checkbox"/>	3.L - Appropriate grade for age	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	4.S - Mimic actions of others	<input type="checkbox"/>	<input type="checkbox"/>	4.S - Establish friendship	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
24 MONTHS	1.G - Runs	<input type="checkbox"/>	<input type="checkbox"/>	1.G - Developed	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	2.F - Stack 4 blocks	<input type="checkbox"/>	<input type="checkbox"/>	2.F - Developed	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	3.L - Combine words	<input type="checkbox"/>	<input type="checkbox"/>	3.L - Appropriate grade for age	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
	4.S - Plays with others	<input type="checkbox"/>	<input type="checkbox"/>	4.S - Associate with peers	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																																																																												
KEY G - Gross Motor Skills F - Fine Motor Skills L - Language Skill S - Social Skill																																																																																																																																																																																		
CHILDHOOD IMMUNIZATION SCHEDULE REFERENCE <table border="1"> <tr> <th>Age</th> <th>Hepatitis</th> <th>DTAP</th> <th>H Influenza b</th> <th>Polio</th> <th>MMR</th> <th>Varicella</th> <th>Other</th> </tr> <tr> <td>Birth</td> <td>Hep B #1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2 MONTHS</td> <td>Hep B #2</td> <td>DTAP #1</td> <td>HIB #1</td> <td>IPV #1</td> <td></td> <td></td> <td>PCV #1</td> </tr> <tr> <td>4 MONTHS</td> <td>Hep B #3</td> <td>DTAP #2</td> <td>HIB #2</td> <td>IPV #2</td> <td></td> <td></td> <td>PCV #3</td> </tr> <tr> <td>6 MONTHS</td> <td>Hep B #4</td> <td>DTAP #3</td> <td></td> <td>IPV #3</td> <td></td> <td></td> <td>PCV #4</td> </tr> <tr> <td>12 MONTHS</td> <td>Hep A #1</td> <td></td> <td></td> <td></td> <td>MMR</td> <td>Varicella</td> <td>PCV #4</td> </tr> <tr> <td>15 MONTHS</td> <td></td> <td></td> <td>HIB #3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>18 MONTHS</td> <td>Hep A #2</td> <td>DTAP #4</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4-6 YEARS</td> <td></td> <td>DTAP #5</td> <td></td> <td>IPV #4</td> <td>MMR</td> <td>Varicella</td> <td></td> </tr> <tr> <td>11-12 YEARS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Tdap HPV</td> </tr> </table>				Age	Hepatitis	DTAP	H Influenza b	Polio	MMR	Varicella	Other	Birth	Hep B #1							2 MONTHS	Hep B #2	DTAP #1	HIB #1	IPV #1			PCV #1	4 MONTHS	Hep B #3	DTAP #2	HIB #2	IPV #2			PCV #3	6 MONTHS	Hep B #4	DTAP #3		IPV #3			PCV #4	12 MONTHS	Hep A #1				MMR	Varicella	PCV #4	15 MONTHS			HIB #3					18 MONTHS	Hep A #2	DTAP #4						4-6 YEARS		DTAP #5		IPV #4	MMR	Varicella		11-12 YEARS							Tdap HPV																																																																																															
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EMERGENCY DEPARTMENT INTERVENTIONS					
PATIENT EDUCATION:			CONSULTS		
Response Code (RC): V= Verbalized Understanding N= Needs Reinforcement					
<input type="checkbox"/> PATIENT	<input type="checkbox"/> FAMILY/FRIEND		Time/RN		
Time/RN	Topic	RC	Time/RN	Topic	RC
	ED Process			Disease	
	Pain Scale			Test Results	
	Bedrest			Crutch Walking	
	NPO Status			Other:	
Time	RN	ADMIT TO ER TREATMENT ROOM			
		To ER RM # _____			
		<input type="checkbox"/> Placed in gown <input type="checkbox"/> Remains clothed			
		Side Rails Up x: <input type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> In Chair <input type="checkbox"/> Held			
		Call light given and explained			
		Bed in low position / wheels locked			
		HOB up _____ degrees <input type="checkbox"/> Trendelenberg			
		Family at bedside			
		ED MD Notified			
		ED MD at bedside			
***		For CP complaint or symptoms Go to "Cardiac" Section			
		Placed on monitor. Initial Rhythm: _____			
		Pulse ox in place. Sat _____ %			
		O2 _____ L per: NC / NRB / Mask			
		12 Lead EKG done			
Time	RN	CARDIAC SYMPTOMS OR CP COMPLAINT			
		Time of first EMS EKG			
		STAT 12 Lead EKG done			
		#2: _____	#3: _____	#4: _____	
		Inferior MI noted? Right sided 12 Lead EKG done			
		Placed on monitor. Initial Rhythm: _____			
		Pulse ox in place. Sat _____ % on (RA / O2):			
		O2 _____ L per NC / NRB / Mask			
		STAT Cardiac Panel labs drawn Sent@_____			
		Initiate CP standing orders			
		Initiate Plan of Care #1: STEMI			
		Initiate Plan of Care #2: NSTEMI / Unstable Angina			
		Initiate Plan of Care #3: Low to intermediate risk ACS			
		Thrombolytic Triage Form Completed			
		ASA: <input type="checkbox"/> Given <input type="checkbox"/> Contraindicated			
		Beta Blocker: <input type="checkbox"/> Given <input type="checkbox"/> Contraindicated			
		STAT Port CXR done			
		Cardiologist called: _____			
		X2: _____	X3: _____		
		Cardiologist Responded (**document issues in notes)			
		Cardiologist Arrived			
		Reperfusion Decision Made: <input type="checkbox"/> CCL <input type="checkbox"/> Thrombolytics			
		<input type="checkbox"/> No reperfusion, why?: _____			
		RRN notified / Cath Team called			
		Cath Team arrived			
		Thrombolytics started: <input type="checkbox"/> TNKase <input type="checkbox"/> tPA			
		Time Thrombolytic Reperfusion noted			
		Noninvasive Testing: <input type="checkbox"/> Cardiac ECHO <input type="checkbox"/> Stress Test			
		3 hr CK/MB. Troponin drawn & sent: 3 hr EKG donet			
		6 hr CK/MB. Troponin drawn & sent: 6 hr EKG done			
		Patient transferred to: <input type="checkbox"/> Cath Lab <input type="checkbox"/> PCU			
Time	RN	SAFETY			
		Suicide Risk Assessment Form Completed			
		Security Guard Called		Time Arrived: _____	
		Police Dept Called		Time Arrived: _____	
		Direct OBS: Rm # _____			
		Restraints (<i>Complete Restraint Orders & Flowsheet</i>)			
		Code White initiated			
Time/RN		EENT			
		Nasal Pack: R / L		Ear irrigation: R / L	
		Morgan Lens: R / L		Eye patch: R / L	
		Slit Lamp Exam		FB removed (ear/ eye / nose)	
Time/RN		PROCEDURES			
		Lumbar Puncture		Pacer (Internal / External)	
		Thoracentesis		# _____ Fr Chest tube: R / L	

[illegible]Page 4 of 6

[illegible]

EMERGENCY DEPARTMENT NURSING RECORD

PRE-PROCEDURE CHECKLIST				Name of Procedure:			
NA	Check when done			NA	Check when done		
<input type="checkbox"/>	<input type="checkbox"/>	Patient ID band on: Name & MR # verified		<input type="checkbox"/>	<input type="checkbox"/>	Dressed in Gown Only	
<input type="checkbox"/>	<input type="checkbox"/>	Allergy Band on		<input type="checkbox"/>	<input type="checkbox"/>	Removed: Jewelry / Dentures / Glasses / Contacts / Hearing Aides / Prosthesis	
<input type="checkbox"/>	<input type="checkbox"/>	Contrast Allergy <input type="checkbox"/> Latex Allergy <input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	Implants (list):	
<input type="checkbox"/>	<input type="checkbox"/>	Consent signed & dated by patient & MD		<input type="checkbox"/>	<input type="checkbox"/>	Surgical site marked: (Y / N)	
<input type="checkbox"/>	<input type="checkbox"/>	Blood consent signed		<input type="checkbox"/>	<input type="checkbox"/>	Time Out form completed (for procedures in ER only)	
<input type="checkbox"/>	<input type="checkbox"/>	NPO since:		<input type="checkbox"/>	<input type="checkbox"/>	Sedation Flowsheet initiated (for procedures in ER only)	
<input type="checkbox"/>	<input type="checkbox"/>	Voided / Foley Placed		<input type="checkbox"/>	<input type="checkbox"/>		

FINAL DISPOSITION			
<input type="checkbox"/> Improved		<input type="checkbox"/> Unchanged from Initial	
<input type="checkbox"/> Declined			
Discharge Vital Signs: BP _____ P _____ R _____ T _____		O2 Sat _____ Pain Score _____	
Time _____		Time _____	
DISCHARGED to: <input type="checkbox"/> Home <input type="checkbox"/> Other: _____ Referral MD: _____ <input type="checkbox"/> Walk <input type="checkbox"/> W/C <input type="checkbox"/> EMS <input type="checkbox"/> Carried <input type="checkbox"/> AMA (signed form / refused to sign) <input type="checkbox"/> Desertion (unable to located pt) D/C Instructions Explained to: <input type="checkbox"/> Pt <input type="checkbox"/> Other Given: <input type="checkbox"/> RX <input type="checkbox"/> Med Facts <input type="checkbox"/> Excuse given: School / Work <input type="checkbox"/> Printed Instructions <input type="checkbox"/> Verbal Instructions		ADMIT to: <input type="checkbox"/> PCU <input type="checkbox"/> Cath Lab <input type="checkbox"/> Surgery Admit MD: _____ Bed Requested RM # received Report given to: To dept per: <input type="checkbox"/> Stretcher <input type="checkbox"/> W/C With: <input type="checkbox"/> RN <input type="checkbox"/> PCP <input type="checkbox"/> MD <input type="checkbox"/> O2 <input type="checkbox"/> Monitor	
Time _____			
EXPIRED: (Also Complete Record of Death) <input type="checkbox"/> To Coroner <input type="checkbox"/> To Funeral Home <input type="checkbox"/> LOPA			

DISCHARGE / ADMIT RN Signature	
Date	Time
TRANSFERRED to ANOTHER FACILITY: (Also completed Transfer Consent, Transfer Order & Midas Log)	
Diagnosis:	
Reason for Transfer:	
Allergies:	
Accepting Facility:	
❖ The receiving facility must have available space and be able to provide appropriate personnel and treatment in order to accept patient for transfer. The facility above has agreed to these terms when transfer was accepted.	
MD Sending: _____ MD Receiving: _____	
Time of initial contact with receiving facility	Name and title of initial contact person at receiving facility:
Time of acceptance	Person accepting transfer / Title:
Report Given To:	
Vital Signs: BP _____ P _____ R _____ T _____ O2 SAT _____	
Time Transport Called / Transporting Agency:	
Time Transport Arrived	
Medical records to be sent with patient at time of transfer include:	
<input type="checkbox"/> ED Physician & Nurses Notes <input type="checkbox"/> EKG <input type="checkbox"/> Lab Test Results	<input type="checkbox"/> Radiology (copies / originals) <input type="checkbox"/> H&P <input type="checkbox"/> Consultation Reports
<input type="checkbox"/> Face Sheet <input type="checkbox"/> Advance Directives <input type="checkbox"/> Other:	
Transferring RN's Printed Name/Signature: _____ / _____	
Date/Time: _____ / _____	
Patient Condition: (check one) <input type="checkbox"/> The patient has a stabilized emergency medical condition (See: Transfer Consent) -OR- <input type="checkbox"/> The patient does not have a stabilized emergency medical condition (See: Transfer Consent)	
Mode of Transfer: <input type="checkbox"/> Ambulance with Paramedic (ALS) <input type="checkbox"/> Ambulance with Basic EMT (BLS) <input type="checkbox"/> Helicopter with RN or Paramedic <input type="checkbox"/> Ambulance with RN	
Medical Orders During Transfer: <input type="checkbox"/> IV Site: (1) _____ (2) _____ <input type="checkbox"/> Cardiac Monitor <input type="checkbox"/> Oxygen: Route _____ Flow Rate/ FIO2: _____ <input type="checkbox"/> Medications: _____ <input type="checkbox"/> Equipment Sent: <input type="checkbox"/> Monitor <input type="checkbox"/> Vent <input type="checkbox"/> IV Pump <input type="checkbox"/> Other	
Medical Direction for Care During Transfer: <input type="checkbox"/> Maintained by this facility <input type="checkbox"/> Maintained by receiving facility	
Transferring MD's Printed Name/Signature: _____ / _____	
Date/Time: _____ / _____	

APPENDIX G
AFFILIATION AGREEMENT

**MEMORANDUM OF AFFILIATION
BETWEEN THE BOARD OF SUPERVISORS OF LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL & MECHANICAL COLLEGE AND**

[REDACTED]

This Memorandum of Affiliation, hereinafter referred to as "Agreement," is entered into by and between the Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, herein represented by Robert Kuhn, Interim Vice Chancellor for Finance and Administrative Services and CFO of Louisiana State University and A&M College, hereinafter referred to as "University," and [REDACTED], hereinafter referred to as the "Affiliate." The LSU Department of Communication Studies, hereinafter referred to as "Department," will provide graduate students in its program to the Affiliate for the purposes of educational research.

WHEREAS, the University and Affiliate have agreed that it is in their mutual interest for University to have access to Affiliate's facilities (hereafter the "Premises") for the purposes of educational research,

WHEREAS, the University and Affiliate agree that University will access Affiliate's Premises for the above stated purposes under the following terms and conditions.

NOW THEREFORE, in consideration of the Premises and the mutual covenants stated herein, the parties do hereby agree as follows:

Section I: Responsibility of University Department:

The Department agrees to:

1. Maintain the academic responsibilities of teaching and advising students;
2. Provide oversight of the student's activities and assist the student in making all final arrangements;
3. Be responsible for the final determination of the student's grade;
4. Be responsible for any mediation which may be needed between the student and the Affiliate supervisor;
5. Assume the responsibility for terminating arrangement should circumstances warrant such action.

Section II: Responsibility of Student:

The student agrees to:

1. Follow appropriate routine at the Affiliate's Premises regarding conduct, hours, dress, attendance at meetings, and any other established guidelines;
2. Follow appropriate regulations of the Affiliate's Premises;
3. Coordinate schedules with the Affiliate's representative.

Section III: Responsibility of Affiliate:

The Affiliate agrees to:

1. Grant permission to the University to conduct educational research activities on the Premises;
2. Provide the student with an orientation of the emergency room common areas and provider work areas, barring patient exam rooms, for the purposes of observing communication/interaction between nurses, technicians, and physicians.
3. Allow the student to ask providers questions about their communication practices and computer medical records systems.
4. Provide a representative for scheduling and contact purposes.
5. Contact the University if the student is consistently experiencing problems;
6. Affiliate may remove student at its discretion for behavior, and/or conduct, that is detrimental to the care and/or safety of patients;

Section IV: Responsibilities of University and Affiliate:

It is mutually agreed that:

1. The University represents that their personnel and employees are generally familiar with operations of the type conducted on the Premises, and will conduct their activities in a careful and prudent manner giving full regard to safety of persons and property. University agrees their personnel and employees will comply with all the Affiliate's safety rules and all rules, regulations, and standards while on the Affiliate's Premises.
2. The University acknowledges Affiliate may/may not be a covered entity under HIPAA. University acknowledges that the students participating in educational/clinical experiences on the premises of the Affiliate are considered "workforce" under HIPAA regulations.

Section V: Additional Stipulations:

1. Each party hereto agrees to indemnify, defend, and to hold the other, its officers, directors, agents and employees, harmless from and against any and all losses, liabilities, demands, suits, judgments and claims, including reasonable attorney's fees, to the extent that such losses, liabilities, demands, suits, judgments, claims, or fees arise out of or result from the willful act, fault, omission, or negligence of the indemnifying party, or of its employees, servants, or agents, in performing its obligations under this agreement, provided, however, that neither party hereto shall be liable to the other for any consequential damages arising out of its willful act, fault, omission or negligence.

Section VI: Terms of Agreement:

1. That University and Affiliate shall comply with Title VI of the Civil Right Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of Rehabilitation Act of 1973, and Title II of the Older Americans Amendments of 1975, and all related regulations, and assure that they do not, and will not, discriminate against any person on the basis of race, color, sex, creed, national origin, age or handicap under any program or activity receiving Federal financial assistance;
2. Nothing in this Agreement is intended to be contrary to State or Federal law. In the event of conflict between terms of this Agreement and any applicable State or Federal law, that State or Federal law will supersede the terms of this Agreement. In the event of conflict between State and Federal laws, Federal laws will govern;

3. Student interns of the University are provided third party liability claims coverage while providing professional services as stated within this Agreement for the Affiliate facility under the State of Louisiana Commercial General Liability Policy only while interning as part of their educational requirements and without receiving remuneration from the Affiliate facility.
4. Periodic reviews of programs and policies will be conducted under the auspices of the Louisiana State University's Office of Academic Affairs;
5. This Memorandum of Affiliation may be terminated by either party upon written notice.
6. This Memorandum of Affiliation shall commence on November 1, 2013.
7. This Agreement shall be interpreted and governed in accordance with the laws of the State of Louisiana. The venue of any action brought with regards to this Agreement shall be the Nineteenth Judicial District Court, East Baton Rouge Parish, State of Louisiana.

(The remainder of this page intentionally left blank.)

RECOMMENDED BY:

Department: LSU Department of Communication Studies
Signature: Renee Edwards
Printed Name: Renee Edwards
Title: Professor + Chair
Date: Oct. 25, 2013

**BOARD OF SUPERVISORS OF
LOUISIANA STATE UNIVERSITY AND
AGRICULTURAL AND MECHANICAL COLLEGE**

Robert Kuhn
Robert Kuhn
Interim Vice Chancellor for Finance & Administrative Services and CFO
Date: 10/30/13

AFFILIATE:

Name: [REDACTED]
Address: [REDACTED]
City/State/Zip Code: [REDACTED]
Signature: [REDACTED]
Printed Name: [REDACTED]
Title: President and CEO
Date: 11/19/13

APPENDIX H QUESTIONNAIRE

Dear Participant,

Researchers in the Department of Communication Studies at Louisiana State University are conducting a survey to examine emergency room workers' use of and satisfaction with electronic medical records systems (EMRs) and whether EMRs impact job satisfaction and/or communication in the emergency room. This questionnaire will take about 5 minutes to complete.

1. Title of Study: Emergency Room Electronic Medical Records Systems, Job Satisfaction, and Communication.
2. Performance Site: survey conducted by researchers at Louisiana State University; concurrently, paper surveys distributed to emergency room workers in southeastern Louisiana.
3. Contact: Barbara Cook Overton, bcook22@lsu.edu.
4. Purpose: To identify patterns in communication and/or job satisfaction among emergency room workers who use electronic medical records systems versus those who use paper charts.
5. Participants: Adult volunteers who work in emergency rooms and are responsible for charting/documenting patient care.
6. Benefits: The information will examine if EMRs impact job satisfaction and communication in emergency rooms, while isolating specific aspects of EMR adoption that may be problematic.
7. Risks: The survey is designed to be nonthreatening. If you experience emotional discomfort, please discontinue.
8. Right to refuse: All participation is voluntary. Participants are free to stop at any time or skip any questions.
9. Privacy: All responses are anonymous.

By continuing: "I understand the nature of this study and may direct questions regarding its specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert C. Matthews, Chairman, LSU Institutional Review Board, (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb."

1. What is your job title?

- ☐ tech
- ☐ unit secretary
- ☐ nurse
- ☐ nurse practitioner/physician assistant
- ☐ physician
- ☐ other

2. How long have you worked in emergency rooms?

- ☐ 1 year or less
- ☐ between 1 and 5 years
- ☐ between 5 and 10 years
- ☐ more than 10 years

3. Which shifts do you work?

- ☐ mostly day shifts
- ☐ mostly night shifts
- ☐ a mix of days and nights

4. Did administration ask for your input when deciding which EMR would be used in your emergency room?

- ☐ yes (then please answer question 5)
- ☐ no (then please skip to question 6)
- ☐ not applicable/EMR was chosen before I came to the ER (then please skip to question 6)

5. Do you believe administration took your input into consideration when choosing which EMR to install?

- ☐ yes
- ☐ no
- ☐ not sure

6. Generally speaking, how do you view administration?

- ☐ very favorably
- ☐ somewhat favorably
- ☐ neither favorably nor unfavorably
- ☐ somewhat unfavorably
- ☐ very unfavorably
- ☐ no opinion

7. Please indicate how often you feel this way for each statement.

	rarely	sometimes	moderately often	usually	very frequently
I feel like I am fighting unnecessary fires at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People are caught in a cycle of undermining one another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel obligated to fulfill opposing demands at the same time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am treated with respect by administration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience unnecessary stress at work because of people "playing games."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The politics of the hospital prevent patients from having their needs addressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at my hospital are team players.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The concerns of the hospital surpass the needs of the patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at my workplace sabotage one another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am "damned if I do, damned if I don't."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration will help me out if I tell them I am feeling overwhelmed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at my hospital hold personal vendettas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurses and physicians view patients differently, and this causes conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical staff and administration view patients differently, and this causes conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backstabbing is a problem at my hospital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative procedures get in the way of what's best for the patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't go to administration for help resolving conflicts because they won't do anything to help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I am "between a rock and a hard place."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How has the EMR system impacted communication between you and your co-workers?

Please select all that apply.

- ☐ I talk with my co-workers more
- ☐ I haven't noticed a difference
- ☐ I talk with my co-workers less
- ☐ we talk about fewer topics
- ☐ we don't spend as much time chitchatting
- ☐ I spend more time clarifying/asking about orders
- ☐ we spend more time discussing patient care face-to-face
- ☐ we spend less time discussing patient care face-to-face
- ☐ we spend time complaining about the EMR
- ☐ we spend time teaching each other how to use the EMR

Other (please specify)

9. Overall, how satisfied are you with the EMR that your emergency room uses?

- ☐ very satisfied
- ☐ satisfied
- ☐ somewhat satisfied
- ☐ somewhat dissatisfied
- ☐ dissatisfied
- ☐ very dissatisfied
- ☐ not sure

10. Please indicate how much you agree or disagree with each of the following statements that begin "Since I've begun using EMRs..."

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
I am more satisfied with my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered quitting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered changing jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered retiring.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have considered changing careers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. I feel burned out from my work.

- ☐ never
- ☐ a few times a year or less
- ☐ once a month or less
- ☐ a few times a month
- ☐ once a week
- ☐ a few times a week
- ☐ daily

12. I have become more callous toward people since I took this job.

- ☐ never
- ☐ a few times a year or less
- ☐ once a month or less
- ☐ a few times a month
- ☐ once a week
- ☐ a few times a week
- ☐ daily

13. Overall, how satisfied are you with your career in emergency medicine?

- ☐ very satisfied
- ☐ satisfied
- ☐ somewhat satisfied
- ☐ somewhat dissatisfied
- ☐ dissatisfied
- ☐ very dissatisfied
- ☐ not sure

14. If you had it to do over, would you still chose a career in the emergency room?

- ☐ yes
- ☐ no
- ☐ not sure

15. Comments?

APPENDIX I
MODIFIED INTERNAL REVIEW BOARD EXEMPTION

ACTION ON EXEMPTION APPROVAL REQUEST



TO: Tracey Shaffer
CMST

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: January 12, 2015

RE: IRB# E8458

TITLE: Emergency Room Electronic Medical Records Systems, Job Satisfaction, and Communication

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

New Protocol/Modification/Continuation: Modification

Brief Modification Description: Adding new, shortened questionnaire.

Review date: 1/9/2015

Approved X **Disapproved** _____

Approval Date: 1/9/2015 **Approval Expiration Date:** 10/6/2016

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable): _____

Protocol Matches Scope of Work in Grant proposal: (if applicable) _____

By: Dennis Landin, Chairman 

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

VITA

In 1995, Barbara Cook Overton received a Bachelor of Arts in Mass Communication from the University of Charleston in Charleston, West Virginia and in 1999, she earned a Master of Fine Arts in Film and Media Production from the University of New Orleans in New Orleans, Louisiana. Over the next decade while living first in Tennessee and then in California, Overton taught film production, documentary making, editing, cinematography, film history, horror and science fiction studies, screenwriting, television news reporting, and media criticism. Overton was also a filmmaker and made several documentaries about health and healthcare in the developing world. In 2011, Overton decided to pursue a doctorate in Health Communication and returned to Louisiana. She attended Louisiana State University in Baton Rouge, where she was awarded a Dissertation Year Fellowship in 2014. Her research interests include emergency room communication, electronic medical records systems, organizational change, communication and aging, ageism and health outcomes, persuasion, mass media, public health campaigns, pharmaceutical advertising, sexual health, patient education, and patient-provider interactions.