KNOWLEDGE SHARING BEHAVIORS: A DESCRIPTIVE CASE STUDY TO EXPLORE
THE KNOWLEDGE SHARING BEHAVIORS OF MEDICAL DOCTORS IN A
COMMUNITY HOSPITAL LOCATED IN THE NORTHEASTERN UNITED STATES

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This doctoral thesis is dedicated

to my husband John Carvalho and to my mother Eugenia Patras

and in loving memory of my father

George Patras
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Abstract

A descriptive single-case study using a qualitative design method was employed to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The topic was timely given that effective collaboration and coordination among healthcare providers was recognized as a vital component of quality patient care. Thus, the purpose of this study was to better understand the communication processes and knowledge flow among doctors and other healthcare professionals to gain insight into the nature of their social interactions.

Habermas’ (1984) theory of communicative action provided a non-positivist approach in interpreting human interactions where the objective, subjective, and social worlds were integrated to attain intersubjective mutuality. The theory emphasized social pragmatics and rational reconstruction among individuals who engaged in dynamic interplay to co-construct their environment. Since the purpose of the study was to explore the dialogical exchange among doctors and other healthcare professionals, Habermas’ (1984) theory served as an appropriate lens to interpret the findings.

A qualitative design using three data collection techniques (documentation, non-participatory observations, and semi-structured interviews) served as the strategy of inquiry and provided triangulation. Each phase was iterative and informed subsequent phase(s) of the study. A purposeful sample was employed to recruit participants. Thirty-two of 242 doctors were targeted, 14 of the 32 participated.

The results from the data analysis identified four broad themes (collaboration and coordination emphasizing evidence-based medicine, verbal and electronic communication, transparent organizational culture, and reflective learning) which led to six key findings: doctors
engaged in interdisciplinary collaboration that emphasized evidence-based medicine, doctors took initiatives to clarify and corroborate data to ensure knowledge acquisition and knowledge application were interpreted and applied as intended, social conversation created personal communication channels, electronic system facilitated communication across the organization, organizational culture strongly influenced knowledge sharing behaviors, and reflective learning was perceived as vital to individual and organizational learning.

The study concluded there was evidence that doctors at this community hospital collaborated with other healthcare professionals to effectively coordinate patient care. Notably, the types of actions displayed by doctors were consistent with Habermas’ (1984) theory of communicative action. The study was completed over a period of six months.

Keywords: Knowledge sharing, knowledge transfer, knowledge sharing and medical doctors, knowledge sharing and medical/hospitals/healthcare, Inter-professional collaboration or communication, social collaboration and coordination among doctors or physicians, interdisciplinary communication or collaboration, and cross-functional communication and healthcare professionals or medical doctors.
Chapter 1: Introduction and Context

“If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.”

Thomas Jefferson (Jefferson 13 August 1813)

This chapter introduces the topic of knowledge sharing, as well as the main purpose and research questions that were used to guide the inquiry for this study. The introduction provides an overview of the healthcare industry based on various social, cultural, technological, and legal environmental changes that have taken place over the past few decades to explore what impact they’ve had on knowledge sharing among healthcare professionals. This chapter then gives a presentation of the problem statement and its significance, the theoretical lens and framework employed to interpret the phenomenon, and an overview of the data collection strategies and methods used to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States.

The emergence of the information age in the late 1970s and its concomitant data expansion marked a shift in society from industrialization to computerization where knowledge management became embedded in organizations across the globe. More recently, over the past few decades the knowledge management landscape has moved from a “product-centered” to a “process-centered” approach characterized by a change in organizational focus where a first generational mindset that had emphasized storage of information was subsequently replaced by a second generation that focused on understanding the social processes and learning networks.
associated with the effective acquisition and creation of knowledge (Mentzas, Apostolou, Young, & Abecker, 2001). Oye, Salleh, and Noorminshah (2011) distinguished between knowledge and information by emphasizing that knowledge provided an individual with the know-how needed to use information strategically to attain a competitive advantage. Comparatively, Drucker (1989) argued that “Knowledge is information that changes something or somebody -- either by becoming grounds for actions, or by making an individual (or an institution) capable of different or more effective action” (p. 242).

Over the past decade, the healthcare industry has undergone a significantly changed role in society with a “health for all” initiative that resided at the center of this social movement supported by the Patient Protection and Affordable Care Act of 2010, more commonly known as the Affordable Care Act or ACA. These transformations reflected an emancipatory social movement in response to a public outcry that poor quality patient care and rising medical costs were detrimental to the future of healthcare (National Institute of Health, 2008). To meet these goals, healthcare providers were required to create strategies that emphasized preventive medicine that would result in a higher quality of patient care through collaborative initiatives that reduced redundancy and ultimately the cost of medicine in line with the mandates of the Affordable Care Act of 2010. New healthcare regulations emphasized that hospitals had to engage in patient collaboration to receive government support (Federal Register, 2010). This challenge has forced hospitals to reposition themselves by establishing the infrastructure needed to encourage knowledge sharing among healthcare professionals (Zigan, Macfarlane, & Desombre, 2010).

In addition, healthcare systems worldwide recognized that, in order to successfully meet growing healthcare demands, they were critically dependent on capturing and sharing the
intellectual knowledge assets of doctors (Spilg, Siebert, & Martin, 2012). Yet this initiative presented a challenge since the nature of tacit knowledge was highly abstract, intuitive, and unique, making it difficult to transfer (Polanyi, 1966). Despite this challenge a shift towards collaborative patient care was at the top of the healthcare agenda. Initiatives to meet the needs of specific stakeholder groups (patients, public health entities, pharmaceutical organizations, and governmental agencies) posed potential conflicts of interest that ultimately impacted knowledge sharing behavior further (Zigan et al., 2010). These issues have weighed on the healthcare industry even as it was being pressured to combat recent public health challenges such as Ebola, avian influenza, SARS, HIV, and other deadly pathogens, as well as the dangers of drug resistant infections (Osterholm, 2013).

To effectively meet these healthcare objectives within the parameters of governmental regulations, it was critically important to the healthcare industry that research be conducted to understand what constituted the nature of knowledge sharing among healthcare professionals. The purpose of this study was to explore doctors’ knowledge sharing behaviors and specifically the types of knowledge and types of actions they shared with other healthcare professionals. Focus was directed to the social interactions among doctors and other healthcare professionals to better understand how they socially engaged with one another to coordinate patient care, and to gain insight into the communication processes and knowledge flow that took place between them. In this study, there were three types of data collection strategies (documentation, observation, and semi-structured interviews) employed to provide insight into how doctors shared knowledge with other healthcare professionals.
Problem Statement

This section identifies the statement of problem that was explored in this doctoral thesis. Specifically, why the problem has emerged, how the problem has continued to exist (on global, national, and local levels), and what measures must be taken to eliminate the problem. The purpose of this study was to explore the knowledge sharing behaviors of doctors in order to understand how they collaborated with other healthcare professionals in a community hospital in the Northeastern United States.

Research shows that an increase in collaboration among doctors leads to a decrease of medical errors and reduced the costs of medicine to society (Landman, Spatz, Cherlin, Krumholz, Bradley & Curry, 2013). Officials warned that the “notion that disease or contamination somehow recognizes geographic or political borders is a dangerous illusion” and “we can no longer separate global health from America’s health” (Daulaire, 2012, p. 382). Nothing could highlight the important nature of these observations more than the 2014 West African Ebola outbreaks. As the local and world healthcare infrastructure scrambled to contain the outbreaks, reported fatality rates of 50% were considered underestimates by some researchers (Kucharski & Edmunds, 2014).

Historically, a physician’s or nurse’s role clearly defined behavioral expectations associated with the delivery of patient healthcare. Physicians traditionally perceived themselves as decision-makers who assessed and prescribed patient care while nurses perceived themselves as caregivers trained to support and administer doctors’ requests (Fagin, 1992). According to Evanoff, Potter, Wolf, Grayson, Dunagan, and Boxerman (2005), differing priorities and goals prevented doctors and nurses from efficiently and effectively coordinating action.
Over the past decade, researchers have further explored the nature of social interactions among doctors and nurses, identifying potential determinants that may enable or impede knowledge sharing and collaboration, and determining to discover how to “merge the unique strengths of both professions into opportunities to improve patient outcomes” (Nair, Fitzpatrick, McNulty, Click, & Glembocki, 2012, p. 115). According to Clark and Greenwald (2013) interprofessional collaboration must improve to achieve the goals of the healthcare industry; these goals included maximizing patient safety and quality of patient care. They defined collaboration as the “process where individuals engage in joint decision making and shared responsibility for outcomes which is achieved through shared vision, open communication, teamwork, interdependency, and shared power” and “characterized by common goals and working together to complete task” (p. 653).

At the national level, an increase in medical mistakes resulted from a lack of communication and coordinated care among healthcare professionals and has continued to negatively impact the quality of healthcare and overall cost of medicine to society (Brown, 2013). There continues to be an urgent need to improve this fragmented healthcare system across the United States (Rabin, 2013, April 29). The Institute of Medicine (2010) indicated that 15,000 Medicare patients suffer monthly from serious medical issues that have contributed to death due to a lack of communication among healthcare providers (Rabin, 2013, April 29). Rabin reported that “Nobody is responsible for coordinating care” and “that’s the dirty little secret about healthcare” (2013, April 29). Zigan et al. (2010) argued that social pressures from stakeholder groups coerce hospitals to develop formal structures to encourage collaboration and coordination among different healthcare providers and to eliminate potential barriers that impede knowledge sharing among healthcare professionals. The need to improve the quality of patient
care and reduce the cost of medical expenditures through consolidated care has been a major priority on the healthcare agenda in the United States as emphasized by the Affordable Care Act of 2010.

At the local level doctors must collaborate with colleagues to increase their knowledge and competence in geriatric care as a result of the demographic trend of older adults living longer according to the (Vincent & Velkoff, 2010). In addition, recent economic trends have led to partnerships between community and tertiary hospitals to sustain a competitive advantage, which means that collaboration and coordination has been essential among healthcare providers in order to ensure a high quality of patient care (Becker’s Hospital Review, June 2012). The government has implemented incentives to reduce the redundancy of medical procedures and to encourage a shift from a traditional philosophy of “fee for service” to a “pay for performance” system where physicians were rewarded in meeting pre-established targets that emphasize patient collaboration and social coordination to improve the quality of patient care (Miller, 2013). In addition, the Federal Trade Commission has implemented techniques to bypass antitrust laws that regulated fair competition in the healthcare industry in narrow circumstances (American Hospital Association, 2010). This allowed hospitals to create partnerships where inter-organizational knowledge sharing could be used to improve the quality of patient care (Brill, 2013).

While collaboration and knowledge sharing were highly emphasized in the healthcare industry, a gap continued to exist between knowledge acquisition (“know-how”) and knowledge application (“know-that”). Knowledge translation was often lost during the process of transformation as interpretation and application were not maintained as initially intended. There was an emphasis that more research be conducted to understand the nature of knowledge sharing among doctors and other healthcare professionals (Aliki, Menon, Boruff, Rodriguez, & Ahmed,
that could be used to inform future research. To date, there has been a large body of research on knowledge sharing in the healthcare industry but few studies have directed attention to the communication processes and knowledge flows that occur among doctors and other healthcare professionals in order to explore the nature of their social interactions. In addition, few studies have explored the topic from a social constructivist approach as a way to understand how individuals co-construct meaning to coordinate action (Aliki et al., 2014).

Zigan et al. (2010) argued there was a disconnection among doctors and other healthcare professionals where various individual, collective, and organizational factors have impeded effective collaboration among them. They emphasized that leadership must create processes that facilitate knowledge acquisition and application through formal and informal structures. They also noted that for knowledge acquisition and application to be effective individuals must perceive a value associated with sharing their knowledge and also understand how to appropriately apply knowledge as intended when they receive it. Davenport and Prusak (1998) argued that the challenge was to transfer, translate, and apply knowledge in its intended meaning for it to be effective. Garud (1997) argued that “know-how” (“learn by doing”), “know-why” (“learn by studying”) and “know-what” (“learn by using”) were interrelated components of knowledge and must be managed together as a system to effectively use and apply knowledge as intended.

According to Waring (2005) and Waring and Bishop (2010) a traditional “blame culture” existed in the healthcare industry where a fear of potential medical liability results in a lack of incidental reporting among doctors and hospital leaders who create barriers to effective
knowledge sharing. Similarly, Gorini et al. (2012) argued that a range of different institutions worldwide has identified a ‘culture of blame’ and a fear of being punished as the principal reasons for the lack of medical error reporting which has consequently led to poor quality patient care (p. 671). They also noted that “the pervasiveness of blame culture refers to the difficulty for health care providers to accept and express criticism related to their working conducts” (p. 674). Although these challenges existed, the healthcare industry perceived physicians as valuable “knowledge assets” which means they must create formal structures to exploit doctors’ intellectual capital in order to sustain competitive advantage (Mansingh et. al., 2009; Spilg et al., 2012; Van de Wiel, Van den Bossche, Janssen, & Jossberger, 2011; Zigan et. al., 2010).

In summary, the ability of hospital leaders to understand what facilitated or impeded knowledge sharing would enable them to create effective communication and knowledge structures that could be used to create strategic initiatives for competitive advantage. Therefore, the purpose of this doctoral research was to explore the knowledge sharing behaviors of doctors in a community hospital located in the Northeastern United States that has been recognized for excellence in patient care and transparent communication, and to understand and identify the types of knowledge and types of actions that doctors used in sharing knowledge with other healthcare professionals (Habermas, 1984).

**Research Questions**

The research questions provide a narrow scope to investigate the overall purpose of the study and serve as a guide to explore the phenomenon (Creswell, 2012). The research questions were aligned with the purpose of the study and with the theoretical framework to ensure consistency. The primary research question was written as a broad question that served as the central focus of the study while sub-questions were used to narrow the focus of the primary
research question to explore the phenomenon in more depth (Creswell, 2012). For this case study, the primary research question sought to explore the knowledge sharing behaviors of doctors in a community hospital located in the Northeastern United States. The two sub-questions sought to gain further insight into the primary research question by exploring the types of knowledge and types of actions that doctors used to share knowledge with other healthcare professionals.

The overarching research question that guided this study was:

1. What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?
   a.) What types of knowledge do medical doctors share (Habermas, 1984), and
   b.) What types of actions do medical doctors use to share knowledge (Habermas, 1984)?

Theoretical Framework

This section is a presentation of the theoretical framework that was used to answer the research questions of this study. The theoretical framework was aligned with the goals and the primary research questions that guided the inquiry of this study. The theoretical construct chosen for this study was the most appropriate lens to explore the phenomenon of knowledge sharing among doctors and other healthcare professionals to better understand the social interactions, communication processes, and knowledge flow that took place among them that could be used to directly address the primary research questions of this study.

Habermas (1984) explored three types of knowledge and distinguished four types of actions to share knowledge. Habermas (1984) presented three types of knowledge content: (a) technical (objective and empirical-scientific; instrumental, used to control environment), (b)
practical (experiential, intuitive, abstract; social interactions guided by norms), and (c) emancipatory (critical and self-reflective; in pursuit of transformation). He further distinguished four types of action used in knowledge sharing: teleological (objective; goal and purpose-oriented), normative (social; culture- and tradition-oriented), dramaturgical (subjective; role specific and contextual), and communicative (intersubjective; objective, social, and subjective).

While Habermas (1984) presented three types of knowledge content and four types of action, he emphasized the theory of communicative action as being the most effective means to coordinate social action where objective, subjective, and social worlds were integrated through intersubjective mutuality based on shared meaning and interpretation that enabled individuals to co-construct their environment. This study employed the theory of communicative action as the primary framework to explore the knowledge sharing behaviors of doctors in a community hospital located in the Northeastern United States.

Habermas was a German philosopher, sociologist, and critic of modern society whose social theory and work reflected a strong interest in democracy and egalitarianism. He believed that public consensus enabled a social emancipation in which individuals freely engaged in the resolution of social issues and conflict. His contributions provided critical insight towards understanding modern discourse and communicative rationale exercised through every day speech acts. His early inspirations were based on the philosophies of Plato and Socrates, who both emphasized reason and rational thought as a means to define “truth.” Habermas (1984) was a strong proponent of social pragmatics, where intersubjective mutuality enabled actors to reach consensus based on shared meaning and interpretation to define context to coordinate social action. Although Habermas (1984) and Plato both argued that “truth” was based on reason and rationality, Plato perceived “truth” as rooted in objective reality outside of the subjective nature
of man while Habermas (1984) argued that “truth” was a socially constructed process where objective, subjective, and social realities were integrated through intersubjectivity. Habermas (1984) and Socrates concurred that dialogue based on argumentation and debate was fundamental to the establishment of “truth.” One Socratic concept seemed very Habermasian; this concept referred to *doxa* or “perspective on the world” and the corresponding *dokei moi* or “what appears to me” as intricately tied to language and conversation among individuals.

Since Habermas was a German philosopher, it was natural to compare him with the preeminent German philosophers of the late 18th and early 19th century, Immanuel Kant and Georg Wilhelm Friedrich Hegel. Both Kant and Hegel significantly influenced the work and philosophies of Habermas towards universal pragmatics. Habermas’ (1984) signature concept of discourse theory reflected Kant’s moral theory of universalisability. Kant’s theory emphasized that social action (rules or policies) should reflect equality through objectivity and consistency, and that objectivity was superior to subjectivity where the latter’s means-to-an-end approach resulted in ethical disparity. Kant’s theory could be related to modern social action which aimed to emancipate healthcare through equality and universality as reflected in the concept of “health for all” rather than in merely treating patients as a means to financial ends. Habermas took a path between Kantian idealism and Hegelian empiricism. Habermas tried to avoid the pitfalls of empiricism as well as those of transcendental and absolute idealism while relating the respective truth of these different and mutually incompatible epistemological positions. This materialist theory of knowledge assimilated Kant's critique of empiricism and Hegel’s critique of transcendentalism, as well as the empiricist critique of absolute idealism (O'Neill, 1976, p. 259). Habermas (1998) seemed to tacitly admit this middle path in *Truth and Justification* describing the work as “Kantian pragmatism” (O’Neill, 1976, p. 259).
Habermas was later inspired by the work of other social pragmatists such as Émile Durkheim, Max Weber, and Margaret Mead. Durkheim (Segre, 2013) emphasized that normative traditions and socialization shaped social action. Weber (1947) argued that consensus enabled social action that transcended the boundaries of normative traditions. Mead (Segre, 2013) proposed that social perception was shaped by the language and symbolism used in dialogue. Habermas was a social critic who advocated against inequality imposed by elites who colonized society by recognizing the perils of capitalism that dominated society. He expressed his support for democracy and the emancipation of human beings in *The Structuration of the Public Sphere* where he advocated that individuals exercise democracy in the public domain in order to freely discuss societal problems and solutions (Scambler, 2001). Habermas (1984) argued that social pragmatics enabled individuals to define “truth” through social deliberation and hermeneutics where meaning was derived through intersubjective mutuality to define context. While Habermas (1984) argued that social pragmatics enabled individuals to define reality and context, he recognized that scientific inquiry provided objective “truth” and a foundation for which to inform social science. He argued that uniting normative and empirical data enabled individuals to rationally reconstruct objective knowledge through intersubjective mutual understanding of intention. In this way meaning was interpreted based on mutual consensus to coordinate action. Habermas’ (1984) theory could be used to explore how individuals used everyday speech acts to co-construct meaning that enabled them to coordinate social action based on three primary cognitive areas of human interest that generated knowledge (technical, practical or emancipatory in nature). According to Habermas (1984), competence was gained through the interdependent processes of labor and interaction. Instrumental action resulted from work which led to shared experience through social interaction and resulted in
communicative action to define the “lifeworld”. Habermas’ (1984) theory of communicative action reflected his two most significant contributions: emphasizing democracy and ethical discourse to define context.

Habermas’ (1984) most valuable contributions were twofold; the first contribution featured “the structural transformation of the public sphere” (1989) which emphasized that democracy was achieved through social deliberation to coordinate social action. Individuals socially engaged with one another in order to resolve social conflict issues through *verständigung* (mutual understanding) where hermeneutics, language, and symbolic expressions enabled them to co-construct reality or a common “lifeworld.” This process presupposed that the actors who engaged in social dialogue were competent, sincere, had an equal opportunity to defend claims and counterclaims, and that any utterances, meaning, or linguistic expressions were common to those participating in the process. This study examined the social interactions among medical doctors and other healthcare professionals to explore the types of knowledge and types of actions they employed to socially construct their reality.

Habermas’ second contribution featured two volumes on *The Theory of Communicative Action* (1984) which introduced “the ideal speech situation” and the “lifeworld and system.” Habermas (1984) employed reason and rationale to justify social activity through the rational reconstruction of practical knowledge. In the second volume, Habermas (1984) addressed the nature of knowledge from a social epistemological perspective in which knowledge was socially derived through language and communication and enacted through speech acts to represent the “ideal speech situation.”

The ideal speech situation was founded on moral consciousness and exercised through ethical discourse to validate claims based on a set of formal rules. These rules required that each
individual was competent, capable of speech and action, was allowed to participate in discourse, and had the ability to express an attitude, introduce or question any claim, and whose rights to participate may not be granted by compulsion from inside or outside the discourse (Scambler, 2001, p. 69). According to Habermas (1984) the ideal speech was triadic in nature and based on three premises that participants had to meet (sincerity, social appropriateness, and factual truthfulness). Consensus was generated from comprehensible arguments that were initiated from competent sources that were credible in nature, and within normative boundaries. In addition, actors could not be deceptive nor be coerced into reaching agreement and must have had an equal opportunity to present their claims.

Habermas’ (1984) ideal speech situation defined the context of how utterances in social discourse were interpreted using “universal pragmatism” (formal rules that form the infrastructure of speech) where each was interpreted as an object of study not as part of a sentence with mere linguistic essence. Habermas (1984) referred to social rationalization as the process where qualified actors (individuals) engaged in social deliberation to reach mutual understanding of intention based on shared meaning that were interpreted as inherently reasonable and common to those who engaged in the process (see Figure 1.1).
Habermas’ (1984) mindset was inspired by Mead and Weber, earlier proponents of societal rationalization, who argued that transcending normative boundaries was important to improving modern society if the validity of counterfactual claims was to be proven through rational argumentation. According to Habermas (1990), communicative action was a linguistically mediated interaction where all speakers pursued illocutionary goals to achieve consensus to coordinate social action. Language served as a medium for validating locutionary (expressing a state of affairs), illocutionary (speaker performing an action by having said something), and perlocutionary (speaker producing an effect on the hearer by acting in saying something) utterances in speech acts. While Habermas’ (1984) ideal speech situation was presented from an idealistic perspective, he realized that to attain ideal consensus was impractical. Despite this, he recognized that communicative action served as a democratic forum
for reaching consensus through social discourse to define context. This process adhered to consensual norms where reciprocity and mutuality were socially expected behaviors (Habermas, 1984).

In his second volume, Habermas (1984) distinguished between the system and the lifeworld (see Figure 1.2) where “system” represented the economy (capitalism) and administrative state (government) and the “lifeworld” represented the universe or state of affairs that subjects experienced together. Habermas (1984) further distinguished that the “private sphere” referred to organizational bureaucracy and the “public sphere” referred to the people or society. Habermas (1975) recognized a “legitimation crisis” between the state and the economy where changed needs reflected in the socio-cultural system were not consistent with the goals of the state and resulted in a dysfunctional state of affairs. Habermas (1975) argued this legitimacy crisis reflected previous colonization that was based on normative traditions that were inadequate to meet the needs of a changing society. He emphasized that communicative action could provide rational reconstruction through formal pragmatics to restore equilibrium or “legitimacy” through intersubjective mutuality. In Figure 1.2, Habermas (1975) illustrated the distinction between lifeworld and system.

![Figure 1.2 Lifeworld System](image)

According to Scambler (2001), the “voice of medicine” has dominated healthcare by
virtue of expertise as social actions were rationalized to legitimize behavior. Scambler (2001) argued that government regulations, policies, and procedures changed the complexity of the “voice of medicine” through isomorphic pressures that imposed new policies and procedures for sharing knowledge; this argument was consistent with the implementation of the Affordable Care Act of 2010.

This study explored knowledge sharing processes among medical doctors and other healthcare professionals at the collective level to understand the types of knowledge and the types of actions doctors used to share knowledge. Focus was directed towards understanding the mechanics of the communication process and the knowledge flow that occurred during social interaction. Although the focus of this study was directed towards the interpersonal communication processes that occurred at the collective-level, there was strong indication at the “macro-level” that the contextual environment and leadership of this community hospital shaped how individuals interacted with one another through various social structures and normative traditions that ultimately influenced their knowledge sharing behaviors. Habermas’ (1984) theory of communicative action provided a lens to understand the types of knowledge and the types of actions that doctors used to share knowledge with other healthcare professionals to coordinate social action within this community hospital. The theory was also used as a lens to interpret whether contextual factors influenced the knowledge sharing behaviors of doctors at this community hospital.

Overview of Research Plan

A qualitative research design using a descriptive single-case study approach was used as the methodology to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The study was conducted in three phases and
used an iterative process where data from each phase was used to inform each subsequent phase(s) of the study. The observations and interview protocol were piloted to ensure for reliability and validity.

Phase I involved a documentation review that provided insight into the contextual environment of the research site and identified the types of knowledge and types of actions espoused by the organization. Various public records and documents that reflected data from both internal and external sources were reviewed. Specifically, the mission statement, values, organizational chart and leadership structure, corporate compliance, community outreach, monthly newsletters, quarterly magazines, company website, knowledge base, and various other relevant documents were reviewed to provide insight from an internal standpoint while various external sources that recognized the hospital for its achievements were also reviewed. This data provided a general understanding about the contextual environment of the hospital.

Phase II involved conducting unobtrusive random non-participatory observations in public (lobby events and cafeteria) and semipublic (professional development sessions, corridors near doctors’ office areas, nurses’ station, and the intensive care unit) spaces to capture the social interactions of doctors who socially interacted with other healthcare professionals in their natural setting. The participants were aware of being observed for security purposes, although they did not actively participate. Not all observed doctors were interviewed and not all interviewed doctors were observed. Observations were random as opportunities presented themselves at various locations in the hospital and were assigned a number (1-31) as they occurred. Overall, thirty-one observations were captured to provide initial insight about the knowledge sharing behaviors of doctors within a social and work-related context.

Phase III involved conducting semi-structured interviews with fourteen medical doctors;
each interview was approximately thirty minutes in length. Twelve semi-structured interview questions were developed based on insights drawn from the analysis output of Phase I (document review) and Phase II (observations). The interview process provided further insight about the knowledge sharing behaviors of doctors using the theoretical framework of Habermas (1984) and behavioral interview construction where participants were asked to “describe a time when” to better understand the types of knowledge and types of action (Habermas, 1984) doctors used to share knowledge with other healthcare professionals. After being given permission by the participants a data recorder was used to tape the interviews to ensure the accurate transcription of the data.

A purposeful sample strategy (non-random) was used to identify a representative sample of doctors at this community hospital. The target population consisted of doctors who interacted with other healthcare professionals. Specifically, fourteen doctors were recruited to provide a representative sample mix. This included both male and female doctors with specific functional expertise, two years of clinical experience, and a mix of different reporting structures.

For data analysis the researcher used two cycles of manual coding to analyze the data collected from the three data collection techniques (documentation review, observations, and interviews) employed in this study. For all three phases of the study a first cycle of coding was completed using initial codes where similar words or phrases were combined together to reflect the participant’s voice. In vivo codes were used for the initial coding process to maintain the actual voice of the participants for all three phases of the study. Additionally for Phase II, descriptive codes were employed to describe the non-verbal behaviors observed and then combined with the verbal content to form co-verbal meaning where it was initially coded. For all three phases, a second cycle of coding was used to further reduce the data using axial codes
where subcategories and categories were created to combine similar concepts. Each category was unique to avoid overlapping. Data was then aggregated across all three phases of the study using thematic analysis where common patterns evolved into the broad emergent themes of the study.

**Significance Statement**

On the global scale, this study was extremely relevant and timely given the recent pandemic outbreak of the Ebola virus in West Africa. Effective information sharing across borders had been perceived as critical in order to meet the ongoing challenges faced by the healthcare organizations across the globe (Sambo, L. G., 2014). On the national landscape the findings from this study were significant and timely to the field of healthcare because they were aligned with the recent goals set forth by the federal government through the passing of the Affordable Care Act of 2010. The ACA mandated collaboration among doctors and other healthcare professionals in hospitals across the United States to improve the quality of patient care and reduce the overall costs of healthcare to society.

At the local level, the practical implications from the findings of this study could be used to provide insight to this community hospital on the knowledge sharing behaviors of doctors, specifically the types of knowledge and types of actions they used to share knowledge with other healthcare professionals to collaborate and coordinate social action. The findings indicated that doctors at this community hospital emphasized using an evidence-based medicine approach to coordinate patient care which was aligned with *best practices* as defined by the healthcare industry. These goals emphasized the importance of social collaboration and coordination among healthcare providers to improve the quality of healthcare and to reduce the costs of healthcare to society.
These findings can be used by the hospital leadership to enhance existing communication structures and processes to sustain their competitive advantage and as part their commitment to fulfill their goals and objectives to the community as espoused in their mission statement (Patton, 2001). For example, the doctors at this community hospital were taking various successful initiatives to engage with other healthcare professionals in collaborative behavior using an evidence-based medicine approach where they cooperatively shared information and perspective to define the most effective way to coordinate action. They could exploit these findings by implementing these techniques into their training program for new residents, nurses, allied health professionals, and new physicians as well as to integrate as part of their ongoing professional development for current medical staff. These initiatives could be made routine and become embedded and institutionalized as part of the organizational tradition to ensure ongoing success (March, Sproull, & Tamuz, 2003; Von Krogh, Roos, & Slocum, 1994). The ability of a hospital to demonstrate that its doctors and other healthcare professionals engaged in effective knowledge sharing was considered a valuable asset since it could be utilized as leverage for competitive advantage (Yang, Fang, & Huang, 2010). According to Patton (2001), community hospitals emphasized their ties to the local community and have a vested interest in providing efficient, effective, and timely healthcare to the local patrons through efforts that aimed to consolidate and coordinate patient care among the various healthcare providers.

Previous empirical research (Waring, 2005; Hewett et al., 2009; Leever et al., 2010; Lu & Lajoie 2008; Mansingh et al., 2009; McGivern et al., 2010; McGowan, et al., 2012; Spilg et al., 2012; Van de Wiel et al., 2011; Waring & Bishop, 2010; Yang et al., 2010; Van de Wiel et al., 2011; Weller et al., 2011; Zwarenstein et al., 2013; Zigan et al., 2010) in the healthcare industry had explored knowledge sharing among healthcare professionals using various
theoretical perspectives that emphasized resource-based or knowledge-based approaches or learning theories to understand how knowledge was transferred at the individual, collective and organizational level. Mansingh, et al. (2009), Waring (2005), Waring and Bishop (2010), McGivern et al. (2010), and Van den Wiel et al. (2011) emphasized that future research should focus attention on the actual communication processes among healthcare professionals to better understand the phenomenon of knowledge sharing. To date only a few studies in the healthcare industry have explored this phenomenon from a communication perspective. For example, Geiger (2010), MacIntosh et al. (2012), Clark and Greenwald (2013), and Gotlib-Conn et al. (2014) have explored dyadic communication among doctors and other healthcare professionals using communication theories and models to better understand interpersonal communication and specifically to explore how positional status and cross-functional boundaries can potentially result in conflict. However, not many studies had explored the phenomenon of knowledge sharing using a social pragmatic approach where individuals co-constructed their environment through to define context (Aliki, et al, 2014).

The findings of this study provided a roadmap for future research where efforts could be extended to explore the knowledge sharing behaviors of doctors using Habermas’ (1984) theory of communicative action to explore knowledge sharing from a more narrow perspective in which focus was directed to the dyadic communication processes that occurred in physician-to-physician communication, since it was critically important that doctors work cooperatively to ensure they were on the same page when they engaged in mutual patient care. Habermas’ (1984) theory emphasized a communication lens and was used to interpret the findings of this study to explore the dynamic interplay among individuals who engaged in social interaction to gain a better understanding of how they co-created their environment through the process of rational
reconstruction. Habermas’ (1984) lens greatly contributed insight towards understanding the role of communication in the knowledge sharing process among doctors and other healthcare professionals in the healthcare industry. Specifically, his lens provided insight into the various communication techniques that doctors took to initiate social interactions with other healthcare professionals as well as the various corroboration techniques such as language and message continuity which enabled them to ensure common understanding when they engaged with one another. As a result, the findings of this study provided insight into the knowledge sharing behaviors of medical doctors and specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals at this community hospital. The theory aligned with the goals of the healthcare industry which emphasized a need for stakeholder collaboration using evidence-based medicine as best practices to attain the highest quality of patient care.

The findings from this study were critical since only a few previous studies had explored knowledge sharing using a social constructivist paradigm (Aliki et al., 2014) and communication theory to explore knowledge sharing among healthcare professionals. Specifically, how individuals used communication and speech acts to purposefully co-create their environment to coordinate action. Habermas’ (1984) theory contributed to the understanding of dyadic communication among individuals and the means by which speech acts were impacted by language and argumentation. The findings of this study illustrated how individuals cooperated with one another to effectively share knowledge using various techniques to ensure that meaning and interpretation were acquired and applied as intended. These findings were also critical to the healthcare industry since current research (Aliki et al., 2014; Gorini, et al., 2012; Mansingh et al., 2009; Zigan et al., 2010) argued there was a gap that still existed between effective knowledge
acquisition and knowledge application which resulted in poor quality patient care. Habermas’ (1984) theory of communicative action served as a valuable framework and lens to explore how individuals in the healthcare professions established context through intersubjectivity to coordinate action. Thus, Habermas’ (1984) theory can be used to explore the phenomenon of knowledge sharing by focusing on the actual speech acts among individuals to explore how language and argumentation impacted their knowledge sharing behaviors as opposed to previous studies that explored various individual, collective, and organizational factors as potential barriers to effective knowledge sharing.

In the future, the findings of this study could be used to further explore the phenomenon of knowledge sharing by extending the study to include multiple hospital locations while replicating the same research process. Additionally, the recruiting process would be modified so that participants observed during Phase II would also be interviewed in Phase III to ensure better consistency. Future research may also explore a mixed-methods approach to gain a broader perspective into the knowledge sharing behaviors of medical doctors. Specifically, a survey questionnaire could be administered as follow-up to interviews to capture more specific data across a larger population sample to provide more depth towards understanding this phenomenon. Also, a questionnaire format could be used to explore the various techniques identified as valuable to effective knowledge sharing in this study using a scale to measure the degree of each variable that would provide more specific insight to inform the study.

This study explored the types of knowledge and types of actions that doctors used to share knowledge with other healthcare professionals based on Habermas’ (1984) theory of communicative action. This theory was based on a social constructivist approach where individuals’ co-constructed their environment. Wang and Noe (2010) argued that when
knowledge was socially derived within a bounded entity it was difficult to separate the actors from the context. In light of that, Habermas’ lens was an appropriate framework to interpret the doctors’ knowledge sharing behaviors when they engaged with one another in a community hospital. Understanding the knowledge sharing behaviors of doctors was a timely and relevant topic given the recent changes in the healthcare industry. Government regulations imposed mandates on healthcare providers to engage in social collaboration and coordination to improve the quality of healthcare. The findings from this study could be used as an instrumental tool to design communication structures or processes that facilitate or encourage knowledge sharing among healthcare professionals in order to meet these social expectations.

Significantly, the purpose of this case study was to explore the knowledge sharing behaviors of doctors in a community hospital that had been recognized each of the prior three years by the nationally recognized Leapfrog Group (2012). The organization acknowledged healthcare service providers for outstanding patient, emergency, and nursing care and for excellence in technical innovations that had enhanced the transparency of healthcare information. As a result, this community hospital served as an instrumental case to understand the knowledge sharing behaviors of doctors (Patton, 2001). The researcher employed three types of qualitative methods; documentation review, observations, and semi-structured interviews.

**Key Definitions and Terms**

“Knowledge sharing” was a transformational process based on communicative rational and social pragmatics that enabled members to explore individual “know-how” and “know-that” at the collective level through “intersubjective mutuality” where shared meaning and interpretation defined reality or context to coordinate social action (Habermas, 1984).
“Types of Knowledge” referred to three types of knowledge used in knowledge sharing: technical (objective, empirical-scientific; instrumental, used to control environment), practical (experiential, intuitive, abstract; social interactions guided by norms), and emancipatory (critical, self-reflective; in pursuit of transformation) Habermas (1984).

“Types of Action” referred to four types of action used to share knowledge; teleological (objective; action was goal and purpose-oriented), normative (social action; comply with socially accepted norms), dramaturgical (action was subjective; role specific, context-based), and communicative (intersubjective; integrated objective, social, and subjective) where members rationalize action to socially construct knowledge (Habermas, 1984).

“Community Hospital” was defined as all nonfederal, short-term general, and other special hospitals. Other special hospitals include obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; and other individually described specialty services. Community hospitals include academic medical centers or other teaching hospitals if they were nonfederal short-term hospitals. Excluded were hospitals not accessible by the general public, such as prison hospitals or college infirmaries (American Hospital Association, 2011).

Search Terms: Knowledge sharing, knowledge transfer, knowledge sharing and doctors, knowledge sharing and medical/hospitals/healthcare, Inter-professional collaboration/communication, informal knowledge sharing and doctors, social collaboration and coordination among doctors/physicians, inter-professional communication, interdisciplinary communication or collaboration, and cross-functional communication and healthcare professionals/doctors'. 
Chapter 2 Literature Review

This chapter is an in-depth presentation of the literature that was reviewed for this study to explore the phenomenon of knowledge sharing. A combination of theoretical and empirical research provided insight into knowledge sharing behaviors at the individual, collective, and organizational levels; the research also identified the potential factors that either facilitated or impeded knowledge sharing processes in an organization. Specific focus was directed to empirical research that was conducted in the healthcare industry to gain a better understanding of how medical doctors shared knowledge with other healthcare professionals and to explore the role of informal knowledge sharing and how it was used to coordinate patient care.

Introduction

The purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The primary research questions that guided this study were:

- What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?
- What types of knowledge do medical doctors share (Habermas, 1984), and
- What types of actions do medical doctors use to share knowledge (Habermas, 1984)?

From an epistemological perspective, there were two primary theoretical branches that constituted the nature of knowledge and its existence. One theoretical branch emphasized knowledge as an economic tradition where it was perceived as an asset, possession, or object having economic value (Carlile, 2002, 2004; March, 1991; Polanyi, 1966). Proponents of the economic tradition sought to exploit individual knowledge assets through organizational-based approaches that were underpinned by economic implications. Transactional cost approaches
(Ipe, 2003; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995) emphasized either knowledge-based models where social processes were perceived as vehicles that facilitated knowledge transfer among individuals in an organization or competency-based models (Teece, 1998) where knowledge assets were captured, institutionalized, and retained in repositories to be used as leverage for competitive advantage. More specifically, resource-based traditions (Wernerfelt, 1984, 1995) emphasized individual competencies where knowledge was perceived as a resource and exchanged with others in a firm to create competitive advantage, while knowledge-based approaches (Spender, 1996; Sveiby, 2001) emphasized knowledge transfer through social interactions where members shared knowledge to achieve a common purpose that could be used to create competitive advantage. Both the resource-based and knowledge-based approaches emphasized a positivist perspective that was empirically based and were identified as functionalist approaches to understanding knowledge (Vo, 2012).

The second theoretical branch emphasized a social constructivist perspective where knowledge was a product of the dynamic interplay among individuals who engaged at the collective level to socially co-construct their environment through intersubjectivity, where shared meaning and interpretation enabled them to coordinate social action (Tsoukas, 2002; Weick, 1995). This school of thought emphasized a non-positivist approach that integrated multiple perspectives to establish reality and context to coordinate action. This literature review provided perspectives from each of the theoretical branches to inform the findings of this study.

This literature review provided a combination of theoretical and empirical data to inform this study. A broad group of theoretical research was reviewed to inform this study, a group based on a diverse set of perspectives that emphasized social, behavioral, economic, organizational, and contextual constructs explaining knowledge transfer processes and the
potential enablers and barriers that impacted the effectiveness of knowledge acquisition and application. A literature table was provided in chronological order dating back to the mid-1900s to reflect the significant theories and frameworks used to understand knowledge sharing. The table identified the scholar’s name and year of publication, and the theory about the nature of knowledge sharing and its underpinnings as a foundation of their research; the table also provided the theoretical perspective used to explore their theories (see Appendix A).

The seminal work of Polanyi (1966), Brown and Duguid (1991), Kogut and Zander (1992), Nonaka and Takeuchi (1995), Szulanski (2000), Von Krogh (1998), Davenport and Prusak (1998), Carlile (2002, 2004), Ipe (2003), Argote, McEvily, and Reagans (2003), and Tsoukas (2002, 2009) were cited frequently in this literature review and were recognized as influential to the advancement and understanding of knowledge sharing, providing a deeper understanding about the process of knowledge acquisition and knowledge application. The work of these individuals, combined with a broad range of theoretical and empirical research specific to the healthcare industry, served as a foundation to explore the knowledge sharing behaviors of medical doctors for this study.

In addition to theoretical research, a range of empirical studies were used for this literature review in order to explore knowledge sharing and as informal knowledge sharing among healthcare professionals. The majority of the studies reflected research that was conducted over the past ten years with the exception of a couple of significant healthcare studies dated back to 2003. A listing of the key empirical studies used to inform this study is located in the literature table (see Appendix B). The table presents a chronological listing of each study by author, research question(s), the theoretical base which underpins the foundation of the study, and the methodology used for the study.
The empirical research reviewed for this study reflected data that explored the phenomenon of knowledge sharing and informal knowledge sharing in healthcare to provide a holistic understanding from various individual, collective, and organizational perspectives. Although a mix of empirical studies (qualitative, quantitative, and mixed studies) were reviewed to explore the phenomenon of knowledge sharing, the majority was qualitative (68%) in nature while 18% was quantitative, and 14% used mixed methods; these numbers included studies that were specific and non-specific to the healthcare industry. One significant reason why quantitative methods were less frequently used as a method to explore the phenomenon of knowledge sharing was because it did not provide an in-depth understanding about the phenomenon from a behavioral standpoint. Responses based on survey research using scales presented as absolute categorical responses had a tendency to distort findings (Wang & Noe, 2010). For example, if two respondents gauged their knowledge sharing with colleagues as a ten on a scale of one to ten, but one person’s response was based on constant back-and-forth interaction with others while the other person merely passed along e-mails or documentation the results were ultimately distorted. Specifically, Wang and Noe (2010) and Ryu, Ho, and Han (2003) study explored the impact of rewards and incentives on knowledge sharing using quantitative methods and found that it limited their findings because response scales were based on specific categorical choices which did not adequately reflect human emotions and intentions in identifying the factors that impacted their knowledge sharing behaviors. In contrast, qualitative methods were based on personal interviews that emphasized hermeneutics as a data collection strategy, in which open-ended questions enabled respondents to share personal experiences based on rich descriptions that provided a deeper understanding about the types of knowledge and the types of actions they used to share knowledge. These findings were
consistent with Ipe (2003), who emphasized that it was vitally important to understand the factors that influenced knowledge sharing behaviors since the process was controlled by the individual who determined when to share or relinquish their knowledge.

**Overview of the chapter.** Part One of this literature review starts by tracing the historical evolution of the philosophy of knowledge as proposed by early philosophers of epistemology. Following the historical overview, a presentation of the theoretical research is presented in order to reflect the various functionalist and social constructivist approaches that were used to explore knowledge sharing and that served as a foundation for this study. Also, this part includes a presentation of the empirical studies that explored knowledge sharing and, more specifically, knowledge sharing among healthcare professionals which was the focus of this study.

Part Two of this literature review provides theoretical insight about informal learning theories (Eraut, 2000; Marsick & Watkins, 1990; Mezirow, 2000; Schon, 1983), and, more specifically, about informal knowledge sharing in healthcare in order to gain insight into how doctors used informal environments (events, serendipitous encounters, and cafeteria) to share knowledge with colleagues as part of their ongoing professional development. Various empirical studies were explored to provide insight into how and why medical doctors used informal environments to establish social interactions with other healthcare professionals.

Part Three of this literature review focuses on the social dynamics of medical dialogue in order to explore doctor-nurse dialogue (since the two professions were interdependent) and to understand how doctors co-constructed knowledge using language and argumentation to coordinate action. This section also presents an overview of literature that reflected Habermas’ (1984) *theory of communicative action*, which was the primary lens used to interpret the findings
of this study. His theory was rooted in communication and emphasized social pragmatics where individuals engaged in intersubjectivity in order to achieve consensus that enabled them to co-construct meaning. The theory was used to explore the social interactions of doctors and other healthcare professionals to gain insight about the communication processes and knowledge flow among them when they engaged in social deliberation. In addition, a Habermasian (1984) lens was used to understand what impact social pragmatics had on the emancipation of healthcare and reform.

Finally, Part Four of this literature review provides an overview and scope of the healthcare industry, showing how social change over the past couple of decades has impacted the knowledge sharing behaviors of healthcare professionals. Specifically, this study explored how knowledge sharing behaviors were impacted by the Health Insurance Portability and the Accountability Act of 1996 (HIPAA), which regulated patient confidentiality laws; the Affordable Care Act of 2010, which promoted consolidation of patient care through collaboration and social coordination to improve healthcare; and the Health Information Technology for Economic and Clinical Health Act of 2010 (HITECH), which enforced the sharing of meaningful healthcare information among healthcare professionals. In addition, recent news articles and editorials over the past few years provided further insight from a societal perspective.

**Part Ia. Evolution of Knowledge**

Two of the foundational concepts of modern philosophy were **ontology** and **epistemology**. Ontology explored the question of what was “real” and what were the entities that defined reality. These questions referred to states of being and their properties set the stage for other forms of philosophical inquiry. Epistemology was the study of knowledge, its nature and the
extent to which anything could be known about a particular object or concept. Epistemology essentially sought to discover what was “true” by developing criteria such as classification. In the Socratic dialog entitled the *Theaetetus*, truth was defined as a “justified true belief.” The definition hinged on how “justification” was determined by emotional or self-interest but ideally it stemmed from unbiased observations and rational argumentation.

Invariably Western philosophers were compared against foundational thinkers in the Western tradition such as Socrates and Plato. In Plato’s *Theaetetus*, Socrates was recounted as describing knowledge as “justified true belief,” where knowledge was believed, objectively true, and at some level justifiable. At the heart of this description were truth and its meaning. In the traditions of the ancient Greek philosophers Socrates, Plato, and Aristotle, truth was perceived as an objective or discernible thing, its existence rooted in objective reality outside the subjective nature of man. Socrates, Plato, and Aristotle were absolutists who believed that a thing could be justified even though everyone believed it to be false, and who argued that truth was transcendent and independent of belief. This absolutist thought in philosophy was associated with the modern concept of the correspondence theory of truth, where truth corresponded to an obvious fact; this theory was rooted in Socrates, Plato, and Aristotle (Prior, 1969, p. 224). This was a seminal concept in Western thought, in which the nature and validity of truth was questioned to determine its truth or falseness: truth had to accurately define, or correspond to, reality (Hanna & Harrison, 2004). The theory distinguished between fact and belief in which truth was not a property of fact: *fact* was an objective description of a thing as it existed in the world or “the state of affairs” and was neither true nor false whereas *belief* was a subjective description of things as they appeared in the world, a description that may have been inaccurate.
**Understanding modern-day thought on “knowledge.”** Modern epistemologists such as Habermas (1984) have focused attention towards understanding the nature and scope of knowledge by exploring the questions (a) what is knowledge and (b) how is knowledge acquired. Much attention and analysis has been directed towards understanding the validity of claims as they relate to the truth and justification of action (Habermas, 1984). Due to its complex nature, the definition of knowledge has varied among researchers according to Oye et al. (2011). They warned that philosophical differences that were part of a demographic culture could shape an author’s perception of what constituted knowledge, how it was acquired, and how it was applied (Oye et al., 2011). To maximize the depth of this literature review, various viewpoints are explored to provide diverse perspectives.

**Eastern and western perceptions of “knowledge.”** According to Chia (2003), there were distinct perceptual differences that existed between Eastern and Western cultures regarding how knowledge was defined and how it was acquired from an epistemological perspective. According to Chia (2003), an “epistemological gap” existed between theory and practice where the actions of Western-minded individuals were driven by justification, in contrast to Eastern-minded traditions where “action over words” and tacit expertise were driven by pragmatism based on the philosophy of “what works over what is true” (Chia, 2003, p. 961).

Eastern traditions emphasized a Zen-like, direct insight, approach to knowing, where apprenticeship and practical experience occurred as a result of doing; perfection was emphasized over causal explanation expressed through language (Chia, 2003). Eastern traditions emphasized “unlearning” as a way of replacing redundancy since they felt that “too much knowledge desensitized reality whereas subsidiary awareness enabled mastery through proficiency” (p. 954). Chia (2003) noted that language was always in flux where meaning was contextual and defined
through collective collaboration where individuals co-constructed shared meaning and interpretation to coordinate action.

Western societies have traditionally held an epistemological view that assumed knowledge was derived from empirical scientific research based on observation and reasoning where evidence through experimentation was a posteriori and provided validity to claims of truth (Chia, 2003). According to Chia (2003), Western culture emphasized individualism in which one sought to prove “truth” objectively using language and argumentation, whereas those with an Eastern mindset focused on a collectivism in which members collectively established meaning to define “truth.” The Western mindset dated back to Aristotle who argued that to know meant to understand the why behind the cause of something; knowing enabled an individual to teach others because they were able to understand the intricacies associated with how something worked not just by making it work. According to Aristotle, experience did not constitute knowing and was considered merely a way of enacting routines while failing to provide insight on causal events (Chia, 2003). Although Western and Eastern perspectives varied, research from both domains provided a holistic approach to understanding knowledge and was used to inform this study.

**Distinguishing between tacit and explicit knowledge.** Knowledge can be understood from a dichotomous perspective and classified as having either tacit or explicit properties; tacit knowledge was considered abstract and highly ambiguous, which made it hard to articulate, while explicit knowledge was concrete since it was codified and documented (Polanyi, 1966). Polanyi’s (1966) delineation of knowledge provided a seminal foundation for other researchers to explore organizational knowledge. Polanyi (1966) distinguished between tacit and explicit knowledge by identifying that each had different properties yet emphasized that they were both ultimately implicit because each individual’s personal experiences and frame of reference shaped
the meaning and interpretation that made it unique to each individual. According to Polanyi (1966), tacit knowledge was subjective and based on an individual’s personal experience or technical know-how which was highly intuitive, implicit, and abstract, and was considered to be the most challenging type of knowledge to share. Yet tacit knowledge was identified as the most significant and critical to an organization since it represented individual skill and expertise that could be used to create competitive advantage. Tacit knowledge was embedded and stored implicitly at the cognitive level where it resided as a mental model difficult to articulate because it was unique to each individual (Polanyi, 1966). In contrast, explicit knowledge referred to codified data that was documented and empirical in nature, in which codes, symbols, and artifacts illustrated meaning that was commonly understood (Polanyi, 1966). Fothe (2010) extended Polanyi’s (1966) discussion on tacit knowledge by arguing that an individual internalized and stored events at the cognitive level and then accessed them when triggered by stimuli outside of one’s narrow focus, which led to an intuitive response. This was referred to as a triadic structure where the observer, subsidiary parts of a task, and the focus of a task become one entity through subsidiary awareness (Fothe, 2010).

**Interchanging “knowledge sharing” and “knowledge transfer.”** The terms knowledge sharing and knowledge transfer were used interchangeably in this literature review to reflect the different perspectives as defined by those who perceived knowledge as an object, possession, or resource; and by those who argued that knowledge stemmed as a result of a socially derived process where individuals engaged in social interaction with others in order to share knowledge. For example, some researchers (Wang & Noe, 2010) identified knowledge transfer as the movement of knowledge between groups and knowledge sharing as the knowledge movement among individuals. In comparison, others explored the terms from a sociological
Roberts (2000) argued that knowledge transfer occurred when “knowledge which is diffused from the individual to others … through processes of socialization, education, and learning where transfer. Knowledge may be purposeful transferred or may occur as an outcome of other activity” (p. 432), while lpe (2003, p. 341) referred to knowledge sharing as the act of making knowledge available to others within the organization and that knowledge sharing between individuals is the process by which knowledge is held by an individual and is converted into a form that can be understood, absorbed, and used by other individuals. This implied that the individual who possesses the knowledge will share it in some understandable form as a conscious action and that “the sender will not relinquish ownership of the knowledge and where ownership of the knowledge becomes joint between the sender and the recipient as a result of the process” (p. 341).

This study explored the theory of knowledge using the interpretive lens of Haberamas (1984), whose theory of communicative action argued that knowledge sharing was considered a transformational process based on communicative rational and social pragmatics that enabled individuals to explore know-how and know-that at the collective level through “intersubjective mutuality,” in which shared meaning and interpretation defined reality and context in order to coordinate social action. Overall, this literature review provided insight into the nature of knowledge sharing and knowledge transfer based on the two primary schools of thought (functionalist and social constructivist perspectives) that inform this study.

Knowledge as a school of thought. There were two major schools of thought held by researchers who studied the theory of knowledge. One school of thought held a positivist view that emphasized organizational science and was based on a functionalist tradition in which knowledge was perceived as a resource, object, or possession that resided within the individual
and was considered as having economic value such that an organization sought to exploit this knowledge to leverage its competitive advantage (Vo, 2012). Spender (1996) argued that this branch was divided among two strategies and several models: a resource-based approach (Teece, 1998; Wernerfelt, 1984) that emphasized individual “knowledge assets” or competencies (cognitive or contextual) that were exploited by an organization for competitive advantage; and a knowledge-based approach (Ipe, 2003; Kogut & Zander, 1992; Nonaka and Takeuchi, 1995) that emphasized a transactional-cost approach in which social interactions among individuals based on common goals and shared mental models enabled them to convert individual tacit expertise into explicit codified knowledge at the collective level where it could become routine and institutionalized by an organization and used as leverage for competitive advantage. According to Spender (1996), supporters of the resource-based and knowledge-based approaches perceived knowledge as a quantifiable asset underpinned by economic value that a company could identify as leverage for competitive advantage.

The second school of thought was based on a non-positivist perspective that emphasized social pragmatism. This approach recognized knowledge as being a product of human interaction where knowledge resulted from a socially created process (Arnd-Caddigan & Pozzuto, 2008; Bordum, 2002; Tsoukas, 2002, 2009). Context was defined through the dynamic interplay among individuals who collectively explored existing knowledge structures to co-construct their environment through intersubjective consensus where shared meaning and interpretation enabled them to coordinate social action (Bordum, 2002). This literature review provided theories and empirical studies from both schools of thought to explore knowledge sharing and includes studies relevant to the healthcare industry to provide a foundation for this study.
Part Ib. Exploration of the Theoretical Research

The theoretical research for this study explored knowledge based on the two schools of thought previously identified in this literature review. The one school of thought perceived knowledge as having economic implications for an organization and emphasized organizational science to exploit individual knowledge assets using a functional approach. Knowledge was transformed into a competitive resource that could be leveraged by a firm either through knowledge structures that captured individual competencies or through social processes where knowledge was converted from the individual to the collective where it became institutionalized by an organization. The other school of thought emphasized a social constructivist approach to knowledge where individuals constructed their environment using social pragmatics that emphasized human interaction and defined context via intersubjective mutuality.

Knowledge and organizational learning. Knowledge sharing was considered to be an integral part of organizational learning, having economic implications that enabled a firm to sustain leverage for competitive advantage. The literature reviewed for this study provided insight from various researchers (Argyris & Schon, 1978; Schon, 1983; Argyris, 1993; Drucker, 1998; Senge, 1990, Von Krogh, et al., 1994, March et al., 2003) who explored the phenomenon of knowledge sharing from social, contextual, and organizational standpoints. They identified various enablers that facilitated knowledge sharing among individuals in an organization and ultimately led to organizational learning. Specifically, focus was directed towards the interdependency that existed between an individual and the organization in order to better understand how knowledge was converted from the individual to the collective through knowledge structures and processes that facilitated the process.

Senge (1990) argued that “the learning organization” was achieved through social
coordination and collaboration among individuals where transformation led to new development and growth. He argued “that individuals share tacit expertise and learning experiences that enable the organization to learn through a combination of personal mastery, shared visions, common mental models, team learning”; the organization was “considered to be a bounded object consisting of people, structures, and processes that are bound and work together as a whole to generate the system” (p. 3).

Schon (1983) argued that collaboration enabled “reflection-in-action,” in which individuals shared past experiences to create new distinctions through “lessons-learned” and was considered to be a more valuable learning tool than technical knowledge since “competent practitioners usually know more than they can say” (p. 8). Similarly, Von Krogh et al. (1994) argued that reflection led to organizational learning based on the direct experiences of its people; lessons-learned enabled both individual and organizational learning. They argued that individual knowledge acquisition must be converted and stored as a repository in the organization in order to leverage competitive advantage and noted that historical content was most critical for development and training of new members.

March et al. (2003) provided insight that was consistent with Von Krogh et al.’s (1994) arguments that organizational learning occurred as a result of exploring historical context through lessons-learned where “exploration and exploitation” (p. 72) served as benchmarks to inform future decisions. They noted that exploration emphasized the new distinctions that developed from the exchange of personal experiences with others, while exploitation emphasized the sharing of existing knowledge to capitalize on past successes through redundancy (p. 72).

Argyris and Schon (1978) argued that organizational learning was dependent upon its members who provided a cognitive function that was important to the organization since it was
unable to achieve goals without human input. They referred to the “double loop” process where the organization thrived through the synergy of its employees who engaged in knowledge sharing to collaborate and reflect on past experiences through lessons-learned that led to new innovations and improved decision making (pp. 2-3). Similarly, Drucker (1998) introduced “The Coming of the New Organization” which emphasized the importance of joint performance in an organization where knowledge was shared among the collective to interpret and convert valuable data into useful applications. This coalition enabled members to coordinate social action based on timely, appropriate, and effective knowledge application.

Despite the argument that intellectual capital was perceived as an intangible and invaluable asset to organizational learning, Polanyi (1966) argued that tacit knowledge was difficult to transfer due its highly intuitive, abstract, and personal nature that could inhibit knowledge sharing among individuals. This challenge was explored through theoretical research that emphasized a knowledge-based approach to knowledge conversion where individuals engaged in social interaction that transferred individual tacit expertise to explicit knowledge at the collective level, thus creating new innovations that could be leveraged as competitive advantage for the organization.

**An exploration of the knowledge-based approach.** There were notable proponents (Ipe, 2003; Islam et al., 2012; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995; Spender, 1996; Sveiby, 2001; Von Krogh et al. 2012) who explored a knowledge-based approach using a positivist perspective to understand knowledge acquisition and transfer through social processes. This school of thought emphasized a functionalist approach that was underpinned by economic traditions. According to this mindset, social interactions enabled individuals to share information across the organization. Knowledge became explicit at the collective level and
institutionalized at the organizational level and used as leverage for competitive advantage by the organization.

The seminal work of Nonaka and Takeuchi (1995) on organizational knowledge creation provided a foundation to explore knowledge conversion from various individual, social, and organizational domains to gain insight on the potential factors that may enable or impede knowledge sharing processes. Their model emphasized an economic transactional-cost approach where knowledge was perceived as a valuable asset to the organization, knowledge that could be used to sustain competitive advantage. Nonaka and Takeuchi’s (1995) organizational knowledge creation theory was a model that emphasized knowledge production based on a “spiral” process where members transferred knowledge within an organization through social interactions that were facilitated by common goals and shared mental space known as “ba” (Nonaka & Konno, 1998). Nonaka and Takeuchi’s (1995) model emphasized socialization, externalization, combination, and internalization (SECI) as the key to facilitating knowledge transfer in an organization. According to their theory, knowledge originated at the individual cognitive level as tacit expertise and shared as explicit with recipients through observation and socialization at the collective level where it was systemized. Nonaka and Takeuchi’s (1995) organizational knowledge creation theory had economic implications that underpinned the process of knowledge conversion where knowledge sharing was perceived as a strategic asset which enabled the organization to sustain competitive advantage.

Similarly, Islam et al. (2012) argued that structure, climate, and organizational socialization were major factors that influenced knowledge sharing. They argued that the structure of the organization influenced communication processes and the type of systems that were in place to facilitate opportunities for knowledge sharing (pp. 44-46). They noted that a
centralized organization tended to be very hierarchical, in which leadership controlled the communication protocol, resulting in limited knowledge sharing and communication among individuals; in contrast, a decentralized environment emphasized shared leadership and employee empowerment where members of the organization were encouraged to engage in knowledge sharing through upward, downward, and horizontal communication. They argued that the climate referred to the formal and informal policies, normative traditions, attitudes, and values (pp. 46-49), and that organizational socialization reflected the social context or “the way things are done around here” (p.49). They argued that if the social context encouraged communication among employees they would be more likely to share knowledge with their colleagues.

The impact of context and heuristics on knowledge sharing. Ipe’s (2003) arguments emphasized that heuristics enabled individuals to share personal insight on complex tasks. Ipe (2003) said “knowledge sharing is a complex multifaceted process in organizations under the best circumstances” (p.338), the organization must establish knowledge structures that capture individual knowledge assets by encouraging members to engage in social interactions that enabled them to coordinate social action. Ipe’s (2003) arguments were consistent with those of Schein (1985) and De Long and Fahey (2000) that the organizational culture dominated over the motivations, opportunities, and the nature (tacit or explicit) of the types of knowledge shared among its employees. Ipe (2003) noted that by taking a “people-perspective” rather than “technology-driven” perspective organizations recognized the human aspects of knowledge sharing since much of the organizational knowledge resided at the individual level as know-how (experienced-based), know-what (task-related), and dispositional knowledge (aptitude and ability); therefore, identifying the factors that influenced knowledge sharing behavior was
critically important since the individual was the one that controlled the types of knowledge they shared and to whom and on what occasion (p. 343).

Ipe (2003) identified four factors that impacted knowledge sharing among individuals: culture (normative traditions), motivation (power, reciprocity, relationship with others, and rewards), opportunities (work environment, structure, training, and events), and the nature or type of knowledge shared (tacit or explicit and perceived associated value). These four factors influenced knowledge sharing behavior and she noted that any of these factors could negatively impede knowledge sharing if they conflicted with the goals of the individual (pp. 345-351). For example, she noted that perceived power and reciprocity were implicit. An individual’s perceived value associated to sharing their knowledge and how they felt it would be received determined whether one shared their personal intellect. In contrast, she argued that external factors such as rewards (monetary) could have an impact on knowledge sharing while penalties (reprimands) may have negative impact. Ipe (2003) warned that in some situations rewards could be perceived negatively if they felt they were being coerced or if they perceived it to be demeaning. She noted that intrinsic rewards such as altruism and satisfaction were more likely to create an incentive to share knowledge (p. 348).

In addition, Ipe (2003) argued that formal or informal opportunities were important components of knowledge sharing. She said that formal situations could be facilitated through structured work teams, training programs, and company events, while informal situations could be enacted through social networks, blogs, or communities of practice (p. 349). Ipe (2003) argued that informal opportunities created a more relaxed atmosphere where people felt less bound to normative traditions. Ipe (2003) argued that although purposive learning channels (structured environments) played an important role in facilitating knowledge sharing among
individuals, she noted that informal settings (communities of practice, social events, or social networks) provided opportunities to socially interact with people through relational learning channels (p. 349).

Ipe (2003) recognized the benefits of informal learning but warned that explicit knowledge may be context-dependent in certain instances where only those familiar with the context and were professionally inclined could absorb the knowledge. She noted that those who lacked capacity may have difficulty in receiving or transferring knowledge which may negatively impact knowledge sharing. She noted it was vitally important that explicit knowledge be readily available and transferrable to those unfamiliar with it but emphasized that individuals had to be informed not only on the acquisition and relevance of knowledge but on how to access and apply the intelligence for it to be of value (p. 344). Notably, Lee, Foo, Chaudhry, and Al-Hawandeh (2004) argued that individuals who had pre-existing ties through established relationships were more likely to engage in informal knowledge sharing based on a level of trust that enabled them to voluntarily engage in collaboration that was unplanned or serendipitous.

Ipe’s (2003) arguments were consistent with Carlile (2002) who emphasized that knowledge across borders can result in different syntactic (common lexicon) and semantic (common meaning) meanings through the transformation process and noted that technical jargon (blueprints, x-rays, e.g.) could alter the translation of “knowledge in practice” (p. 443). Carlile (2002) argued that shared meaning ensured consistency of content that could be achieved through artifacts and boundary objects (maps, notes, graphs) to enable translation and to minimize misinterpretation (p. 443). Carlile (2004) also explored knowledge sharing across functional boundaries to determine how pragmatic and political differences impacted effective knowledge transfer, and noted that when functional domains differed and political interests were
involved, they created conflicting goals that negatively impacted knowledge sharing. Carlile (2004) argued that to effectively establish common understanding members had to work across boundaries to establish common goals through shared meaning to better coordinate knowledge translation across functions.

**An exploration of the resource-based approach.** A resource-based approach explored knowledge as an object, resource, or possession, in a context in which economic traditions underpinned the organizational goal of exploiting the knowledge skills or competencies of individuals as leverage for competitive advantage. The initial work of Penrose (1959), later extended by Wernerfelt (1984), served as a foundation for followers such as March (1991), Davenport and Prusak (1998), and Cabrera and Cabrera (2005) who used a resource-based approach to understand the motivational factors associated with knowledge sharing when knowledge was perceived as a possession; while others (Argote et al., 2003; Bock & Kim, 2002; Carlile, 2002; Nahapet & Ghoshal, 1998; Teece, 1998) explored the social, organizational, and contextual structures that enabled a firm to exploit individual competencies through repositories to capture knowledge when it was perceived as a valuable resource.

**Exploring the cognitive processes associated with knowledge sharing.** March (1991) explored the cognitive processes and rationale that individuals used to determine whether to engage in knowledge sharing behavior based on Becker’s (1976) *rational choice theory* where individuals weighed the costs and rewards as pre-determinants as to whether to engage in collaboration. He noted that social and economic rewards could impact one’s rational on whether to share knowledge and argued that usually one chose a course of action that yielded the greatest personal return.

Gagné (2009) referred to Ajzen and Fishbein’s (1980) theory of reasoned action (one’s
reasoning on whether to engage in a behavior), Ajzen’s 1991 theory of planned behavior (which assume intention was the motivational factor), and Deci and Ryan’s (1985) self-determination theory (one engaged in volitional action) to understand the impact of culture on knowledge sharing behavior. She argued that culture played a major determinant of collaboration where the social climate fostered autonomous motivation that led to prosocial volitional behavior among colleagues. She warned that rewards and punishments could have adverse effects where individuals purposely did not engage in the behavior as an expression of self-determination if they perceived the rewards or punishment to be condescending (p. 573). It was critically important that the culture created an environment that encouraged knowledge sharing behavior among individuals who were willing to share individual knowledge assets with their colleagues.

**Knowledge as an economic-transaction or “possession.”** According to Davenport and Prusak (1998), individual knowledge assets were perceived as having economic implications that enabled a firm to sustain competitive advantage. Davenport and Prusak (1998) argued that the organizational structure had to facilitate the transfer of knowledge from the individual cognitive level to the collective where it could be embedded into the firm as knowledge repositories. They emphasized that trust and reciprocity were key factors that facilitated this process and noted that sociopolitical influences and established social relationships could impact knowledge sharing among individuals that could be used to create competitive advantage for the organization (pp. 97-100).

Bock and Kim (2002) extended the previous mindset that individual knowledge was a valuable possession that could be exploited by an organization. They referred to Blau’s (1967) social exchange theory to understand the costs and benefits associated with knowledge sharing and specifically the intrinsic reward (obligation, trust) associated to the attitude and the intention
that motivated them to engage in the knowledge sharing behavior. They argued behavior was based on how strongly one felt the action would improve one’s relations with others or the extent to which reciprocity was perceived. They also referred to Kelley and Thibaut’s (1978) economic exchange theory that argued that self-interest motivated social interaction based on expected extrinsic rewards (money or promotion), and noted that such rewards could either negatively influence one’s behavior if the person felt manipulated or could result in normative behavior if they felt a sense of “organizational citizenship” where their actions were perceived as an act of altruism (p. 15). Wang and Noe’s (2010) findings were consistent with Bock and Kim’s (2002). Wang and Noe (2010) emphasized that incentives were effective only if individuals trusted leadership; otherwise incentives could be perceived as evaluative where lack of self-efficacy could hinder knowledge sharing behavior if one felt incompetent.

In some instances, knowledge was perceived as a possession where the organization created formal structures to capture knowledge assets. Dwivedi, Bali, and Naguib (2003) provided a practical knowledge management framework for the healthcare industry as a model for preventive medicine and retention of critical knowledge that combined social processes with technology to produce relational knowledge that could be used for critical decision making in a healthcare environment. Bosua and Scheepers (2007) presented a model to explore formal and informal networks in complex environments by examining two systems where individuals socially interacted with one another. One method used the distributed cognitive theory (TDC) to understand the cognitive processes that drove social interactions where knowledge was presented as objects (books for example) in a network of distributed “knowers”; while the other method used actor network theory (ANT) where individuals socially interacted through technological interfaces to transfer and create knowledge. According to Bosua and Scheepers (2007), the TDC
approach emphasized individual interaction with the knowledge objects taking a secondary role, while ANT emphasized that individual actors and the systems were equally important. To gain better insight into how structure impacted knowledge sharing behavior, it was critically important to understand how the environment influenced knowledge acquisition and application.

**The impact of social, contextual, and organizational structures.** According to Bourdieu (1986), social capital represented the knowledge resources that were shared and combined with the collective across the organization to create communal capital that was used for competitive advantage. He argued reproduction of the social capital strengthened the value of the collective which enabled the organization to capitalize on past success through redundant procedures that were made routine and institutionalized. Cabrera and Cabrera (2005) provided insight on how to build social capital based on people-management practices (work design, staffing, training, rewards, culture, or technology) where organizational structures facilitated voluntary participation among colleagues. They noted that members would more likely engage in knowledge sharing if they shared a common identity based on shared goals and values, and if members identified with acts of altruism as socially responsible citizens. They argued this behavior led to trust, good reputation, and reciprocity which ultimately strengthened a firm’s social capital and leverage. Their arguments were consistent with March (1991) who emphasized that the organizations must create structures (formal policies and procedures) to exploit successful processes and must explore new innovations by creating opportunities for individuals to engage with one another through social events.

Similarly, Nahapiet and Ghoshal (1998) argued that “actor bonds” created among individuals through social relationships enabled them to integrate intellectual assets that could be leveraged by an organization. They emphasized that social relationships drove behaviors based
on sociability, approval, and prestige. Teece (1998) argued that formal and informal communication channels enabled individuals to share information across borders, where the individuals shared tacit expertise and intuitive knowledge in order to reduce the lack of knowledge capacity, inability to absorb, and insufficient knowledge translation that could negatively impact knowledge sharing. Teece’s (1998) arguments were consistent with those of Kogut and Zander (1992) who argued that social relationships enabled individuals to collaborate to create cumulative knowledge. This represented an organization’s intellectual capabilities known as the “know-what” and “know-how” that could be used to exploit new innovations (p. 386). Kogut and Zander (1992) argued that shared language provided normative sanctions that guided individuals on the types of knowledge they shared and when to share it, and noted that indwelling enabled individuals to transfer tacit expertise by establishing mental schema based on common language that enabled them to mutually construct reality. This process enabled path dependence through redundancy where individuals shared past success stories to complete present tasks (Kogut & Zander, 1992).

Argote et al. (2003) findings were consistent with previous researchers (Argyris, 1993; March, 1991) who emphasized there was inter-dependency between an individual and an organization where the context of the relationship influenced the knowledge sharing process. They argued that the purpose for knowledge sharing had to be clearly articulated through the contextual structure of the organization (social environment) to ensure that effective application. They also noted that the nature of the knowledge (tacit or explicit) dictated the context to accommodate its complexity. They argued that skill (knowledge capacity of source and recipient’s ability to absorb content), relationships (social ties among individuals), and tacit expertise (complexity of highly abstract content) impacted the context for which knowledge was
shared and noted that formal (training) and informal (social events) opportunities enabled individuals to bond and form social ties that facilitated knowledge sharing. Also, they noted that informal channels (narration and storytelling) facilitated knowledge sharing across complex boundaries on how-to accomplish task.

Endres, Endres, Chowdhury, and Alam (2007) explored the impact that context had on an individual’s self-efficacy to share knowledge. They argued that the contextual environment served to define whether individuals engaged in vicarious learning and noted that self-efficacy and reciprocity resulted when individuals felt comfortable and encouraged in learning from one another.

*The impact of culture and sub-culture on knowledge sharing.* According to Schein (1985), the organizational culture defined the philosophies and values of the organization that were articulated to the organizational members through strategies and structures that aimed to facilitate the company’s goals. Schein (1985) argued that three cultural phenomena (artifacts, espoused values, and basic underlying assumptions) reflected the normative traditions and guided the behaviors of the individuals who resided in an organization. Schein (1985) argued that organizational socialization (training and events) provided employees with formal and informal expectations about an organization. He argued that shared assumptions served as “silos” where individuals shared common experiences and routines as a collective group. He identified sub-cultures as having specific goals and objectives unique to a particular group (department of an organization) even though they were bounded by the overall mission and goals of an organization. Schein (1985) noted that conflict could occur if sub-cultural goals were incongruent with the dominant culture and if the behaviors were driven by those who benefited within a particular group. He argued that in order to avoid conflict the organization had to create
structures that emphasized common goals and encouraged collaboration across the organization. Schein (1985) provided a seminal foundation for later researchers (De Long & Fahey, 2000; Endres et al., 2007; Sackmann, 1992) who explored the impact of culture and sub-culture on organizational knowledge sharing.

Sackmann’s (1992) arguments were consistent with previous research that the culture influenced behaviors in an organization and that sub-cultures further impacted collaboration across borders depending on the type of knowledge that members shared. She noted that the perceived reciprocity associated with the behavior combined with the culture influenced subsequent behaviors. She noted that culture created an underlying assumption where certain expectations drove the behaviors of the collective. She noted that homogeneous groups were more successful in socially constructing knowledge than heterogeneous groups where individuals shared diverse perspectives that deviated from the norm and lacked common understanding, negatively impacting knowledge sharing processes.

De Long and Fahey’s (2000) arguments were consistent with those of Sackmann (1992) who argued that the culture and sub-culture of an organization must support strategies that encouraged knowledge sharing among members in an organization; although, they noted that normative practices could be ignored at the sub-cultural level where traditions were contrary to those of the dominant culture. They argued that the organizational culture shaped what type of knowledge was shared among organizational members and that leadership established the context and processes (formal channels of communication based on protocol) that guided the types of knowledge transferred across borders. They defined three types of knowledge generated within a culture: human (individual tacit expertise or “know-how”), social (collective knowledge that defined context), and structured (knowledge that was embedded through processes that
institutionalized traditions).

Consistent with the arguments presented by De Long and Fahey (2000) were those of Van den Hooff and De Ridder (2004) who explored the impact of organizational commitment and communication climate on how knowledge was shared among individuals in an organization. They argued that members with “affective commitment” were devoted to the organization and were most likely to share knowledge because they perceived their contribution as valuable while those with “continuance commitment” (employment outweighed the cost of leaving) and “normative commitment” (employment was obligatory) were less likely to have motivation to share knowledge (p. 119). Furthermore, they argued that knowledge sharing and acquisition was based upon the communication climate which impacted the level of knowledge an individual shared (p. 118). If an organization had communication structures that foster upward (employees initiated communication with leadership), downward (leadership initiated communication with employees), and horizontal communication (employees engaged in communication across functional boundaries), then knowledge sharing among individuals was more likely. Van den Hooff and De Ridder (2004) referred to human relation factors such as climate and commitment as “soft” variables (time and personal motivation) and technology as “hard” variables that facilitated the knowledge sharing process. They argued that “computer mediated communication” could minimize the communication barriers that were associated with “soft” variables by establishing protocol using communication structures that required individuals to communicate knowledge with one another using the computer system. They noted that the use of communication technology fostered a transparent environment that encouraged individuals to share knowledge that ultimately benefited the organization since the system served as a structure that enabled the organization to capture individual knowledge assets that could be
institutionalized and used for competitive advantage (p. 119).

Liyanage, Elhag, Ballal, and Li’s (2009) arguments were consistent with those of Davenport and Prusak (1998) who argued that knowledge translation was impacted by the act of communication used to transition knowledge among individuals. They noted that for knowledge to be meaningful to the recipient the sender had to determine what the knowledge meant to the receiver in order to effectively transfer the knowledge in a context that could be understood and applied by the receiver. Otherwise, the knowledge was meaningless. This process was referred to as the transformation process where the semantics used to transfer the knowledge impacted the interpretation and translation by the receiver, accurate acquisition by whom depended on language familiarity on the receiver’s end. They combined Deutsch’s (1952) communication theory that explored individual corroboration, and Jacobson, Butterill, and Goering’s (2003) framework for knowledge translation where meaning was contextually defined, to establish knowledge application (p. 125). Liyanage et al. (2009) provided a knowledge transfer model based on four prerequisites that they argued had to be present for knowledge transfer to be effective: source’s willingness to share, recipient’s willingness to acquire, recipient’s perceived value of the knowledge, and the recipient’s capacity to absorb the knowledge.

Bennett, Blanchard, and Fernandez (2012) argued that the clinical environment was highly guarded when it came to knowledge sharing among healthcare professionals because “medicine was founded on public trust” (p. 219); since decisions tended to happen under complex circumstances, hospital bureaucracies discouraged physicians and healthcare professionals from discussing incidental reports that could present potential liability to the organization. They noted that the way knowledge was shared depended on the type of knowledge needed to effectively translate in the intended context. They noted that the
organization must establish knowledge structures that formally encourage individuals to collaborate and build trust, and argued that training would enable members to gain experience through practical application while incentives could be used strategically to facilitate these processes. Bennett et al.’s (2012) arguments were consistent with those of Ipe (2003) who argued that the organizational culture must create trust among individuals through various structures that create opportunities for members to bond.

The impact of social pressures on knowledge sharing. DiMaggio and Powell’s (1983) seminal research contributed towards understanding the impact of industry standards and governmental regulations on the contextual environment of the organization and provided insight into how internal and external social pressures and institutional isomorphism impacted knowledge sharing behavior within an organization. Specifically, they provided insight on the impact of isomorphic pressures on the healthcare industry and identified three types of isomorphic pressures that influenced leadership behavior. Coercive pressures were based on political influences and governmental mandates that were imposed on the industry to guide the behaviors of organizations based on regulations and policies that were created as part of an emancipatory social movement towards improving the status quo. Normative pressures were based on industry-wide regulations that defined “best practices” that set the tone for meeting standards through compliances, while mimetic pressures were benchmarks set by industry leaders that served as standards for industry followers. DiMaggio and Powell’s (1983) arguments were rooted in Marxist theories in which socio-political influenced dominated followers.

Szulanski (1996) and Patton (2001) further explored the concept of “best practice” to understand the implications associated to its meaning. Szulanski (1996) argued that “the transfer
of best practices” in an organization was defined and classified as successful processes that produce optimal results. Leadership emphasized best practices through redundant procedures to ensure consistency across the organization. He argued that the term “best practice” had implicit meaning for each organization, where each meaning was unique and based on what a particular organization perceived to be its “best practices.” Szulanski (2000) argued that potential barriers could take place between the source and the recipient during the initiation, implementation, ramp-up, and integration of routine where “stickiness” could impede the knowledge transfer process (pp. 12-16). These arguments were consistent with those of O’Dell and Grayson (1998) who argued that knowledge acquisition did not always lead to effective knowledge application if a recipient was unaware of its intended use, and that the greatest barrier was when either the source or recipient lacked the capacity to absorb the knowledge or failed to understand the benefit of receiving or sharing it. Thus, benchmarks and best practices for effective knowledge transfer required that the source and recipient shared the same perceived value of the knowledge being shared.

Comparatively, Patton (2001) questioned the root of “best practices” and argued that diverse meanings could alter the context while politics could undermine the purpose of its function where criteria were established based on personal motivations. Patton (2001) emphasized that experiential learning was “cumulative knowledge or working hypotheses that can be adapted and applied to new situations, a form of pragmatic utilitarian generalizability“ enabled members to co-construct meaning and interpretation to define context where knowledge was meaningful and relevant to the context and reflected multiple perspectives across various contexts (p. 334).
An exploration of the social constructionist approach. The second school of thought emphasized a social constructivist approach to understanding the theory of knowledge based on a non-positivist approach that emphasized social science over empirical science, an approach where multiple perspectives provided introspection and intuition that served to define reality. This perspective specifically explored the dynamic interplay among individuals who engaged in social interaction and cognitive thought processes to co-construct meaning and interpretation through intersubjective mutuality that enabled them to define context (Aliki et al., 2014; Tsoukas, 2002, 2009; Weick, 1979, 1995). Proponents (Brown & Duguid, 1991; Sveiby, 2001; Tsoukas, 2002, 2009; Von Krogh, 1998) of this mindset argued that to establish reality individuals had to engage in social dialogue through intersubjective mutuality where shared meaning and interpretation enabled them to co-construct their environment.

Tsoukas (2002) argued that tacit knowledge was difficult to transfer based on its highly intuitive and abstract nature and noted that tacit and explicit knowledge were “two sides of the same coin” where an individual’s unique frame of reference was based on past experiences that shaped interpretation, making it difficult to transfer. Tsoukas (2009) argued that social construction enabled “relational engagement” across intellectual boundaries in which members took joint social action through productive dialogue and self-distanciation to combine, expand, and the reframe their perspective based on mutual understanding (p. 942). Tsoukas (2009) emphasized that language played a key role in defining context and noted that complex language could impede effective knowledge sharing where translation could be lost. He argued that experts often used technical language and jargon to communicate but failed to realize that some individuals outside of a specialty domain lacked the terminology to comprehend accurately, leading to misinterpretation. He noted that cognitive maps varied in meaning depending on each
individual’s personal expertise and emphasized that language played a key role in shaping how maps were developed. He also argued that the use of metaphor, narration, and stories enabled individuals to establish context but emphasized that interpretation depended on the explanation and specifically the wording used to describe a process or object. If the words did not accurately describe the process or the recipient was unfamiliar with the meaning, then it could result in misinterpretation. Tsoukas’ (2009) arguments were contrary to those of Nonaka and Takeuchi (1995) who argued that effective knowledge sharing was merely part of a spiral process where members shared stories and experiences to achieve common goals. Tsoukas (2009) argued that for knowledge transfer to be effective in dyadic communication common language and translation had to be present; both the source and the recipient had to share familiar understanding of what was being conveyed, otherwise it was meaningless. Tsoukas’ (2009) arguments were consistent with those of Weick (1995) who noted that observation and reflection enabled sensemaking and interpretation that led to mutual understanding, enabling individuals to define context.

Bordum (2002) arguments were consistent with Habermas (1984) and argued that social pragmatics enabled individuals in an organization to establish context through shared meaning and interpretation; he noted that “we can know more than we can tell” (p. 50). Bordum (2002) argued knowledge was not simply a factor in organizational success but the only factor for success. To bolster his arguments he referenced Drucker (1998), who coined the term “knowledge work” and “knowledge workers.” Bordum (2002) acknowledged that tacit knowledge was consistent with Russell’s (1905) discussion on “knowledge by description” where this kind of knowledge enabled individuals to implicitly store and access knowledge based on past descriptions they heard or read about, enabling them to recognize certain environments
they had never experienced personally. Bordum (2002) recognized the existence of tacit knowledge as insightful yet warned that to use it in organizational management subverted the foundations of judgment and reason and made management morally ambiguous since meaning was unique to those who beheld it.

Similarly, Sveiby (2001) argued that a “capacity-to-act” enabled one implicitly (consciously or unconsciously) to store, access, and replicate knowledge based on a common frame of reference that was used to establish reality (p. 345). His arguments were rooted in Habermas’ (1984) social pragmatics in which knowledge was co-constructed to define context. Sveiby’s (2001) arguments were consistent with those of Von Krogh (1998) who argued that sensemaking through reflection and interpretation enabled individuals to establish common meaning that defined reality. Comparatively, Tsoukas and Vladimirou (2001) emphasized that heuristics were invaluable to an organization and noted that experiential learning added knowledge depth based on lived experiences. They argued that a combination of internalized context and theory provided a diverse and holistic understanding about a phenomenon.

The seminal work of Brown and Duguid (1991) set the foundation to explore communities-of-practice as an approach to knowledge sharing among members of a professional community. For example, Bartunek et al. (2003) explored communities-of-practice (CoPs) in the healthcare industry. They argued that the healthcare industry advocated a need for sharing tacit expertise among medical doctors and healthcare professionals to enhance professional development and to improve the quality of patient care. They noted that proficient practitioners had an intuitive understanding that enabled them to identify anomalies that could be shared with other healthcare professionals through observation and reflection. According to Brown and Duguid (1991) individuals who engaged in CoPs socially constructed their environment through
shared professional identities where collegiality and common experience enabled them to build rapport and trust that led to knowledge sharing. Bartunek et al. (2003) argued that contextual knowledge went beyond formal medical training in providing insight since doctors reflected on their lived experiences to describe various anomalies and difficult procedures they had encountered in the past, which provided colleagues with practical expertise that was unavailable in medical texts. They argued that communities-of-practice were usually homogeneous subcultures where members shared common identities that served to create bonds between them, encouraging collaboration. They noted that interdisciplinary groups comprised of diverse members were more challenging because they had less opportunities to engage in social interaction, which resulted in weaker social bonds where less trust existed, negatively impeding knowledge sharing. They emphasized that organizational events created social networks that encouraged social rapport across functional borders. This led to camaraderie and increased the likelihood of knowledge sharing among individuals since they were exposed to diverse perspectives that could be used to enhance their decision making abilities.

In summary, the theoretical research presented in this literature review explored the theory of knowledge from positivist and non-positivist perspectives to better understand the meaning of knowledge. Knowledge was explored based on two primary schools of thought that attempted to define its origin. One branch emphasized a functionalist approach where knowledge was perceived as having economic implications and was considered to be a possession or resource that was shared among the collective and used to create competitive advantage. The other branch emphasized a social constructivist approach where knowledge resulted as a product of the dynamic interplay among individuals who co-created their environment through intersubjectivity where shared meaning and interpretation enabled them to
define context. To provide further insight, this literature review was based on a presentation of qualitative, quantitative, and mixed studies that were used to explore the process of knowledge acquisition, application, and retention and served as a foundation to explore the types of knowledge and types of actions that doctors used to share knowledge with other healthcare professionals at this community hospital.

**Part Ic. Exploration of the Empirical Studies**

The empirical studies were divided into two sections; the first section presented findings that pertained directly to the phenomenon of knowledge sharing while the second section focused on knowledge sharing in the healthcare industry. Overall, the findings from 35 empirical studies conducted over the past decade were reviewed as a foundation for this study and are listed in Appendix B, which highlights the study findings. The literature review consisted of empirical data that employed qualitative, quantitative, and mixed methods as design strategies. Over two-thirds of the studies used to explore the phenomenon of knowledge sharing for this study were qualitative in nature; this number included studies from within and outside of the healthcare industry.

**Studies that explored knowledge sharing.** The literature reviewed for this study reflected data based on empirical studies that employed qualitative, quantitative and mixed methods to explore the phenomenon of knowledge sharing at the individual level in order to identify the potential enablers and barriers that facilitated or impeded knowledge sharing processes in an organization. The literature explored studies that provided insight into how individual, social, and organizational factors and communication processes impacted the types of knowledge and types of actions that individuals used to share knowledge with one another in an organization. The majority of empirical studies used for this literature review reflected data from
the healthcare industry since the purpose of this study was to explore the knowledge sharing behaviors of medical doctors.

Ford and Staples (2008) and Van den Hooff, Schouten, and Simonovski (2012) explored individual motivational factors such as attitudes, intentions, and behaviors associated with knowledge sharing; their research provided insight into the cognitive processes that drove individual knowledge sharing behaviors in an organization and provided insight at the micro level. The qualitative study by Ford and Staples (2008) addressed individual factors that could impact knowledge sharing. They explored the source’s intentions to share knowledge specifically, to understand whether intention influenced attitude based on Ajzen and Fishbein’s (1980) theory of reasoned action (behavioral intention depended on a person’s attitude about the behavior and subjective norms) and Ajzen’s (1991) theory of planned behavior (attitudes towards a behavior, subjective norms, and perceived behavioral control shaped an individual’s behavioral intentions). They described the knowledge sharing process among individuals as discretionary, fully disclosed, partially disclosed, hinted, hoarded or disengaged and noted that normative traditions further impacted knowledge sharing behaviors (p. 13). Their findings indicated that sharers and receivers had a tendency to share knowledge based on their perception of one another’s needs or from personal agendas that impacted their behaviors.

In contrast, Van den Hooff et al.’s (2012) quantitative study explored emotions and how they impacted an individual’s intention to engage in knowledge sharing. Specifically, the study explored the relationship between pride and empathy to determine whether willingness and eagerness impacted their knowledge sharing intention. They found that the emotional state of an individual at a particular time influenced their attitude and intention for sharing knowledge with others, and argued that empathy was an emotion that triggered prosocial behaviors facilitating
knowledge sharing based on normative traditions such as reciprocity and pride, which affected eagerness and willingness to share knowledge. According to their findings, pride and empathy affected eagerness and willingness to share knowledge where eagerness and willingness impacted pride, but only willingness mediated the relationship between empathy and knowledge sharing. While exploring potential motivational factors provided insight into this study, it was also important to understand the impact of social networks and how individuals engaged with one another across boundaries to transfer knowledge. Specific attention was directed to understand how the social climate influenced the social interactions among individuals, and how social capital was created among individuals that enabled them to share knowledge in the organization.

According to Whittaker and Van Beveren (2005) and Wah, Menkhoff, Loh, and Evers (2007), social capital was a necessary component of building social bonds that enabled knowledge sharing in an organization. Whittaker and Van Beveren (2005) argued that social capital was developed at the cognitive dimension where shared context based on common goals enabled individuals to cooperatively share resources with one another to accomplish task. They argued that at the relational dimension trust and reciprocity facilitated the dynamic interplay among individuals where they co-constructed meaning to establish context while the structural dimension created a common space for individuals to engage in relational building such as social networks and communities-of-practice that enabled them to share information with one another (pp. 301-302). They also noted that the context was a dynamic process where knowledge was constructed among individuals through shared meaning and interpretation of new situations (p. 302). According to Whittaker and Van Beveren (2005), “social capital exists in a relationship between two actors if they develop personal bonds, attachment, and trust” (p. 302).
Comparatively, Wah et al. (2007) argued that strategies had to be implemented by the organization to facilitate various dimensions of social capital. They referred to the *structural dimension* as the social climate where individuals were encouraged to share knowledge through rewards and incentives; the *relational dimension* as the foundation for establishing relationships with others in the organization that led to strong ties that encouraged knowledge sharing; and the *agency dimension* as a coalition that enabled members to acquire resources from one another (pp. 31-32). Wah et al.’s (2007) findings strongly indicated that knowledge was a socially embedded process where the social environment in an organization facilitated all three dimensions (structural, relational, and agency) of social capital, which encouraged knowledge sharing behaviors. They noted that if management wanted to achieve certain outcomes they would have to provide various incentives and rewards to facilitate the knowledge sharing processes. In addition to understanding social relationships, it was important to explore the organizational context to determine what impact it had on knowledge sharing processes.

Lehtonen (2009) explored how the organizational context (social, structural, contextual, cultural) impacted knowledge sharing behaviors in an organization. They explored how culture impacted knowledge sharing and communication at the individual level among Finish and Indian team members who worked on multicultural projects. They argued that “communication by accident” occurred as a result of “trust,” noting individuals felt connected to share knowledge through common understanding of goals and objectives (p. 71). The results of their study indicated that the organizational context fostered trust, which facilitated communication among individuals that led to knowledge sharing. Lehtonen (2009) identified language, interpersonal similarity, attitude toward knowledge sharing, organizational environment, trust, and personal relationships as having an impact on effective knowledge sharing behavior in situations where
culture differed and noted that a supportive climate fostered camaraderie among individuals to unite them.

While exploring the organizational context provided insight into how it impacted knowledge sharing behaviors, Tsoukas (2009) explored the communication processes that took place among individuals in an organization. He noted that reflexive social interaction resulted when members socially constructed new knowledge through dialogical processes based on self-distanciation where members reflected and shared experiences with others to gain diverse perspectives to create new innovations. Tsoukas (2009) argued that “dialogue becomes productive when the modality of relational engagement is adopted by those involved” (p. 945). This meant that individuals took joint action based on strong social ties to explore diverse perspectives (p. 945). Tsoukas (2009) referred to dialogue as “the interaction order” where individuals engaged in turn-taking to identify common goals through a process of argumentation based on reasoning and justification to validate claims that enabled them to establish meaning (as cited in Goffman, 1997, pp. 233-261). He identified four properties of productive dialogue: collaborative emergence where members engaged in dialogue and utterances were exchanged and interpreted to co-create meaning; constrained novelty where individuals contributed meaning towards causation that enabled novel ideas to emerge; incremental emergence where individuals added some level of modification to enhance meaning; and indexical creativity where individuals used questions to declare a state of affairs that led to the creation of meaning (pp. 945-946). Tsoukas (2009) noted that boundary objects helped to clarify meaning to ensure common understanding. According to Tsoukas (2009) three processes of conceptual change took place when individuals engaged in productive dialogue, resulting in conceptual combination, conceptual expansion, and conceptual reframing that led to new distinctions (p. 942). Tsoukas’
(2009) study provided insight on how cross-functional professionals with different expertise could effectively collaborate through shared meaning and interpretation using dialogical strategies that emphasized language, negotiation, and meaning making to define context.

**Studies that explored knowledge sharing in healthcare.** The purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. Specifically, the study addressed the types of knowledge and types of actions that medical doctors used to share knowledge with other healthcare professionals. As a result, the literature review for this study included data specific to the healthcare industry that was collected over the past decade to explore the phenomenon of knowledge sharing among doctors and other healthcare professionals. The research provided insight into how individual, collective, social, and organizational contextual factors influenced knowledge sharing behaviors while it also identified the enablers and barriers that impacted effective knowledge sharing among doctors and other healthcare professionals. In addition, the research provided understanding of the techniques healthcare professionals used to transfer knowledge with one another, and what constituted effective knowledge acquisition and knowledge application where knowledge was interpreted and applied as intended.

**Understanding individual knowledge sharing behaviors in healthcare.** Ryu et al. (2003) and Leever, Hulst, Berendsen, Boendemaker, Roodenburg, and Pols (2010) explored individual knowledge sharing behaviors in a hospital. Ryu et al. (2003) explored the behavior of physicians in thirteen hospitals to explore how attitudes and intentions influenced an individual’s behavior. Ryu et al. (2003) argued that “physicians were knowledge-intensive where both practical and theoretical knowledge was vital to their professional development and ability to provide quality patient care” (p. 113). They noted that changing peoples’ behaviors was the
most challenging task faced by an organization. They argued that organizations must understand human processes to determine what influences their attitudes, intentions, and behaviors, all of which impact how effectively they share knowledge. Their findings showed that subjective norms tended to have the biggest impact on knowledge sharing, and emphasized that hospital leadership had to create an environment that was conducive to knowledge sharing (p. 120). They noted that leadership had to establish communication structures and opportunities for physicians to engage in social interaction, where the environment created an attitude that facilitated their intention to share knowledge (p. 120). Ryu et al. (2003) referenced Fishbein and Ajzen’s (1975) theory of reasoned action and Ajzen’s (1991) theory of planned behavior as a foundation for their study. They noted that when an organization sets the tone that defined expectations, individuals perceived a loss of control that negatively influenced their personal attitudes and intentions and ultimately impacted their knowledge sharing behaviors. They also noted that a negative attitude towards a behavior, subjective norms, and perceived loss of behavioral control shaped an individual’s intention and behavior, which was consistent with the theory of planned behavior.

Ryu et al.’s (2003) study explored how implicit motivational factors impacted knowledge sharing at the individual level which was a critical component of understanding the knowledge flow among physicians since knowledge assets resided with the individual who was the only person who could initiate the knowledge sharing process. Ryu et al. (2003) emphasized that by employing a qualitative design it provided insight about these factors from the participant’s perspective, where the participant’s rich descriptions provided a deeper understanding about what influenced his or her knowledge sharing behaviors.

Comparatively, Leever et al. (2010) explored various external factors that influenced
communication processes and argued that physicians and nurses had to engage in explicit communication that is clear and concise, and had to perceive one another as equals in order to avoid positional bias that could negatively impact communication between them. They emphasized the importance of mutual respect and trust, and argued that leadership must create a climate of collaboration that fostered teamwork among colleagues by clearly identifying common goals and objectives, thus encouraging cooperation that ultimately facilitated knowledge sharing among them.

**Understanding collective knowledge sharing behaviors in healthcare.** While identifying the potential factors that may impact individual knowledge sharing behaviors was important (Leever et al., 2010; Ryu et al., 2003), it was equally important to understand knowledge sharing at the collective level to determine what potential factors may enable or impede knowledge sharing among colleagues. The studies of Hewett, Watson, Gallois, Ward, and Leggett (2009), Mansingh et al. (2009), and Landman et al. (2013) explored knowledge sharing behavior among doctors and or other healthcare professionals in hospital environments, in order to identify potential motivational and behavioral factors that could positively or negatively impact collective knowledge sharing among individuals in an organization.

Hewett et al. (2009) explored intergroup communication among doctors in a hospital to determine the impact of knowledge sharing across functional borders. The study was based on 45 interviews with doctors from a range of different specialties in a large metropolitan hospital. The study was rooted in Tajfel’s (1978) social identity theory that argued individual behavior was influenced by group members where people sought to maintain distinct group identities. Also, they referred to Gallois, Ogay, and Giles’ (2005) communication accommodation theory that argued when people interacted they adjusted their speech, vocal sounds, and gestures to
accommodate others based on communication strategies that aimed to achieve their personal goals.

Hewett et al.’s (2009) study focused on the social dynamics of intergroup communication and relationships during patient collaboration. They argued that intergroup conflict was at the center of potential barriers to knowledge sharing across borders because group identity led to conflict where members from each team perceived themselves as superior to others and created communication barriers that impeded knowledge sharing (p. 1733). In addition, socio-historical context could impact what types of knowledge and what level of knowledge individuals shared based on past experiences where poor outcomes or vulnerable situations were not shared to avoid embarrassment (p. 1733). In addition, power, status, positioning, control, and competition were at the root of conflict. Patient ownership was perceived as the responsibility of the admitting team and contributions outside of this jurisdiction were met with resistance. They argued that consensus across professional boundaries was reached through negotiation either by taking an accommodative position that emphasized group specialty or a non-accommodative position that negatively responded to any suggestions that were outside of their group (p. 1733).

Hewett et al. (2009) identified interpersonal control as the effort to use language to maintain positional power (p. 1733). The study indicated that much of the communication conflict across boundaries during operating procedures occurred from a lack of understanding or from self-centered egos that failed to recognize the professional capabilities of those who differed (p. 1733). In contrast, a need to maintain normative traditions and collegiality may have resulted in the use of social dialogue as appeasement, in which certain realities were overlooked, leading to potentially ineffective patient care (p. 1733).

Comparatively, Mansingh et al. (2009) also used qualitative methods to explore cross-
functional knowledge sharing among doctors and other healthcare professionals in a hospital setting. They argued that knowledge sharing was most effective across borders when individuals perceived a common value associated to the knowledge being shared. They noted that different goals and a lack of capacity or ability to absorb knowledge created a barrier where individuals failed to appreciate the knowledge application, and the knowledge sharing was thus ineffective.

Mansingh et al.’s (2009) findings were consistent with Tortoriello et al. (2012) who argued that knowledge shared across borders was tentative due to a lack of conceptual understanding between the source and recipient that impacted efficient knowledge translation and application. Tortoriello et al. (2012) further argued that strong social ties enabled individuals to effectively share knowledge across boundaries since they were familiar with the application of the knowledge and felt comfortable asking questions. In contrast, weaker social ties across boundaries resulted in less effective knowledge sharing because individuals were unfamiliar with one another and did not feel comfortable asking one another. Thus a lack of capacity to absorb the knowledge content resulted in an inability to effectively apply the knowledge as was initially intended, which resulted in ineffective knowledge sharing.

Mansingh et al. (2009) also concurred with Dwivedi et al. (2003) that the healthcare industry was dependent on doctors’ knowledge assets, assets critical to the advancement of medicine, and they argued that organizations must facilitate knowledge sharing among doctors by creating structures and opportunities that enabled them to share knowledge with their colleagues.

Mansingh et al. (2009) noted the potential use of technology as transactive memory systems to improve knowledge awareness and application. The systems facilitated knowledge sharing among healthcare professionals who co-constructed meaning. The systems also allowed
for coordinated action and could be used as a knowledge storage area for future application as well (p. 2856). They emphasized that the human element was the most important component of this process since individuals communicated tacit expertise and intuitive know-how with one another to facilitate patient care. They noted that it was vitally important to understand the knowledge flow in an organization, specifically, the nature and relationships of knowledge to ensure that knowledge acquisition and application were effectively managed and utilized to produce optimal results in the future (p. 2856).

Landman et al. (2013) provided insight by exploring patient collaboration among colleagues to understand what impact working-together towards common goals had on the quality of patient care. Their study explored patient collaboration among hospital staff (doctors and nurses) and emergency medical service (EMS) professionals to determine how it impacted the quality of patient care; the study was conducted at 11 US hospitals that ranked in the top 5% of performance for preventing myocardial infarction mortality rates. The study indicated that monthly hospital meetings among hospital and EMS staff to discuss patient care on acute myocardial infarction cases led to improved patient care. Four themes emerged from the interviews and observations of collaborative care among hospital staff and EMS: timely treatment to acute patients was predominant among all participants; EMS professionals were perceived as part of the care team for patients with acute myocardial infarction noting that social bonding among hospital staff; EMS produced better patient outcomes; strong communications resulted in timely, up-to-date evidence-based clinical knowledge that could be shared to provide optimal patient care outcomes; and active engagement of EMS members enabled them to participate in problem solving with doctors and nurses where knowledge could be shared and used toward future decision making. The study concurred with the findings of previous
empirical data that argued patient collaboration among doctors, nurses, and other healthcare professionals led to the improved quality healthcare where patients were treated in a timely manner based on knowledge shared by members of the care team who took the most appropriate action to assist patients in acute medical situations.  

*The impact of organizational context on behaviors in healthcare.* Taylor and Wright (2004), Weller, Barrow, and Gasquoine (2011), Zigan et al. (2010), and Stroetmann and Aisenbrey (2012) explored the impact of organizational context on knowledge sharing behavior in the healthcare industry. Taylor and Wright (2004) argued that hospital leadership had a tendency to dictate discourse to minimize potential threats that could arise from full disclosure and transparency. This negatively impacted the quality of patient collaboration (p. 25). Their findings indicated that the social environment played a determinant role by shaping the meaning and interpretation that defined the context for which knowledge was shared. They argued that most traditional hospitals were hierarchical organizations that controlled the types of knowledge shared among colleagues to protect the organization from potential medical liabilities that could result from transparency. Their findings identified six important factors that had to be met to avoid ineffective knowledge sharing in hospitals: an innovative climate that encouraged new ideas; lessons-learned where transparent behavior was not inhibited by bureaucracy; individuals who understood the relevance and importance of knowledge acquisition and application and were not merely following orders; performance that reflected reality; individuals who understood a need for innovations; and a vision for change where individuals were encouraged to participate in collaborative patient care (pp. 28-34). According to Taylor and Wright (2004) individuals must perceive a benefit to sharing knowledge across boundaries and noted that the culture must
support collaboration among different groups by providing infrastructure that facilitated knowledge sharing processes (p. 13).

Weller et al. (2011) explored inter-professional collaboration among junior doctors and nurses in a hospital setting where participants had at least two years of professional experience after graduation, in order to explore the nature of their social interactions and how it impacted patient collaboration across functional borders. According to Weller et al. (2011) the interviews provided rich descriptions from the participants (doctors and nurses) who described how they perceived each other’s professional ability, qualification, and reliability as a doctor or nurse, and provided insight into whether role expectation impacted their collaborative behavior. Their study showed that the organizational structure impacted knowledge sharing among doctors and nurses and noted that communication, culture, and professional role created distinct boundaries that implicitly reinforced positional status and dictated the protocol on patient care and task fulfillment. Weller et al. (2011) argued that the structure imposed a barrier between nurses and doctors where nurses usually worked within their wards and had little social contact across borders while doctors interacted with various cross-functional professionals while they conducted rounds. Weller et al. (2011) noted that professional status impacted how members of a particular group perceived those of another and noted that doctors perceived nurses as having lack of knowledge capacity which impacted the types of knowledge and level of data they chose to share with them. According to Weller et al. (2011) shared mental models enabled members to collaborate that ensured proper patient care.

Comparatively, Zigan et al. (2010) employed a qualitative study to explore the impact that contextual factors had on knowledge sharing among managers and front-line staff from different organizational levels in a university hospital. According to the managers interviewed
in the study, the hospital culture was not ready to create structures to facilitate knowledge sharing in the organization. Zigan et al. (2010) argued that lack of awareness on how to facilitate effective knowledge management in the hospital sector led to structures that were technologically-driven to capture codified documentation but failed to capture tacit expertise and intuitive cognitive processes that were unique to each doctor and considered critical to the hospital organization for competitive advantage (p. 120). Zigan et al. (2010) recognized that hospitals must reposition themselves to meet the demands and challenges of various stakeholders by establishing structures that enabled them to capture the knowledge assets of physicians that could be used to create leverage for competitive advantage. The study concluded that leadership had to create routine communication structures and emphasized knowledge sharing among doctors and other healthcare professionals. A social climate was needed that created an environment based on trust, and noted that hierarchical structures were detrimental to effective knowledge sharing. Zigan et al. (2010) also argued that healthcare could benefit from the research on effective knowledge sharing in other business fields with respect to the nature and practice of knowledge management.

Stroetmann and Aisenbrey (2012) referred to Davenport and Prusak’s (1998) theories on managing knowledge flow processes that argued it was important to convert individual knowledge assets to the collective through collaboration among healthcare professionals; these knowledge assets could then be made routine and institutionalized and used for competitive advantage. They argued the culture must encourage an atmosphere where individuals were persuaded to share knowledge within and across boundaries to ensure optimal success. They also argued that infrastructure and technology facilitated knowledge sharing processes. The findings from Taylor and Wright (2004), Zigan et al. (2010), and Weller et al. (2011) indicated that the
organizational context and structure played a pivotal role shaping knowledge sharing behaviors, while political struggles based on positional power and role identity created implicit barriers that divided doctors from other healthcare professionals. As a result, doctors were perceived as the medical consultants while nurses and other healthcare professionals played a supportive role to implement doctors’ orders and provide day-to-day care for patients.

Waring (2005); Yang et al. (2007); Yang, Fang, and Lin (2010); and McGivern and Fischer (2010) explored organizational culture to understand the impact of internal and external influences on knowledge sharing behavior among healthcare professionals. Waring (2005) argued that physicians traditionally exercised a culture that emphasized “a collective understanding and attitude towards complaints that maintains professional control and identity in the face of these external or non-professional challenges” (p. 1929). Waring (2005) warned that collegiality among doctors created potential barriers to effective knowledge sharing where incidental reports were concealed to avoid “cultural blame” at the expense of improving the quality of patient care. He argued that medical practice in western cultures had a tendency to attach blame to bad outcomes, and argued that the healthcare industry must transition from a traditional “blame culture” to a “reporting culture” where incidental reporting could be used to improve the quality of patient care (p. 1928). According to Waring (2005) this type of behavior reinforced existing norms that emphasized a strong need among hospital leaders to maintain control of medical quality issues to avoid outside governmental and industry scrutiny that could impose sanctions to mandate behaviors.

Comparatively, McGivern and Fischer (2010) provided qualitative research based on narratives that explored the impact of industry regulations on knowledge sharing among doctors, psychiatrists, and other healthcare professionals. They argued that outside regulators (industry or
government) lacked qualification to pass judgment and set regulations on processes that required complex expertise. The study indicated that a high number of doctors expressed professional frustration towards “spectacular transparency” and noted that transparent medical regulations and external scrutiny forced doctors to work defensively and impeded their performance (p. 607).

Yang et al. (2007) explored isomorphic pressures in the healthcare industry to determine what impact they had on the organizational context and how it impacted transparency and knowledge sharing behaviors of hospital administrators. Their study was rooted in DiMaggio and Powell’s (1983) institutional theory that argued isomorphism legitimized social pressures in an organization where governance and regulations were perceived as mechanisms that shaped the performance of an organization. Yang et al. (2007) argued that the healthcare industry was subject to normative pressures where success in one institution was often used as a benchmark across the industry and set the tone for expectations. They noted that governmental regulations exercised coercive pressure where hospitals had to comply with federal regulations. In addition, increasing competition and partnerships among hospitals created mimetic pressures where organizations copied other successful organizations to maintain competition (p. 265). They noted that hospitals were knowledge intensive organizations where knowledge was used as leverage for competitive advantage and argued that doctors were considered to be the knowledge assets given their tacit and intuitive experience that makes them unique. They noted that hospitals had to create structures that captured and retained doctors knowledge assets to sustain competitive advantage (p. 266).

Yang et al. (2007) provided meta-analysis from qualitative data that explored isomorphism and its impact on organizational context and the behaviors of healthcare administrators. The findings showed that institutional strategies that complied with isomorphic
pressures were more likely to be implemented if administrators perceived their organization to be vulnerable to the pressures of organizational politics (p. 267). If normative pressures were perceived as setting industry standards they were likely followed, in order to maintain the organization’s position among the competition (p. 267).

Yang et al. (2010) extended the research of Yang et al. (2007) in exploring how hospital leaders (administrators and managers) perceived the impact of having to conform to isomorphic pressures. They argued that hospital leadership had to meet the ongoing social pressures associated with healthcare reform and needed to create structures that facilitated knowledge acquisition, retention, and application on a timely basis to sustain a competitive advantage. They argued that since hospitals were knowledge intensive and doctors were considered human knowledge assets, it was important to understand the nature of how knowledge was shared by exploring what prompted their needs to share knowledge, what types of knowledge they shared and the level of knowledge shared. Also, they explored the impact of social rapport and noted that it created bonds among individuals that facilitated knowledge sharing among them.

Yang et al. (2010) referred to social capital theory to understand how social ties and networks enabled individuals to share resources and argued that strong ties created channels for individuals to exchange resources across boundaries, establishing collectively-owned capital that was embedded in the organization and used for competitive advantage (p. 5). They argued that social networks enabled hospitals to meet isomorphic pressures by facilitating patient collaboration, which indicated improved patient care and resulted in government support (p. 12).

It was evident from the research presented by Waring (2005); Yang et al. (2007); Yang et al. (2010); and McGivern and Fischer (2010) that government, industry, and competitive pressures influenced knowledge sharing in healthcare organizations. According to the findings,
healthcare organizations demonstrated social collaboration and coordination, emphasizing transparent behavior that resulted in federal support that otherwise may have been denied, denial of which could negatively impact a hospital’s ability to sustain competitive advantage.

In summary, healthcare was recognized as a knowledge-intensive industry where hospitals were dependent upon the tacit expertise and skills of doctors who were considered to be human knowledge assets that represented a competitive advantage to an organization (Ryu et al., 2003; Yang et al., 2007; Yang et al., 2010). Over the past decade, the healthcare industry had undergone a major shift from a fee-for-service to a pay-for-performance industry that emphasized patient collaboration among doctors and other healthcare professionals as a way of improving the quality of patient care (McGivern & Fischer, 2010).

As noted in the studies, knowledge sharing and incidental reporting among doctors and other healthcare professionals was minimal due to an existing “blame culture” where doctors refrained from engaging in transparent behaviors from fear of potential medical liability (McGivern & Fischer, 2010; Waring, 2005). As a result, hospitals continued to use caution on the types of knowledge and the level of knowledge they disseminated in their organizations (McGivern & Fischer, 2010; Waring, 2005). This industry-wide misperception continued to inhibit hospitals from engaging in knowledge transparency especially among doctors who were bound by collegiality and confidentiality (McGivern & Fischer, 2010; Waring, 2005). As a result, hospital leaders created barriers to knowledge sharing through centralized communication structures that limited social interaction among colleagues (McGivern & Fischer, 2010; Taylor & Wright, 2004). Yet hospital organizations had to respond appropriately to the coercive (governmental), normative (industry), and mimetic (competition) isomorphic pressures that encouraged them to encourage transparency (Yang et al., 2007; Yang et al. 2010). This
continued to be a challenge since hospital organizations had a tendency to focus attention on patient care and perceived collaboration as a secondary priority (Yang et al., 2010).

To facilitate collaboration hospitals must recognize the importance of how to capture and manage individual knowledge assets through structures that could be embedded and retained for competitive advantage (Mansingh et al., 2009). To meet this challenge, it was important that hospitals understood the impact of individual, collective, and contextual barriers that could impede knowledge sharing among doctors and other healthcare professionals. As noted in the literature, individual factors such as ego disposition and perceived need (Hewett et al., 2009), and positional status (Hewett et al., 2009; Weller et al., 2011) could influence knowledge sharing behaviors while collective barriers such as a lack of capacity across functional borders (Hewett et al., 2009), infrequent opportunities to engage in social interaction (Weller et al., 2011), and a lack of transparent behavior to protect against potential liability could negatively impact knowledge sharing. In addition, contextual factors such as organizational politics (Yang et al., 2007) and isomorphic pressures (Yang et al., 2007; Yang et al., 2010) influenced knowledge sharing behaviors in a hospital organization. The collective results from these studies indicated a need for leadership to create a social environment that encourages knowledge sharing among colleagues through structural empowerment and communication processes that create opportunities for members to engage across borders through social networks, events, and training that foster collaboration and social coordination among individuals.

As noted in the literature, doctors must maintain professional competence in providing quality patient care by enhancing their skills through post graduate education, enabling them to acquaint themselves with new treatments, diagnostics, and preventive care measures (Landman et al., 2013; Mansingh et al., 2009; Weller et al., 2011; Yang et al., 2010; Zigan et al., 2010).
Given that doctors’ schedules had a tendency to be time restrictive, it was challenging for them to partake in formal classroom education, which meant seeking alternative solutions to furthering their education through informal learning channels such as observation, peer collaboration, social networks, and self-directed learning to meet professional standards. Overall, this section provided theoretical and empirical research to explore the phenomenon of knowledge sharing and more specifically, about knowledge sharing in the healthcare industry.

Part II. Knowledge Sharing and the Informal Environment

The purpose of this study was to explore the knowledge sharing behaviors of medical doctors, specifically, the types of knowledge and types of actions they use to share knowledge with other healthcare professionals in a community hospital (Habermas, 1984). Informal knowledge sharing was common among medical doctors in the workplace since they were required to continually enhance their professional skills but their schedules left little time to seek formal classroom education (Swanwick, 2005). This section of the literature review provides both theoretical and empirical insight about how medical doctors engaged in collaboration through various informal channels such as communities-of-practice (Brown & Duguid, 1991), narration and storytelling (Geiger, 2010; Van de Wiel et al., 2011) and “water-cooler” (Waring & Bishop, 2010) learning to share knowledge with other healthcare professionals in informal settings.

Establishing a theoretical foundation for informal learning. The following section is a presentation of the theoretical research that was used to explore informal learning and knowledge sharing among individuals and included empirical data that was specific to the healthcare industry and served as part of this literature review to inform this study. The purpose of this study was to explore the knowledge sharing behaviors of doctors in a community hospital
located in the Northeastern United States. Mezirow (2000) argued that experience was transitional throughout the course of an individual’s life and was acquired as a byproduct of one’s daily activities in their profession. He argued the process was transformational and redefined a person’s lifeworld as how one responded to things, because the process reshaped their perceptions, attitudes, and behaviors, a reshaping based on an accumulation of past experiences that would be used to inform future decisions. He noted that individuals reflect upon lessons-learned through past experiences when they engage with others in social discourse. Mezirow (2000) was highly inspired by the work of Habermas (1984) and concurred that there were three distinct types of knowledge: instrumental (objective; scientific empirical), practical (social; experiential, hermeneutic; intuitive, abstract), and emancipatory (self-reflective; critical) that determined the nature of knowledge and its validity. Mezirow’s (2000) arguments were consistent with those of Habermas (1984) who argued that social pragmatics was the most effective way to coordinate social action because it took into consideration that human interpretation was subjective by integrating the multiple perspectives through intersubjectivity where individuals co-constructed meaning to establish reality (p. 8).

Eraut (2000) argued that knowledge was implicit but became explicit when individuals engaged in social interactions and argued that “intuitions and routines were interpreted and stored as tacit expertise at the cognitive level and served as episodic memory to guide future decision making” (p. 116). He also noted that intuitive knowledge was based on recognized patterns where an individual reflected upon past experience to make quick decisions while routine responses resulted from having knowledge of previous similar activity, and reactive responses occurred as situational awareness at the meta-cognitive level (p. 129).

Comparatively, Marsick and Watkins (1990) argued that incidental learning was semi-
conscious, tacit, and unique to an individual, was a result of byproduct of some activity, and became conscious when one reflected upon lessons learned to inform present decision (p. 26). Their arguments were consistent with those of Schon (1983) who argued that experience was stored implicitly as lessons-learned from past success and failures and used to inform future decisions. Schon (1983) argued that individuals engaged at the collective level to share valuable insight from past experiences that served to inform their decisions when they defined context.

In summary, Mezirow (2000), Marsick and Watkins (1990), Eraut (2000), and Schon (1983) provided perspectives to establish a foundation for informal learning and knowledge sharing among individuals. The following section provides insight on how informal knowledge sharing using communities-of-practice, cognitive map sharing, and narration can be used as a tool for sharing experiences among colleagues.

**Exploring informal knowledge sharing.** Novak (2007); Sun, Mathews, and Lane (2009); and Geiger and Schreyögg (2012) explored informal knowledge sharing among individuals and identified the types of knowledge and types of actions they used to share knowledge with one another. Specifically, communities-of-practice, cognitive map sharing, and storytelling were explored to understand how individuals shared knowledge with others in these types of informal contextual environments.

Novak (2007) argued that communities-of-practice enabled individuals to share knowledge with one another in a forum that was relevant to their profession and where they could collaborate and coordinate social action based on common goals. He noted that communication using informal online channels (chat, communities, blogs) enabled individuals to become familiar with one another’s specialty. However, he warned that knowledge sharing across diverse groups could also result in ineffective knowledge sharing if there were conflicting
goals, egotistical problems, lack of capacity to absorb certain knowledge or a lack of perceived value associated to the knowledge transfer that could impact the types of knowledge and types of actions used to share knowledge across boundaries (pp. 1530-1531).

Novak (2007) argued that perspective making enabled individuals to co-create meaning and context across functions, which eliminated the potential for misinterpretation among intergroup members, unlike perspective taking where individuals maintained personal bias and were less open to diverse perspectives (p. 1531). The dynamic process of perspective making and perspective taking across unfamiliar borders was referred to as a “sensemaking learning loop” where knowledge was socially constructed across boundaries to establish common meaning that enabled individuals to define context (Novak, 2007, p. 1532). According to Novak (2007), intra-group members shared common mental schematics where dialogue was familiar that enabled them to engage in perspective making because it created a sense of trust and reciprocity among individuals which facilitated the knowledge sharing process. In contrast, perspective taking was more challenging because members across boundaries had less social interaction and were less familiar other people’s tasks where lack of capacity, failure to perceive a need to share knowledge, and weak social relationships prevented them from effectively sharing knowledge (Novak, 2007).

Novak (2007) argued that by establishing common knowledge structures it provided common vocabularies and information that detailed processes to establish common meaning among inter-professional group members (p. 1533). Novak (2007) provided a model that was based on a knowledge map method to support inter-professional knowledge sharing where individuals from different communities could access content about specific domains, along with semantic explanation to ensure common understanding (pp. 1534-1536). Comparatively, Sun et
al. (2009) argued that effective knowledge sharing across professional borders in science education required that an individual explain the “tricks of the trade” to others by sharing implicit information at the collective level to provide insight that would provide them with clarity (p. 239). Yet, they also noted that unfamiliarity with particular types of routines could negatively impact effective knowledge transfer. They noted that reflection was more effective when members shared common understanding about certain phenomena and argued that by combing both technical and practical information it would enhance their understanding to ensure effective knowledge transfer across boundaries.

Geiger and Schreyögg’s (2012) arguments were consistent with those of Sun et al. (2009), who argued that effective knowledge transfer among cross-functional professionals using informal learning channels had to be relevant to those sharing and receiving the knowledge to be effective especially when the information was complex in nature (p. 98). Geiger & Schreyögg (2012) explored the use of narratives and storytelling as potential informal learning approaches to knowledge sharing among colleagues where learning occurred in the work environment as either on-the-job, during breaks, events, or meetings where individuals’ reflected upon past stories to inform one another. Geiger and Schreyögg (2012) argued that narratives and storytelling provided rich descriptions about personal know-how and enabled individuals to establish context based on their reflections from their lived experiences that served as valuable insight to inform decisions since practical insight was not explicitly documented (p. 100).

Geiger and Schreyögg’s (2012) study findings explored several vignettes on informal knowledge sharing to provide insight on how they impacted knowledge sharing among individuals. First, they explored communities-of-practice across global networks that indicated virtual communication limited the type of knowledge shared because individuals were concerned
about privacy issues (p. 102). Comparatively, in another vignette they explored narration and found that stories confused individuals because there was tendency to exaggerate stories that ultimately tainted the value of their input and also led to negative feelings about the organization. Overall, it appeared that narration was a valuable tool but that effort had to be made to ensure that knowledge transferred was accurately described and clarified to ensure that there was common understanding with the recipient in order for it to be effective (p. 104). Geiger and Schreyögg (2012) referred to Habermas’ (1984) theory of communicative action and argued that language and argumentation should enable individuals to provide reasoning to validate their claims not intuition. Like Habermas (1984) they assumed that all participants had equal opportunity to present their findings, reflected arguments in good faith, and used common language (p. 106).

**Exploring informal knowledge sharing among healthcare professionals.** Over the past decade, researchers (Geiger, 2010; McGowan, Wasko, Vartabedian, Miller, Freiherr, & Abdolrasulnia, 2012; Sargeant, Mann, Sinclair, Ferrier, Muirhead, Van Der Vleuten, & Metsemakers, 2006; Swanwick, 2005; Spilg, et al., 2012; Van de Wiel et al., 2011; Waring & Bishop, 2010) explored informal knowledge sharing among healthcare professionals which was pertinent to this study because much of a medical doctors’ continuing professional development occurred through informal learning opportunities on-the-job or serendiptously in passing as noted by Swanwick (2005), Sargeant et al. (2006), and Spilg et al. (2012).

Swanwick (2005) argued that while post graduate medical education was vital for medical doctors to enhance their competence and professional development, most learning occurred outside of the formal classroom based on knowledge acquisition that came from the workplace either directly from experience or from peer collaboration and noted that “work-based
“learning” was considered a primary method for the ongoing development of medical doctors (p. 859). Spilg et al. (2012) argued that “successful healthcare systems worldwide are critically dependent on the development of doctors” (p. 1617), but emphasized that how to accomplish that successfully was still in question. Van de Weil et al. (2011) emphasized that “since doctors are life-long learners they need these skills to solve problems they encounter when diagnosing and treating patients ... as part of their continuing education” (p. 83).

Swanwick (2005) argued that reflection and modeling through observation and socialization enabled doctors to learn through work-related activities but noted that learning and knowledge sharing was often shaped by the environment where various normative traditions may define the types of information shared. Also, Swanwick (2005) warned that communities-of-practice were successful if they encouraged new innovations and argued that a redundancy that emphasized normative traditions stifled growth and defeated the purpose for creating new distinctions. These arguments were consistent with Garud (1997) who argued that path creation led to new innovation while path dependency merely reinforced redundant procedures that stifled development. Swanwick (2005) noted that medical doctors had positional power and influence over the language they used to establish context, which impacted the types of knowledge and the type of actions shared among colleagues (p.863).

Sargeant et al. (2006) explored informal learning initiatives that physicians took to enhance their professional development through self-directed learning and peer collaboration. Sargeant et al.’s (2006) study findings indicated that physicians perceived informal learning through patients, that colleagues were fundamental to their development, and that their main concern was to improve the quality of patient care delivered (p. 657). The authors argued that self-directed learning was deliberative where doctors perceived novel expertise as beneficial that
provided insight on how to solve complex medical problems. Sargeant, et al. (2006) noted that a
doctor’s personal attitude towards the source could influence their perception, reciprocation, and
egotism which could impact their behaviors when they interacted with others and the types of
information they shared with them (p. 657).

Similarly, Waring and Bishop (2010) explored informal knowledge sharing among
doctors to understand how knowledge was shared on the “backstage” in a clinical environment
that they referred to as “watercooler” learning (p. 325). They argued that a traditionally “blame
culture” existed in the healthcare industry where hospital leadership discouraged transparent
communication and incidental reporting among individuals to protect against potential medical
liability (p. 325). They conducted an ethnographic study to observe how members in three day
surgery units shared knowledge, specifically, to observe “front stage” formal communication and
“backstage” informal interaction among colleagues (p. 330). The results indicated that inclusive
interaction occurred in staff lounge or office areas where content was functional and based on
formal “staging talk” while exclusive interactions occurred in store rooms or corridors where
individuals shared “dark secrets” in confidentiality (p. 337). They argued that “watercooler”
knowledge sharing was situational and discretionary where trust and reciprocity based on
collegiality enabled them to share experiences collectively to address mutual problems (p. 338).

Comparatively, Spilg et al. (2012) explored social learning through communities-of-practice
to understand how social networks enabled individuals from a common professional
domain to share relevant knowledge resources for problem resolution and new medical
innovations (p. 1617). They provided insight from a socio-political and socio-economic
perspective, and contrasted it to a socio-cultural perspective to determine what factors enabled
and impeded informal knowledge sharing in a situated learning environment where members
directly learned from work experience, observation, and collaboration with peers. Spilg et al. (2012) argued that socio-political factors that were normative in nature such as reciprocity and the influence of positional status were perceived as barriers that could negatively impede the types of knowledge shared through communities-of-practice if one perceived that the knowledge they shared was more valuable than that received in return (p. 1619). In contrast, socio-cultural factors were perceived as enablers that created an environment that fostered common goals and values and encouraged cooperation that facilitated knowledge sharing processes. They argued that a benefit to communities-of-practice was that they provided historical context that could be used to inform individuals about how the management strategies impacted the community. For example, they argued that certain normative traditions shaped the organization’s policies and procedures based upon past performances, and argued that historical information influenced the types of knowledge shared in a social network as a result (p. 1619). Spilg, et al.’s (2012) study indicated that participants found bureaucracy to be the greatest obstacle when sharing knowledge in communities-of-practice because normative traditions had a tendency to influence the types of knowledge shared in a community (p. 1623).

Spilg et al. (2012) also explored the use of social media as a communication tool to share medical expertise with colleagues. Specifically oncologists and primary care physicians were studied to determine their potential use of social media. Social media served as another form of informal learning through technology where blogs, chats, and forums enabled knowledge sharing among colleagues (p. 124). The study revealed that 24% of the respondents used social media daily, 57.5% perceived social media as beneficial, engaging, and an excellent resource to up-to-date high-quality information, while 60.0% stated that it improved the quality of patient care. They noted that social media was both an efficient and effective way for doctors to learn about
new medical innovations (p. 118).

Van de Wiel et al.’s (2011) study was consistent with that of Sargeant et al. (2006). They argued that learning in medical practice was embedded in a doctor’s clinical work where experiential learning and observation served to enhance their professional development. They noted that practical experience resided implicitly which enabled doctors to identify anomalies based on intuitive expertise rather than to rely on explicit documentation, and emphasized that peer collaboration and self-directed learning provided further insight that formal education lacked. According to Van de Wiel et al.’s (2011) study findings, when participants were asked about whether they sought the advice of a colleague, they said that they sought additional information when they had insufficient knowledge to assist a patient or when they were uncertain on how to proceed with a unique procedure. According to the study, although participants found seeking advice from other colleagues was very useful, they did acknowledge that differences in opinion (egotistical, positional, experience, lack of capacity, etc.) could result in conflict (p. 89). To gain a better understanding about how doctors engaged with other healthcare professionals to coordinate care, this literature review also examined the impact of medical dialogue as part of the communication process to determine how argumentation and narration enabled individuals to reach consensus.

Overall, various kinds of theoretical and empirical research was reviewed to explore knowledge sharing in informal environments from a theoretical standpoint to gain a better understanding of how individuals engaged with one another in informal settings to learn and share information with one another. Specifically, various empirical studies that pertained to the healthcare industry were reviewed in order to provide a more in depth understanding about how informal learning initiatives in the workplace such as social networks, communities-of-practice,
social media, self-directed learning, and serendipitous “watercooler” discussions enhanced the professional development of medical doctors.

**Part III. Analyzing Medical Dialogue**

Since the purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital, attention was directed towards understanding the communication processes and knowledge flow among medical doctors and other healthcare professionals, specifically, the types of knowledge and types of actions they used to share knowledge. This section explores how language and argumentation were used to facilitate communication among individuals, enabling individuals to reach mutual understanding through shared meaning and interpretation in the coordination of social action.

**The social dynamics of medical dialogue.** In the present era, in which the Affordable Care Act of 2010 mandated patient collaboration among healthcare professionals, it was critically important that hospitals and other healthcare providers engaged in knowledge sharing behaviors that improved the quality of patient care in the United States. Researchers such as Bartunek et al. (2003); Evanoff, Potter, Wolf, Grayson, Dunagan, & Boxerman (2005); Lu and Lajoie (2008); Leever et al. (2010); Geiger (2010); MacIntosh, Beech, and Martin (2012); Zwarenstein et al. (2013); and Gotlib-Conn, et al. (2014) evaluated the dynamics of medical dialogue in order to understand the dynamic interplay between doctors and other healthcare professionals. They explored whether positional status and advanced educational training impacted social interaction among healthcare professionals, and the types of knowledge and types of actions they chose to share. Evanoff, et al. (2005) study argued that “poor communication and collaboration between members of a patient’s health care team can result in medical errors and poor quality of care” (p. 5). Their study findings indicated that
communication among healthcare professionals was usually not consistent due to varied
priorities that existed across interdisciplinary professions which ultimately impacted the quality
of patient care delivered (p. 5). When asked about top priorities, the responses from doctors
differed than those of nurses, a difference that was identified as a potential reason that
miscommunication among doctors and nurses existed.

In a recent study by Zwarenstein et al. (2013) they argued that communication among
nurses and doctors was usually very specific in content: while interactions among physicians
were more meaningful and valuable where they engaged in diverse perspectives that were
usually empirically-based and perceived as valuable to patient assessment, the physicians’ felt
dialogue with nurses emphasized socio-emotional factors that were not clinically supported and
were perceived as less valuable to patient care.

According to Gotlib-Conn et al. (2014), “interprofessional collaboration was a complex
and dynamic process that involved the establishment of trust, familiarity, and goal-sharing
between health care professionals in addition to a supportive work environment and culture” (p.
2). To achieve this purpose it was extremely important to understand “the evolving relationship
between nurses and physicians in terms of the quality of their communication, the nature of their
interactions, and their perceptions of their relationship to continually work toward cohesive
interprofessional care” (p. 2). Presently, each profession had a distinct perception of the other:
nurses perceived doctors as lacking in communication skills and physicians felt that nurses over-
emphasized heuristics as a foundation for patient care. This mindset had prevented effective
collaboration and continued to present an ongoing barrier to communication between the two
professions.

The findings of Leever et al. (2010) provided insight into how physicians and nurses
could minimize conflict. They argued that there had to be an understanding of how one role impacted another to better coordinate care and noted that inter-professional trust fostered teamwork and led to optimal patient care. To achieve this goal, there needed to be effective communication among the two professions in which individuals had mutual respect and perceived themselves as counterparts, enabling social bonding and leading to cooperative behavior optimizing patient care.

Bartunek et al. (2003) argued that joint interpretive forums and social networks facilitated dialogue among medical practitioners where practical and academic knowledge could be shared to improve patient care (p. 66). They also argued that communities-of-practice enabled individuals from common professional domains to engage with one another in order to share resources that could be used to create new innovations that improved patient care (p. 66). They argued that effective knowledge sharing required a translation process where knowledge was absorbed in its intended meaning, and noted that for cross-functional communities-of-practice to be successful it required familiarity where individuals shared knowledge about their work and daily activities, vocabularies, and context across boundaries to establish shared meaning and context (p. 66).

Comparatively, Geiger (2010) explored the impact of narration and argumentation when used as part of medical dialogue. Geiger (2010) explored narration and argumentation using Toulmin’s (1958) argumentative frame model that argued individuals clarified and contested the validity of a speech act (evidence, inferences, principle, degree of confidence, rebuttals, and conclusion) through discursive dialogue in order to establish validity through shared interpretation leading to mutual understanding (p. 295). Geiger (2010) argued that in the medical field “it must be clear what kind of issues the argument is intended to raise and its underlying
purpose where the data must factually support the claim” (p. 295). He argued that a structural and significant difference in communication style existed between narration and argumentation: narratives were based on dramaturgical plots that were highly symbolic and arguments were presented through reasoning and factual data (p. 296). Geiger (2010) argued that sensemaking enabled individuals “to bridge the problems of incoherence, context-dependency, and validity” (p. 310). Geiger (2010) referred to Habermas’ (1984) theory of communicative action as a model for reaching consensus, the validity of a claim being systematically questioned through speech acts where language and argumentation enabled social rationalization and reconstruction to co-create meaning (p. 311). Geiger (2010) also argued that although narration was recognized as a viable method for enlightening organizational members through lessons-learned it was also recognized as being highly ambiguous and context-specific when sensemaking was required to establish common understanding (p. 312).

Lu and Lajoie (2008) explored collaborative decision-making and communication discourse during two different medical emergencies to understand how knowledge was socially constructed. They explored how individuals co-constructed medical arguments during a crisis to collaborate on effective patient care. Lu and Lajoie (2008) argued that the types of communication and actions shared by members during emergencies was impacted by the use of technology tools where access to electronic data supported medical argumentation with explicit documentation, while the use of an interactive whiteboard enabled individuals to create shared mental models to interpret meaning (p. 426).

MacIntosh et al. (2012) explored social interactions among clinicians and managers to determine whether their social interactions were dialectic or dialogic. They noted that interactions among clinicians and managers often lacked common language and were dialectical
in nature where individuals within each group had a tendency to reinforce existing knowledge in order to maintain harmony, which ultimately prevented them from effectively sharing knowledge across functional boundaries (p. 332). MacIntosh et al.’s (2012) arguments were consistent with those of Bakhtin (1981) where they argued that dialectical processes simply extended existing mindsets while, in contrast, dialogical processes provided critical reflexivity where individuals were receptive to exploring the perspectives of others (p. 333). They argued that language using semantics enabled individuals to create shared context across borders, while internal dialogue enabled turn-taking in which individuals clarified implicit meaning of utterances to ensure common understanding; microdialogue enabled individuals to clarify words that had multiple meanings through intersubjectivity, shared meaning and interpretation enabling them to define context (p. 334). They argued that effective dialogue resulted from the influence of language, utterances, and intersubjective meanings that enabled individuals to define context (p. 334).

**Habermas on the emancipation of healthcare.** Habermas’ (1989) transformation of the public sphere and theory of communicative action (1984) can be used to understand emancipatory social movements in healthcare and the politics of health (Scambler, 2001, p. 80). Habermas’ (1989) transformation of the public sphere created order in society through social pragmatics in order to restore the negative impact of traditional public policies that created inequality and disparity among individuals (Scambler, 2001). Scambler (2001) referred to Habermas’ (1975) “legitimation crisis” as a conflict between normative traditions set by the state and the contemporary needs of society that were threatened by existing governing structures whose legal authority enabled them to maintain traditions that were impractical and oppressed the underprivileged (p. 7). According to Scambler (2001), Habermas attributed disparity to lifestyle factors such as poor nutrition or smoking while other factors such as environmental
influences, social and community influences, low income, poor housing, unemployment, and geographic location were beyond an individual’s control (p. 109). Scambler (2001) noted that Habermas emphasized the decolonization of administrative power, emancipating society through a new practical medical policy that encompassed all members of society in a democratization process that was achieved by redefining reality through social pragmatics (p. 81).

Habermas’ (1984) theory of communicative action enabled members of society to use social pragmatics to restore social order, allowing members engaged in intersubjectivity to achieve consensus through shared meaning and interpretation while socially coordinating action that led to achieving justice and solidarity (Scambler, 2001, p. 200). Scambler (2001) noted that Habermas’ (1984) theory of communicative action was based on the use of language and argumentation in a socio-cultural context where members were given equal opportunity to validate claims through intersubjectivity (p. 10).

According to Scambler (2001), Habermas critiqued the misuse of capitalism and the powers of the state that were used to colonize the lifeworld in which inadequate healthcare policies provided prescription over praxis that resulted in the deformation of the public sphere (p. 29). Scambler (2001) argued that Habermas’ communicative ethics enabled democracy, where policies were co-constructed based on shared meaning to define a context that represented reality. Scambler (2001) referred to health for all as the new social movement in society and compared it to Habermas’ view of emancipatory social movements that sought to restore equilibrium through transformational change (p. 80).

Hodge (2005) recognized the value of Habermas’ (1984) communicative action as a framework for understanding the value of social pragmatics for achieving consensus but provided a critical perspective on the dynamics of the theory. She argued that lifestyle and
environmental factors created inequality that could prevent individuals from effectively achieving consensus. She argued that Habermas’ (1984) *ideal speech act* assumed that all members were equally competent, ethical, and used the same common language where intersubjectivity enabled them to share meaning and interpretation, but she noted that in the healthcare environment those with expertise were dominant over others; intersubjectivity was tenuous as a result. She emphasized that the competence of a speaker in an ideal speech situation had a bearing on what types of knowledge and what types of actions were used to share knowledge among individuals. Hodge (2005) argued that the communicative ideal “might be used to promote the development of discursive practices that are more attuned to the obstacles that stand in the way of its realization” (p. 179). According to the results from the study, the system had significant influence over the organizational discourse where communicative rational was nonexistent. The system shaped discursive roles that participants adopted, which could impact what was said and by whom, and where participants were structured into adopting communicative roles that limited the forms of knowledge presented in discourse. She noted that the communicative roles were limited to experiential lifeworld knowledge where knowledge was perceived as useful but that the professionals took precedence by providing objective specialized knowledge that actually impacted strategic implementation of health policies and services.

Hodge (2005) argued that there was a clear distinction between the two worlds where Habermas’ (1984) communicative rational was somewhat unrealistic of the real world (p. 179).

Overall, this section provided insight into how medical dialogue was constructed among individuals to co-create meaning that enabled them to coordinate action. Emphasis was directed to the use of language and argumentation as key components that shaped the way information was presented and ultimately impacted dialogue among individuals. In addition, Habermas’
(1984) theory of communicative action was presented to gain further understanding about how social pragmatics, using language and argumentation, enabled individuals to achieve consensus through intersubjectivity to establish reality. Habermas’ (1984) social theory was used to explore communication and knowledge flow among individuals and served as the lens that was used to interpret the findings of this study.

Part IV. An overview of the healthcare industry

Over the past two decades the healthcare landscape in the United States has changed where “health for all” and “quality patient care” have resided at the top of the agenda as a social emancipatory movement to better society (Scambler, 2001, p. 80). The healthcare industry has undergone legal, demographic, social, economic, and political changes. The advent of HIPAA privacy laws in the late 1990s that provided patient confidentiality, and the recent enactment of the Affordable Care Act of 2010 that mandated basic healthcare coverage for all Americans, have served to set the foundation for a changing landscape in the United States. Meanwhile, population trends continue to indicate that older adults are living longer, which required doctors to enhance their professional development in geriatric care to accommodate this demographic shift (Vincent & Velkoff, 2010)

Throughout the 2000s, economic downturns have prompted isomorphic pressures to force hospitals to comply with government mandates on quality patient care based on patient collaboration that aim to reduce the costs of medicine to society. Rising economic costs and competition have forced some of the smaller community hospitals to close and have resulted in the consolidation of other hospitals into fewer and larger healthcare entities. This shift has redefined the role of the local community hospital where having the ability to generate new innovations and leverage knowledge assets are vital to sustain competitive advantage in a
changing industry. In addition, this transformation along with economic pressures has led to changes in the hospital environment where traditional organizational charts that provide protocol and establish reporting structures have changed the hospital profile to allow for independent contractors and medical management groups to utilize hospital facilities yet maintain status as separate entities. Medical management groups began to form in an effort to group physicians together under a corporation to protect them against potential medical liability and to provide the group with insurance coverage that was a private concern with the rising costs throughout the 1990s. Whereas at one time doctors had autonomy based on pay-for-performance, economic downturns have led to an affiliation with larger, more stable entities in order to survive, resulting in less autonomy. These changes are coupled with a changing philosophy that is articulated in the Affordable Care Act of 2010, which emphasizes shared decision-making and team collaboration in order to improve the quality of patient care and reduce the overall costs of medicine.

Besides the transformational role of doctors and the changing hospital environment, nursing has undergone changes due both to social and financial pressures. Traditionally the province of women, nursing has been extended to males, lessening the gender separation; salary, benefits, and professional opportunity have lured men into the field in large numbers to even the distributional proportion of men to women. Highly skilled nurses have become the frontline in healthcare, redefined the nurse’s position. As a result, nurses have become the bridge between doctors and patients, which means there has to be effective communication and collaboration among doctors and nurses to ensure optimal patient care.

Also, during the 2000s the rise of new medical innovations coupled with state-of-the-art new technology have enabled scientists to develop new diagnostics and treatments for patients
and to provide measures for preventive care. Traditionally, the healthcare industry focused on generic treatments aimed at managing disease, whereas recent medical developments have shifted the emphasis towards a more customized contextual protocol where tissue engineering, stem cell research, and genetic engineering through human DNA have enabled scientists to customize patients to determine the optimal evidence-based treatment that fits the biological make-up of an individual.

One of the most profound changes in the practice of medicine over the last decade is the Health Information Technology for Economic and Clinical Health Act. This law provided both incentives for healthcare providers to integrate standard EHR (Electronic Health Records) into their operations, and disincentives if they refused. The goal of the system was to allow several different entities to share information on a patient’s medical history. The law specified that adoption alone was not enough and the providers had to use the new technology in a significant way to share knowledge and enhance patient care. All of this was deeply impacted by the great strides in information technology where unprecedented computing power revolutionized the healthcare industry; relational and statistical analysis were utilized to achieved desired outcomes while electronic records and digital imaging provided precision that improved the quality of patient care and reduced the overall costs to society over the long run.

The evolution of high-tech has also impacted communications in the healthcare industry. The growth of the internet and its ubiquity have made inter-organizational medical record sharing easier and thus more common. The proliferation of social media, such as Facebook and Twitter, and communities-of-practice have enabled knowledge sharing based on common professional domain that has helped healthcare providers have a voice on healthcare blogs and institution specific intranets. These new forms of knowledge transfer have made online social
networks flourish. The impact of virtual communication has also enabled knowledge sharing across geographic boundaries where medical imaging can be globally shared, providing diverse viewpoints while reducing the cost of medicine. These initiatives are critically important during a time when pandemics, such as Ebola, have caused concern among public health officials.

While the medical profession and the healthcare industry have experienced various philosophical and fundamental changes combined with the advent of technological advances that facilitate global communication, trends indicate that personal life-style changes have further prompted a need for preventive medicine and nutritional awareness. National campaigns that emphasize public health awareness based on healthy lifestyles and physical fitness have become the norm for individuals in society.

Lastly, but very significantly, was an increase of partnerships and affiliations being created between academic research hospitals and community hospitals in order to provide a full range of healthcare services at the community level. The economic downturn and growing need for resources to maintain optimal healthcare has led to a need for smaller community hospitals to partner with larger entities that have the resources to provide a full range of innovative services to the community especially, to the underserved. Integrated healthcare has become a growing trend in the healthcare industry, which means that effective communication is imperative to coordinate social action. Specifically, the ability to eliminate redundant procedures and to collaborate through managed care means a need for effective knowledge sharing among vested parties. Overall, the demands of the healthcare industry continues to require that medical doctors and other healthcare professionals engage in effective collaboration and coordination of patient care in order to reduce the overall costs associated with medicine and to improve the quality of patient care.
This literature review explored the knowledge sharing behaviors of medical doctors and specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals. The literature presented both theoretical and empirical research to gain a better understanding about the phenomenon of knowledge sharing and, specifically, knowledge sharing in the healthcare industry. Various individual, social, and organizational factors were explored in order to identify potential enablers or barriers that influenced effective knowledge sharing processes, while in addition research was also reviewed on how communication and the use of language and argumentation impacted knowledge sharing and was used to inform this study. This literature review also explored knowledge sharing in informal environments from a theoretical standpoint to gain a better understanding of how individuals engaged with one another in informal settings to learn and share information with one another. Various empirical studies specific to the healthcare industry were reviewed to provide a more in-depth understanding about how informal learning workplace initiatives, such as social networks, communities-of-practice, social media, self-directed learning, and serendipitous “watercooler” discussions, enhanced the professional development of medical doctors. In addition, attention was directed to the medical dialogue and the communication processes among doctors and other healthcare professionals, gaining insight into how language and argumentation shaped speech acts. Lastly, an overview of the healthcare industry over the past ten years provided the landscape and general scope of the environment for which knowledge sharing was explored in this study.

In summary, this literature review presented the early thought on the evolution of knowledge in order to explore the phenomenon of knowledge sharing. Both theoretical and empirical studies were presented, providing a holistic approach on knowledge sharing at the
individual, collective, and organizational levels. Since this was a case study that sought to understand the knowledge sharing behaviors of medical doctors in a community hospital, specific emphasis was directed to empirical data that provide insight on how healthcare professionals share knowledge. The literature review also explored Habermas’ (1984) theory of communicative action as a lens through which to understand how members in a medical community engage in social action to transform healthcare through various social movements. Finally, the literature review presented an overview of the healthcare industry to present the reader with the current state of affairs on how social changes and regulatory mandates enacted through the Affordable Care Act of 2010 and electronic medical record systems have impacted how members of the medical community engage in social interaction order to collaborate and coordinate healthcare and the types of knowledge and types of actions they use to share knowledge with other healthcare professionals given the scope of this environment.

The following chapter provides an in depth discussion of the methodology used to explore the knowledge sharing behaviors of medical doctors specifically, the types of knowledge and types of actions they use to share knowledge based on a descriptive case study. This study was completed over three phases (documentation review, non-participatory observations, and semi-structured interviews). Documentation was reviewed to provide initial insight that was used to establish context; observations were conducted to provide initial insight into the social interactions and communication processes that took place among doctors and other healthcare professionals in their natural setting; and semi-structured interviews provided a more in-depth perspective about doctors’ knowledge sharing behaviors by directly speaking with the doctors to gain insight based on their rich descriptions of their lived experiences and personal accounts of how they shared knowledge with other healthcare professionals. An overview of the research
design, research tradition, the sample and recruitment of the participants, data collection strategies, data analysis (sequence, process, and techniques), trustworthiness (data reliability and validity), human subject protection, and positionality statement (potential biases) are presented in chapter three in order to define the overall plan used for the methodology of this study.
Chapter 3 : Research Methods

The purpose of this chapter is to present the methodology for this doctoral thesis. The chapter was organized into the following sections: research tradition, research design, sample design, recruitment and access, data collection, data storage, data analysis, trustworthiness, protection of human subjects, and the limitations and delimitations of the study.

The purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The primary research questions that guided the study were:

- What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?

Two sub-questions explore the types of knowledge and types of actions doctors use to share knowledge with other healthcare professionals.

  - What types of knowledge do medical doctors share (Habermas, 1984), and
  - What types of actions do medical doctors use to share knowledge (Habermas, 1984)?

This doctoral thesis employed a qualitative design method using a descriptive case study. The data emerged directly from the participants (medical doctors) who provided information-rich descriptions and personal accounts of their experiences. Three data collection techniques (documentation review, observation, and semi-structured interviews) were used as the data collection strategy for this study. The study was conducted in three phases and was iterative in nature where data collected from each phase was used to inform each subsequent phase(s) of the study. The framework of Habermas’ (1984) theory of communicative action was used as the
primary lens to explore the knowledge sharing behaviors of medical doctors, specifically, the types of knowledge and types of actions that medical doctors used to share knowledge with other healthcare professionals.

**Research Design**

The purpose of this sub-section is to provide the research design that served as the plan for conducting this study. This section highlights the qualitative design that was used to collect data for each of the different phases of the study. Data emerged directly from the participants who provided rich descriptions based on their personal accounts and recollections (Creswell, 2012).

There were three phases of data collection (documentation review, observations, and semi-structured interviews). Each phase was iterative: the data collected and data analyzed from each phase were used to inform the subsequent phase(s) of the study. Phase I was a comprehensive documentation review of all public documents that provided a general scope about the contextual environment of the organization and identified the organization’s position on communication and collaboration among their staff. The data collected and analyzed from Phase I of the study were used to create a strategy for the observations conducted in Phase II. The observations in Phase II provided some initial insight about how doctors engaged in social interactions with other healthcare professionals in public spaces (lobby events and the cafeteria) and semi-public spaces (professional development sessions, nurses’ station, intensive care unit, and the corridors near doctors’ office areas). The observations were random and unobtrusive although the subjects were aware of being observed for security purposes. Observations were by invitation or permission of the hospital administration and required wearing a hospital badge for identification. The observation phase provided further insight about the contextual environment
of the hospital and some initial data on how doctors established rapport and engaged in social interaction with other healthcare professionals.

The data collected and analyzed from Phase I (documentation review) and Phase II (random non-participatory observations) were used to inform the development and writing of the interview questions administered to the participants (medical doctors) in Phase III. Phase III was based on the perceptions of medical doctors and provided insight based on the information-rich descriptions of their past experiences where they described how they engaged in social interactions with other healthcare professionals.

The data collected and analyzed from Phase II was used to inform the development of the interview questions for Phase III. Phase III involved conducting semi-structured interviews with fourteen medical doctors (eight males, six females). Each interview was approximately twenty-five minutes in length. There were a total of twelve semi-structured interview questions that were developed from the insights drawn from the data analysis output of Phase I (document review) and Phase II (non-participatory observations). The interviews were used to gain deeper insight into the contextual environment and provided a more in-depth understanding about the knowledge sharing behaviors of medical doctors and the types of knowledge and types of actions that were shared with other healthcare professionals. The data collected and analyzed from Phase III was used to respond to the main research questions that guided the overall purpose of the study.

Table 3.1 represents the research design and data collection methods for this study; the table illustrates that the data collection process was iterative in that data that was collected from each phase served to inform each subsequent phase of the study.
<table>
<thead>
<tr>
<th>Phase One: Context</th>
<th>Phase Two: Social Interaction</th>
<th>Phase Three: Perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation Review</td>
<td>Observations</td>
<td>Semi-Structured Interviews</td>
</tr>
<tr>
<td>Organizational structure, corporate mission, vision, written news article (internal/external), website, newsletter, magazine, and bulletin board</td>
<td>Observations of doctors interacting with other healthcare professionals.</td>
<td>To be conducted with 6 – 10 medical doctors to explore the types of knowledge and types of actions shared with other healthcare professionals</td>
</tr>
</tbody>
</table>

- Describe the environment
  - Mission statement
  - Vision
  - Organizational structure
  - General scope of the organization
  - Types of knowledge
  - Platforms, modes
  - Potential participants

- Describe the observations
  - General sense of the types of actions that doctors use to share knowledge with other healthcare professionals
  - General sense of the types of knowledge doctors share with other healthcare professionals
  - Stronger sense of potential participants
  - Non-verbal and verbal content

- Doctors’ reflections
  - Reflections on the types of knowledge they share with other healthcare professionals
  - Reflections on the types of actions they use to share knowledge with other healthcare professionals

Table 3.1 Research Design and Data Collection
A qualitative design was used to study and interpret how the informants reflected on their lived experiences, using their rich descriptions to provide insight through meaning-making and interpretations of their perceptions (Creswell, 2012). A qualitative design was most appropriate for this study since there was no pre-determined hypothesis about the knowledge sharing behaviors of doctors and the types of knowledge and types of actions they shared with other healthcare professionals. The timeline used to complete the data collection for this study was approximately six months (March 2014 to August 2014). Both academic and institutional Internal Review Board (IRB) consent were sought and granted to gain access to the research site. A memo of understanding was presented in January 2014 (see Appendix C) to the Chief Academic Officer of the community hospital that provided an overview of what the study entailed and a formal request was submitted to the hospital’s IRB in February 2014. Phase I (documentation review) was completed by the end of April 2014, Phase II (observations) was completed by the end of June 2014, and Phase III (semi-structured interviews) was completed by August 2014.

Table 3.2 illustrates the timeline of this study. Each phase was iterative and informed the subsequent phases of the study.
<table>
<thead>
<tr>
<th>December 2013 to February 2014</th>
<th>March to April 2014</th>
<th>May to June 2014</th>
<th>July to August 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRB Approval</td>
<td>Phase I</td>
<td>Phase II</td>
<td>Phase III</td>
</tr>
<tr>
<td>Academic and institutional consent to gain access to research site</td>
<td>Document review of research Site</td>
<td>Observations of social interactions among medical doctors and other healthcare professionals</td>
<td>Semi-structured interviews with medical doctors</td>
</tr>
</tbody>
</table>

Table 3.2 Study Timeline

**Research Tradition**

This sub-section defines the research tradition that established the parameters and scope used to explore the purpose and research questions of this study (Creswell, 2012). A descriptive single site case study using qualitative methods served as the research tradition for this doctoral thesis. A descriptive case study explores the phenomenon in its natural setting and serves as an appropriate tradition and logical approach to use in studying a complex phenomenon in depth within a particular context when the phenomenon was not easily distinguished from its context as was the situation for this study (Creswell, 2012). For this study, the unit of analysis was a bounded entity that was explored at the collective level, doctors who engaged in social interactions with other healthcare professionals. The phenomenon of knowledge sharing was embedded within the context of this bounded entity. Various underlying assumptions influenced the social behaviors within this entity which was why a case study was the most appropriate approach of inquiry (Merriam, 2002). By exploring the unit of analysis and phenomenon in the same context, it provided an in-depth description and understanding of the phenomenon using three types of data collection methods (documentation, observation, and semi-structured interviews).
Gorman (2004) argued that a qualitative tradition was the most effective means to understand the social human behaviors and interactions that occurred among individuals because the phenomenon was studied in its natural setting. This study explored doctors’ knowledge sharing behaviors in a local community hospital; the study provided insight into the types of knowledge and the types of actions that doctors used to share knowledge with other healthcare professionals.

Sample Design

This sub-section provides the overall sample design used for this study and identifies the target population and strategies that were employed to recruit the participants for Phase III (semi-structured interviews). The purpose of this study was to explore the knowledge sharing behaviors of doctors in a community hospital, specifically, the types of knowledge and types of actions they used to share knowledge (Habermas, 1984).

A purposeful sample was used to ensure that a representative mix of participants was recruited as a sample of the population. According to Miles and Huberman (1994), sampling was theory-driven in qualitative research since the goal was to locate meaningful data, not to attain great representation where “the samples tend to be purposive, rather than random” (p. 27). Overall, a total of 242 doctors were identified as having hospital privileges at this hospital location. Potential recruits were identified by how active a physician was at the hospital. Those who frequented the hospital most often were identified as potential recruits since they had more opportunities to engage with other healthcare professionals at this community hospital and could provide a more in-depth understanding about the phenomenon. A non-random method of sampling was employed to target and recruit participants. This was based on the possible subjects’ expertise and skills with an view towards extracting information-rich data from a
diverse subject pool. These efforts were undertaken in order to gain valuable insight which would inform the study. The target population used for this study was a group of doctors that were chosen from a pool of individuals who had eclectic cross-functional expertise, different contractual arrangements with the hospital, different reporting structures within the larger institution, and represented a mix of gender (male and female participants) for diversity. The only exemption criterion was that recruits had at least two years of clinical experience, which ensured their familiarity with hospital routines and structures.

The Physicians Directory (2014) and an internal listing of current doctors (Intranet, 2014) were used as the method to identify potential participants for the study as well as input from the hospital internal review board (IRB) coordinator. The directory provided a profile of each doctor while the internal listing identified the clinical privileges for each doctor who practiced at the hospital. Since this was a case study that was embedded in a particular context, the sample included individuals from various sub-cultures that provided diverse perspectives and added value to inform the study (Miles & Huberman, 1994).

**Recruitment and Access**

The purpose of this sub-section is to explain the recruitment and access of the participants used for this study and to describe the study site and how it was selected. Recruitment of the participants took place after completion of Phases I and II. Data were collected from Phase I that provided a list and profile of the potential doctors who practiced at the hospital.

**Access to research site.** The selection of the research site for this study was a community hospital located in the Northeastern United States. Patton (2001) argued that choosing the appropriate case to represent the study required a purposeful approach to ensure the research site served as a good example for what the researcher wanted to achieve. He noted that
the most effective means to study a complex phenomenon was to find an instrumental case where the phenomenon was cited for its success.

This community hospital served as an exceptional case to explore the phenomenon (knowledge sharing behaviors) and the nature of the social interactions that took place among medical doctors and other healthcare professionals. This assessment was based on the mission-driven nature of the organization. Beyond this, the hospital emphasized social collaboration and coordination as key components to the high quality and optimal healthcare that it afforded to its local patients. The hospital has been nationally recognized by the Leapfrog Group (2012) for demonstrating excellence in a high level of quality patient care, emergency care, and nursing, and for outstanding efforts in providing transparency through technological advancements. The Leapfrog Group (2012) was a “voluntary program that recognizes big leaps in health care safety quality, and customer value to encourage transparency and easy access to health care information as well as rewards for hospitals that have a proven record of high quality care.”

The Chief Academic Officer was provided access to the research design and plan throughout this study and was informed of any significant findings or happenings during the study to ensure transparency. Confidentiality was maintained throughout the study to protect the privacy of the participants and the hospital. An informed consent document (see Appendix D) was provided to each participant prior to his or her interview that explicitly stated the purpose of the study. The informed consent explicitly stated that participation was voluntary and confidential, and informed them of their right to terminate participation any time during the study. Each participant was required to sign the informed consent and provided a copy for their reference.
Recruitment of participants. The initial recruitment of participants in Phase III was initiated by the Chief of Academic Affairs and Internal Review Board (IRB) of the hospital who sent an electronic letter to prospective participants that explained the purpose of the study. The overall population for this community hospital consisted of 242 doctors who were identified as having privileges to practice medicine at the facility. A purposeful sample resulted in identifying 32 potential participants (doctors) who had at least two years of clinical experience, a mix of different reporting structures, and a mix of gender of which 8 males and 6 females agreed to participate. The letters were staggered (10 at a time) to ensure that the sample was purposeful and enabled enough time to schedule, conduct, and transcribe the interviews. The recruitment process continued until the participant quota was attained. A total of 32 doctors were targeted as potential recruits to participate in the semi-structured interviews. From those 32 doctors, a total of 18 doctors responded favorably while 14 of them actually participated due to time constraints.

If a participant responded favorably, the hospital internal review board (IRB) coordinator provided the contact information to the researcher who then contacted the doctor by introductory letter via email. This provided the physician with an overview of the study and explicitly stated the details of the process. The letter detailed that participation was voluntary and would remain confidential, and that the interview would take approximately 25 minutes with an additional 15 minutes of their time at a later date (by email) to confirm their interview transcript. The letter also informed each doctor that the interview would be recorded to ensure accuracy, and that the doctor could terminate their participation at any time during the interview if he or she felt uncomfortable. Each doctor was asked to provide a potential interview meeting date that served as confirmation for the interview.
**Participant profiles.** Fourteen medical doctors participated in the interview process: eight males and six females. The doctors’ years of clinical experiences ranged from two and a half years to 40 years. Six of the 14 doctors were departmental chairs who represented cardiology, gastroenterology, psychiatry, infectious disease, and the division of hospitalists. The other eight participants were specialists who represented endocrinology, gastroenterology, cardiology, oncology, infectious disease, and internal medicine. Ten of the 14 doctors were directly employed by the hospital while the remaining four doctors were employed as outside contractors by the hospital, but whose offices resided on the hospital grounds.

Following each interview, the interviewee was provided a copy of the interview transcript by email for review and confirmation to ensure that the transcription accurately reflected his or her voice. Each of the doctors confirmed and authorized that the transcripts (which included a notation if revisions where needed) could be used for the study; each doctor then emailed the transcripts back to the researcher. The process was repeated if revisions were made, in order to ensure the doctor was in agreement and to attain authorization that his or her data could be used for the study.

**Data Collection**

This sub-section explains the data collection techniques and strategies that were employed to maximize the data retrieved for this study. Multiple forms of data collection were used as triangulation to ensure data consistency. Using three types of data collection methods allowed constant comparison to ensure data consistency and credibility (Creswell, 2012). Three types of data collection methods (documentation, observations, and semi-structured interviews) were employed as the strategy to explore doctors’ knowledge sharing behaviors. The data
collection methods were aligned with the purpose, primary research questions, and the theoretical lens (Habermas, 1984) used as the frame to interpret the findings of this study.

- What are doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?
- What types of knowledge to doctors share (Habermas, 1984)?
- What types of actions do medical doctors use to share knowledge (Habermas, 1984)?

Data collection was conducted in three phases over a period of approximately six months. For Phases II and III, the processes were piloted to ensure that the data collection strategies were relevant and aligned with the purpose and main research questions of this study. Table 3.3 is an illustration of the data collection process for this study.

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Research Questions</th>
<th>3 Qualitative Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Document Review</strong></td>
<td>What are medical doctors’ knowledge sharing behaviors in a community hospital located in the northeastern United States?</td>
<td><strong>Contextual Environment</strong>&lt;br&gt;Corporate mission, values, organizational structure, corporate website, quarterly magazine, monthly newsletters, community outreach, and external recognition.</td>
</tr>
<tr>
<td></td>
<td>What types of knowledge do medical doctors share (Habermas, 1984)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What types of actions do medical doctors use to share knowledge (Habermas, 1984)?</td>
<td></td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>What are medical doctors’ knowledge sharing behaviors in a community hospital located in the northeastern United States?</td>
<td><strong>Social interaction</strong>&lt;br&gt;Public spaces (lobby, cafeteria) Semi-public spaces (nurses’ station, ICU, and office corridors near doctors’ office areas)</td>
</tr>
<tr>
<td></td>
<td>What types of knowledge do medical doctors share (Habermas, 1984)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What types of actions do medical doctors use to share knowledge (Habermas, 1984)?</td>
<td></td>
</tr>
<tr>
<td><strong>Semi-structured Interviews</strong></td>
<td>What are medical doctors’ knowledge sharing behaviors in a community hospital located in the northeastern United States?</td>
<td><strong>Doctors’ Reflections</strong>&lt;br&gt;What are doctors’ knowledge sharing behaviors? What types of knowledge do they share? What types of actions do they use to share knowledge?</td>
</tr>
<tr>
<td></td>
<td>What types of knowledge do medical doctors share (Habermas, 1984)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What types of actions do medical doctors use to share knowledge (Habermas, 1984)?</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3 Data Collection Process
In the table, column one provides the data collection method employed. This method was aligned with the main research questions of the study that are identified in column two. The research questions in column two guided the types of data collected from each method in column three. Column three responded back to the main research questions in column two which provided initial insight to the main research questions that guided the study.

For each phase of the study, four steps were followed as part of the data collection process. Narrative was provided to explain the selection and number of documents reviewed (internal or external) followed by a summary that identified the purpose, significance, and relevance of the documentation as it pertained to knowledge sharing, and the types of knowledge and types of actions that were identified from each of the documentation. This was then followed by a comparison across all of the documentation collected to distinguish between the types of knowledge and types of actions that served to facilitate knowledge sharing. Lastly, a summary of the emergent themes from Phase I was used to inform Phases II and III of this study (including the pilot processes). A document review sheet (see Appendix E) was completed for each document reviewed in this study. Phase I was conducted over a period of two months.

Phase I provided context and some general understanding about the overall environment that was used to inform the study. Overall, eight documents were formally reviewed which provided some initial understanding about the organization and its general contextual environment. The primary documents reviewed were:

- the corporate mission statement, which provided insight about the purpose and goals of the organization;
- the organizational values espoused as the organization’s collectively shared norms;
- the organizational structure documents, which described the leadership and reporting
structures of the organization;

- corporate compliance documents, which defined the protocol and behavioral expectations of employees;
- community outreach documents, which identified the hospital’s initiatives within the community;
- hospital monthly newsletters and quarterly magazines, which provided current news and events about the organization; and
- various external sources, such as the Leapfrog Group, that recognized the hospital for its achievements.

Each of these documents provided some initial insight about the types of knowledge and the types of actions doctors used to share knowledge. In addition, the documentation provided information about the facility and physical layout of the organization by department that was used to inform the observations conducted in Phase II of the study.

The documentation review also included some general information about the hospital’s use of social media (such as Facebook, Twitter, and YouTube) and the hospital’s advertising campaigns used to reach internal and external audiences. Finally, the corporate website provided some additional insight about the types of educational initiatives offered for the professional development of doctors. Additional documentation was reviewed in October 2014 that was either initiated from the hospital or obtained from the hospital from the Centers for Disease Control (CDC) and the American Medical Society; this documentation provided general context into the measures the hospital took to articulate local and national regarding the global pandemic outbreak of Ebola and the national outbreak of D68 enterovirus. Specific focus was directed to the types of knowledge and types of actions that were conveyed and to the knowledge sharing
behaviors of doctors’ during a crisis situation. A journal was kept to maintain how information was retrieved for the documentation process. Table 3.4 illustrates the data collection from the documentations reviewed in Phase I of the study.

<table>
<thead>
<tr>
<th>Technique (Document Type)</th>
<th>Significance of Document</th>
<th>Comparison (Publication Status)</th>
<th>Summary (Pertains to Collaboration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Statement</td>
<td>Identifies purpose of the organization.</td>
<td>Internal Communication</td>
<td>Explicit espousal of the goals of the organization.</td>
</tr>
<tr>
<td>Organizational Chart</td>
<td>Provides information about the chain of command and leadership reporting structure of the organization.</td>
<td>Internal Communication</td>
<td>Explicit illustration of formal communication protocol.</td>
</tr>
<tr>
<td>Values Document</td>
<td>Refers to the normative traditions (morals, beliefs and philosophies) that underline the behavioral expectations of the organization.</td>
<td>Internal Communication</td>
<td>Espouses values as explicit statements; enacted values conveying meaning through action.</td>
</tr>
<tr>
<td>Corporate Compliance Document</td>
<td>Provides standard codes of conduct to guide organizational behavior.</td>
<td>Internal Communication</td>
<td>Explicitly stated rules, policies, and procedures to guide behaviors.</td>
</tr>
<tr>
<td>Knowledge Base Documents</td>
<td>Facilitate systems operations (hardware and software).</td>
<td>Internal</td>
<td>Electronic data transfer.</td>
</tr>
<tr>
<td>Monthly Newsletter</td>
<td>Informs external and internal community on preventive safety initiatives.</td>
<td>Internal Communication (hardcopy)</td>
<td>Explicit information on safety prevention; case studies and vignettes.</td>
</tr>
<tr>
<td>Quarterly Magazine</td>
<td>Informs external and internal community on news, events, programs, advanced technologies, recognition, etc.</td>
<td>Internal Communication (hardcopy/electronic)</td>
<td>Explicit articles providing news, events, and happenings at the hospital.</td>
</tr>
<tr>
<td>Community Outreach Documents</td>
<td>Support organizational commitment to hospital stakeholders.</td>
<td>External Communication</td>
<td>Actions illustrating commitment to various stakeholders.</td>
</tr>
<tr>
<td>Recognition Documents and Awards</td>
<td>Acknowledge medical achievements.</td>
<td>External Communication</td>
<td>Explicit and visual communication (observed artifacts).</td>
</tr>
</tbody>
</table>

Table 3.4 Document Review Data Collection

The data collected from Phase I was used to inform Phases II and III of the study. Phase II of data collection involved conducting non-participatory random observations as an unobtrusive observer, although the doctors and other healthcare professionals were aware of the academic study since access to semi-public spaces (nurses’ station, intensive care unit, corridors near doctors’ office areas, and professional development sessions) required attaining permission and wearing a hospital badge for identification. Each department was contacted by the hospital’s internal review board coordinator and notified of the study. The researcher was allowed to
situate in the middle of the nurses’ station to observe social interactions as long as a badge was worn that indicated contractor for identification purposes. The researcher was allowed to visit as often, as needed.

The observations in Phase II explored the social interactions that occurred among doctors and other healthcare professionals. Observations were completed over a period of two months, although additional observations to attend Grand Round (professional development through educational initiatives) provided insight into how doctors engaged with other healthcare professionals to share critical information during a crisis and into the types of actions they took to organize global pandemic outbreaks such as Ebola and D68 enterovirus.

The observations were conducted in public spaces (lobby events and cafeteria) which provided insight about how doctors engaged with other healthcare professionals in a social context while observations in semi-public spaces (ICU, nurses station, corridors near doctors’ office areas, and professional development sessions) provided perspective on how they interacted in a work-related context. Public spaces were identified as areas where the researcher had minimal exposure to patient-related data while semi-public spaces (the nurses’ station and intensive care unit) required exercising discretion since the researcher was present to patient-specific information. Medical doctors were identified by the badges worn on their uniforms that indicated “physician,” as was the case for other healthcare professionals. The observations were captured randomly as opportunities presented themselves at various locations in the hospital and were assigned a number (1-31) as each observation was captured. Observations were conducted on various days of the week while the time of day was planned to ensure the most optimal opportunity to observe doctors who engaged with other healthcare professionals. For example, the cardiologists visited the nurses’ station each day between 3 p.m. and 5:30 p.m., so
observations occurred mostly during that time frame.

A total of thirty-one observations were captured to ensure a representative mix of doctors who engaged with other healthcare professionals. Observations focused on capturing sound bites of conversation and describing non-verbal behaviors such as gestures, facial expressions, and vocal prosodies that occurred during a social exchange. Merriam (2009) argued that any incidental meetings, gestures, symbolic gestures, pleasantries, and other notable social encounters provided insight to understand social interactions.

In Phase II, field notes and a journal were used to document findings. A descriptive summary of each event captured and highlighted the specific details of what transpired during a social exchange. Narrative was used to describe each observational event and the significance of the public space selected, which included the date, time, and location of each observation (see observational sheet, appendix F). A summary of each event was provided to identify how contact was initiated, especially who initiated a conversation, who controlled a conversation, and whether the dialogue was socially interactive. This was followed by a comparison of the different observation techniques (lobby events, cafeteria, nurses’ station, intensive care unit, professional development sessions, and corridors near doctors’ office areas) meant to distinguish among the types of knowledge and types of actions that were identified across observational spaces. A summary identified potential emergent themes that were used to inform phase III of this study. The researcher did not conduct observations at meetings or conferences deemed “private” where patient and hospital confidentiality were at risk; this included physicians’ offices, closed door meetings, departmental or general assembly meetings, patient rooms, conference rooms, emergency or surgical waiting areas, and patient examination areas.

Table 3.5 illustrates a sample template of the observational process conducted during
Phase II of this study (see Appendix F).

<table>
<thead>
<tr>
<th>Observational Area</th>
<th>Narrative</th>
<th>Summary of Observational Event</th>
<th>Emergent Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ station was the setting of observation four (see Appendix M); this was considered a semi-public space since some patients were present and patient-related context was at the center of dialogues that took place among doctors and other healthcare professionals. The event took place early in the morning 9:15 am; very busy station; nurses were engaged in shift change; nurses updated doctors about the status of patients’ and brought to their attention any specific episodes they needed to know about.</td>
<td>Male doctor was sitting with nurse at computer reviewing information on computer screen; doctor pointed particular situation and proceeded to explain his interpretation of the situation. Uses clinical information (readings) as point of reference.</td>
<td>Doctor engaged with the nurse and updated her on the patient’s condition and noted there was “a bit of an infection going on” while the nurse asked for clarification “so does this mean we need to prescribe medicine?” The doctor provided further insight “yes, I will prescribe something that should resolve the problem… and added practical insight noting “I think we need to do this as soon as possible otherwise it may result in further complication” explanation, clarification, and interpretation of the situation enabled them to achieve mutual understanding to coordinate patient care.</td>
<td>Collaboration and coordination</td>
</tr>
</tbody>
</table>

Table 3.5 Observational Process Sample

The data collected from Phases I and II of the study were used to develop the semi-structured interview questions for Phase III that further explored the context and provided a deeper understanding about doctors’ knowledge sharing behaviors. The semi-structured interviews were considered the primary source of data used to inform the study because they came directly in vivo from participants who provided their rich descriptions about their knowledge sharing behaviors based on their recollections of how they shared knowledge with other healthcare professionals. Twelve questions were initially chosen and divided into three
parts including an introduction that served to provide some general profile information about each participant’s medical background. Part one (questions one through four) explored the overall knowledge sharing behaviors of doctors while part two (questions five through eight) identified the types of knowledge shared, and part three (questions nine through twelve) provided insight on the types of actions used to share knowledge. The interview questions were designed using a behavioral interview construction approach that asked participants to respond to questions that sought to “describe a time when” or that asked “tell me about how.” This format was most appropriate because it provided insight based on the participants rich descriptions and recollections of how they engaged in a particular behavior. In addition, the interview questions were philosophically aligned with the intentions of the study so that the responses directly responded to the main research questions of the study and were aligned with Habermas’ (1984) framework that was used to interpret the findings from this study. Overall, the interview questions were experiential and behavioral in nature, and delved into the actions, activities, and routines doctors engaged in with other healthcare professionals.

An interview protocol was provided (see appendix G) to each participant which explained what would take place during the interview, the purpose of the study, format and question types (open-ended), length of time to complete the interview (approximately 25 minutes), time required to review transcripts for accuracy (approximately 15 minutes), and why the interview was being digitally recorded and how it would be stored. The interview protocol reinforced that confidentiality would protect the personal identity of the participant and of the hospital. Each doctor was informed that he or she would be referred to in the study by a pseudonym to protect his or her true identify; each doctor was also informed that he or she had the right to terminate the study during any time (Creswell, 2012). In addition, the doctors were informed not to
reference their personal identities or that of the hospital (including the geographic locale of the research site). Each doctor was informed that he or she would be required to review his or her interview transcripts to ensure accuracy and that each would be further contacted after the initial interview to provide clarification, if needed.

**Pilot of semi-structured interviews.** The interview protocol was initially piloted with a specialist who had a private practice and was not affiliated with the research site. The pilot provided some baseline information about the interview process and specifically the wording of the questions to ensure accuracy and clarification. In addition, the pilot provided a chance to test the recording device and provided an idea on the approximate length of the process. The findings from the pilot required necessary revisions that were made to each of the 12 interview questions, which included rewording some of the questions that were unclear. For example, one question read “describe what factors guide your behaviors on when to share knowledge and the level of knowledge you share with other healthcare professionals.” This question was identified as being nebulous: many responses were possible, which was not the intent of its design. In addition, the question was twofold, which complicated its interpretation; and the phrase “level of knowledge” was too figurative. As a result, the question was reconstructed so that it was aligned with the purpose of the study. This was the case with many of the questions that needed to be reworded for clarity and rewritten to ensure alignment with the main research questions of the study.

Additionally, style also had to be modified so that the questions did not appear confrontational to recipients. For example, “from my observation it appears that you” was identified as potentially encouraging a defensive response because it sounded as if judgment was being passed on his or her performance; this question was identified as setting a negative tone
and thus needed rewording to eliminate a potential communication barrier. Also, industry specific wording was used to replace phrases where the wording was not consistent with that of the healthcare industry. For example, it was suggested that other medical staff should be referred to as “healthcare professionals” rather than “medical professionals,” in order to avoid being stigmatized as an outsider to the profession. Also, changes were made to enhance conceptual understanding of certain medical terminology. For example, one of the interview questions inquired about the use of “clinical data” to understand how technical information was used to assess patient care. The initial understanding of the meaning of “clinical data” was flawed and differed from the common meaning among doctors. For doctors “clinical data” included both objective and subjective findings from a clinical evaluation. This required redesigning the question to ensure that the meaning and intent of its use were accurately defined.

Following the pilot, the actual interview process took place over two months. Interviews were staggered to ensure ample time for transcription of the data and revisions. A total of 14 semi-structured interviews were conducted. The data from each interview were personally transcribed; the transcription took approximately three hours on average to complete, while turnaround was usually within a couple of days. Each doctor received an emailed version of his or her transcript with instructions to edit, if needed, and each doctor was then asked to return it via email with the final approval. If editing were necessary, then the process was repeated to ensure the doctor approved and gave authorization to proceed with the use of the data. Overall, only two doctors asked that minor revisions be made to their transcripts.

Following each actual interview, narrative was used to describe the overall interview process such as the date, time, and place of the event, including any other relevant factors that may have contributed to the contextual environment where the interviews took place. A profile
of each doctor was provided. This was followed with a presentation of the interview question and the initial findings. A presentation of the semi-structured interview protocol used for Phase III is provided in the appendix (see Appendix G).

**Data Storage**

The data from the semi-structured interviews of the participants (doctors) were captured using a recording device and transcribed verbatim manually. Prior to the start of each interview, each participant was informed about the data recording device and of his or her right to terminate the device if feeling uncomfortable during any part of the study. Each participant was informed that the tape recording device ensured that his or her voice was accurately represented in the study (Shelton, 2004). Data storage was maintained using Carbonite, an offsite vendor that enabled remote data back-up to an offsite location; this service was utilized throughout the study. All audio recordings of the transcripts and field notes were properly disposed immediately following the conclusion of the study for the confidentiality and protection of all stakeholders.

**Data Analysis**

The purpose of this sub-section is to explain how the researcher analyzed the data collected from the various strategies employed (documentation review, observations, and semi-structured interviews) in Phases I, II, and III of this study (Creswell, 2012). The data was analyzed using initial and axial coding methods that served as a set of interpretive techniques used in qualitative research (Saldaña, 2009). The coding served to summarize portions of an interview transcript into words or phrases that represented some symbolic meaning that captured the essence of the informant’s experience (Saldaña, 2009). Codes were developed to meet the qualitative inquiry purpose and to ensure that the approach and philosophical assumptions were consistent (Saldaña, 2009).
In this case, the codes and categories developed directly responded and were aligned with the research questions of this study.

- What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States? (Habermas, 1984) and specifically,
  - What types of knowledge do medical doctors’ share (Habermas, 1984), and
  - What types of actions do medical doctors’ use to share knowledge? (Habermas, 1984)

Immediately following each interview in Phase III, the researcher transcribed the data using manual verbatim to condense the large amounts of data. A summary was provided of each unit of data using an open coding cycle where initial codes were assigned to summarize the ideas, comments, and thoughts of each respondent, capturing their rich descriptive information in vivo, which preserved the authenticity of the informant’s voice (Saldaña, 2009). This process was consistent with the process used to analyze the data collected from the documentation review and observations in Phases I and II, as well. For each phase of the study, a second cycle of axial coding was used to refine the initial codes. Data was grouped into subcategories and categories based on common patterns that were identified among the data. Each of the subcategories and categories were unique and had distinguished properties to avoid overlapping. Data was then aggregated across all three phases of the study using thematic analysis where similar conceptual themes were identified based on patterns, and integrated when possible, to further refine the data which led to the broad emergent themes that evolved from the study. Thematic analysis was employed for all three phases (data collection, observations, and semi-structured) of the study.

An additional step was implemented for the data analysis of the observations. This step
facilitated the interpretation of the co-verbal data exchange that took place among doctors and other healthcare professionals (see Non-Verbal Assessment Form, Appendix H). For each observation, Krauss and Chiu’s (1998) criteria were used to interpret the meaning of language and co-verbal behavior of each social dialogic exchange. According to Krauss and Chiu (1998), there was close coordination between language and nonverbal behaviors such as gestures, facial expressions, and vocal prosodies (volume, pitch, tone, mode of utterance) that accompanied speech acts and were considered relevant to the meaning of an exchange. For each observation, first the nonverbal behaviors were interpreted and then followed by the interpretation of the co-verbal behaviors that combined the verbal sound bites and nonverbal behaviors to constitute meaning. Following this process, the observations were then analyzed using first and second round coding followed by data analysis using thematic analysis that was consistent with Phases I and III of the study.

For each phase of the study data was described, analyzed, and interpreted; this was the underlying strategy for the data analysis (Guba & Lincoln, 1981). For example a description of the documents in Phase I and a description of the social interactions observed in Phase II were followed by the rich descriptions provided by the doctors during the semi-structured interviews in Phase III. For each phase of the study (documentation, observations, and semi-structured interview), data was then analyzed using initial and second round axial coding. This was followed by data analysis aggregated across all three phases of the study using thematic analysis where similarities and patterns among the data were identified and integrated to further refine the data which ultimately evolved into the broad emergent themes of the study. Data analysis was done in three phases, each phase consisting of four steps: (a) a narrative described the data collected, (b) a summary analyzed the findings from each method (document review,
observations, and semi-structured interviews), (c) data aggregated across the different methods (documentation, observations, and semi-structured interviews) were compared, (d) and a summary provided initial interpretations of the data.

Table 3.6 is an illustration of the comparison process used for data analysis in each phase.

```
Describe → Analyze → Interpret
```

Table 3.6 Data Analysis Process

Once all three phases of data collection and data analysis were complete, thematic analysis was used to compare the summaries of each method aggregated across all three phases (documentation, observations, and semi-structured interviews) of the study to identify the broad emergent themes that resulted from the entire analysis process. This process also further refined each of the emergent themes for triangulation purposes. The thematic analysis emphasized a process where broad themes emerged from the data analyzed. Each phase of the study provided insight into the knowledge sharing behaviors of medical doctors, especially the types of knowledge and types of actions they shared with other healthcare professionals in a community hospital in the Northeastern United States.

In addition, a research question analysis was completed. This analysis was used to identify whether the initial summary findings from each data collection method (document review, observations, and semi-structured interviews) presented relevant evidence that was linked to the main research questions that guided the study and also whether the evidence was linked to each of the broad emergent themes, as well. The research question analysis referred back to the main research questions that guided the study. A summary of data collected from each of the methods (documentation review, observations, and semi-structured interviews)
served to identify whether each of the data collection methods provided evidence that directly responded to the main research questions that guided the study. Once the data analysis process was completed the initial findings were revisited using the main research questions, the literature reviewed in chapter two, and the theoretical lens of Habermas (1984) that served to enhance the interpretations and findings and ultimately led to six key findings and three major conclusions of the study. The three major conclusions ultimately reverted back to the three main research questions that guided the study.

**Trustworthiness**

This sub-section refers to the validation process that was used to ensure the credibility and accuracy of this case study. A triangulate strategy was employed for constant comparison using several data points from different sources (documentation review, observations, and semi-structured interviews) as a holistic approach to explore the phenomenon (medical doctors’ knowledge sharing behaviors) in its natural setting (Shenton, 2004). For the data collection, an iterative approach was used where data from each phase informed each of the subsequent phase(s) of the study; this method minimized the weaknesses of any single approach (Gorman, 2004). Member checking was employed to ensure that the data transcript accurately reflected the participant’s voice during the interview. This technique was used to improve the accuracy, credibility, validity, and transferability of the study (Creswell, 2012). Inter-rater reliability using multiple coders (doctoral students and/or professional executives) was used for the coding of the data analysis to ensure agreement and to avoid potential bias from distorting the data (Miles & Huberman, 1994). In addition a peer debriefer was consulted to ensure that the purpose of the study, research questions, theoretical frame, and data analysis process were appropriate (Creswell, 2009). An academic expert was used for the thematic analysis to confirm theme
development (Miles & Huberman, 1994).

A journal was used to capture the everyday experiences of the researcher (data collection, data analysis, interpretation, and conclusion) and provided insight into the successes, challenges, questions, observations, descriptions, coding, and time allotted for each segment of the study that would serve as transparency and hindsight for future studies. For data collection, field notes and a journal were used to log all relevant data from the documentation, observations, and semi-structured interviews; these data were used as a reference for comparison across methods. For the data analysis, a code book was maintained to reference the codes identified from each phase of the coding process and used as a reference to compare interpretations to ensure consistency between initial and follow-up codes selected throughout the data analysis process; this process was also iterative in nature where each phase served to inform each subsequent phase(s) of the study. Maintaining a reflexive journal reduced potential threats to the external reliability of the study because it documented the rationale for the methods employed and included data about the role of the researcher as one of the instruments (Guba & Lincoln, 1981). This journal served as an audit trail for future researchers who might want to replicate or evaluate the research qualities (Patton, 1990). Additionally, this journal served to capture insights as the study evolved.

Shenton (2004) argued that the validity of a study depends on its transferability and on its dependability. Comparatively, reliability referred to the extent for which findings could be replicated consistently at the same location or in a similar contextual case setting.

In addition, the following four measures were taken to ensure the trustworthiness of the study:

- To ensure credibility, the findings reflected “reality” where data was captured in its natural setting and the study measures and tests were as intended.
documentation, observations, and interviews provided first-hand insight about the knowledge sharing behaviors of medical doctors to ensure internal validity.

- To ensure transferability, full disclosure was provided on how the study was organized and how the data was collected, analyzed, and interpreted. Specifically, references were made to identify participant restrictions and to describe the observational techniques and frequency of data collection to help allow for maximum experimental transferability through external validity.

- To ensure dependability, techniques were employed to ensure the reliability of the study by illustrating that if the study were to be repeated using the same methods under the same context and with the same participants similar results would be obtained. The research design was explicitly described to provide information on how it was executed, and assessed whether it was effective in accomplishing the goals and objectives of the study.

- To ensure confirmability, cognitive measures were taken to minimize the potential for human bias by integrating multiple means of data collection and data analysis for triangulation. Multiple coders were used to ensure the accuracy and validity of the data. Focus was directed to capture data based on the rich descriptions provided by the participants as opposed to preferences that were associated to the researcher (Shenton, 2004).

Overall, the intent of qualitative research was not to seek generalizability to a larger population (Creswell, 2009), but to illustrate transferability of the techniques used to conduct the study. To ensure that the findings of this study may be transferred into another similar context, the researcher provided sufficient descriptive data that could be used to replicate the research
process using the same research questions and Habermas’ theoretical framework and lens to interpret the findings. As part of this process, rich descriptions were provided about each of the participants including the criteria used to recruit them, and information about each of their backgrounds. According to Merriam (2009), the goal of qualitative research was to gain insight from the participants based on their rich descriptions of their lived experiences. Merriam also noted to enhance transferability maximum variation through purposeful sampling enabled the researcher to gain deeper insight if the sample reflected diverse perspectives (p. 227). A purposeful sample was used for this study to allow the researcher to gain the most insight by choosing individuals with diverse backgrounds and different reporting structures in addition to a mix of gender. Specifically, medical doctors were chosen from various disciplines including cardiologists, infectious disease specialists, gastroenterologists, oncologists, hospitalists, internists, and psychiatrists, as well as chiefs of staff and medical directors.

The findings of this study were specific to this one community hospital used as the research site for this study to understand the essence of knowledge sharing. Three data collection techniques (documentation review, observations, and semi-structured interviews) were used to understand how doctors shared knowledge with other healthcare professionals at this location, during a particular time frame, and most importantly within a particular context. The techniques and research process used for this study may be transferred to conduct future research to explore the phenomenon of knowledge sharing provided the context, participants, and research site remain static.

**Positionality statement.** The researcher’s role was considered to be a key instrument for this study because of prior professional experience in the field of organizational behavior and from previous experience in conducting interviews and refining survey questionnaires that
served as a valuable tool to provide insight on how to effectively develop interview questions that were aligned with the goals, purpose and main research questions of the study. In addition, the researcher had a background in communication and served in a professional capacity that required strong interpersonal skills. From a theoretical perspective, the researcher has been an educator of organizational behavior for over five years at an institution of higher education at both the undergraduate and graduate level where “collaborative learning” served as the philosophy of the institution. The researcher had previous experience in exploring research interests such as knowledge sharing and collaboration in the classroom through various internal and external initiatives that emphasized communicative action.

By applying a qualitative approach to explore the phenomenon of knowledge sharing in this study, the researcher was able to explore doctors’ knowledge sharing behaviors by exploring the nature of the doctors social interactions from a communication standpoint and the behaviors associated to how they engaged with other healthcare professionals. This provided an in-depth understanding about the types of knowledge and types of actions doctors employed when they engaged in social interactions with other healthcare professionals in a community hospital.

**Protection of Human Subjects**

This sub-section pertains to measures taken to protect human subjects based on the research guidelines set forth by the Belmont Report. Respect (avoid influencing participants through explicit or implied threats and excessive compensation), beneficence (maximize possible benefits and minimize potential harms), and justice (treat participants fairly and equitably) were maintained throughout the research process. Each potential participant (medical doctor) was informed of the risks and potential benefits of participating in the study, and provided with an informed consent form that explicitly stated that their participation was voluntary and could be
terminated any time throughout the study.

Pseudonyms were used to protect the identity of the participants and organizations involved for confidentiality purposes. Throughout the study, the same pseudonyms were referenced for consistency. In all cases, any identifiable information, including the names of people and places were removed or de-identified for protection. Prior to the start of the interviews, the participants were informed that the study was non-patient related and would not refer to any patient-specific content. If specific patient content was divulged inadvertently, the data were immediately discarded. Data captured from the observations and interviews were used only for the purpose of answering the research questions formulated for this study and not reserved for future research.

The researcher was the only individual to have access to the data throughout the entire study and was responsible for secured storage and eventual destruction of the transcripts. The transcripts were password protected and resided on the researcher’s computer. Digital audio recordings from the interview transcripts were stored offsite at a bank vault were to be destroyed (digital files deleted and hard copies shredded) within one year after completion of the study. This allowed reasonable time to review the transcripts, if necessary, while guaranteeing that the participants’ data would be destroyed. The informed consent forms were also stored at the bank vault for at least three years as dictated by policy, and then shredded.

Limitations and Delimitations

Limitations. Limitations were influences beyond the researcher’s control that may have influenced the methodology and conclusions of the study and must be acknowledged by the researcher (Miles & Huberman, 1994). There were some limitations that may have influenced the findings of this study. The following defines the limitations of this study.
The researcher had a limited understanding about the healthcare industry (academic lecturer) which meant that some technical jargon, medical policies, and operating procedures might have been misinterpreted. These factors may have diminished the quality of the data collected, which may have led to the development of themes that were inconsistent with the intentions of the participants.

The observations were conducted in public (lobby and cafeteria) and semi-public spaces (corridors outside of doctors office areas, professional development sessions, nurses’ station, and the intensive care unit) to protect patient confidentiality; the researcher was excluded from making observations in areas where there was heavy patient contact.

Although observations were random and unobtrusive to avoid biased behaviors and to provide a larger pool of potential subjects for observation, the doctors were aware of the researcher’s purpose and goal of the study since permission and identification badge were necessary to gain access to the nurses’ station and the intensive care unit, factors that may have altered the behaviors of doctors who interacted with other healthcare professionals when being observed.

Since the observations were random, those doctors who were observed were not all interviewed nor was there any reference in the study that linked them together. As a result, there may have been some inconsistencies in the findings since the observations and interviews were not reflective of the same individual.

Since observations were unobtrusive and captured randomly the researcher was not privy to entire conversations or the full circle of a social interaction, these factors may have limited the data collected. For example, verbal sound bites and nonverbal behaviors may have resulted from previous social interactions that the researcher was unaware of and
may have inadvertently resulted in misinterpretation of data. In addition, nonverbal behavior was interpreted based on American culture, which means that observation of foreign physicians that took place may have been misinterpreted due to cultural differences.

- Socio-cultural factors were not identified as part of the criteria for this study. As a result, observations and interviews included foreign doctors from non-Western cultures where collective behavior was traditionally emphasized over individualistic reflective cultures found in Western cultures. As a result, the observations may have been interpreted as “collaborative”, but in context their actions may have been representative of collective behavior typically practiced in Eastern societies.

- Some potential limitations were acknowledged by the researcher which may have influenced the interview protocol. For instance, familiarity with the participants (personal medical doctor) may have resulted in biased responses or may have caused the researcher to unconsciously distort the data collected and presentation of the findings, making the data appear more favorable for the doctor.

- Although the interview questions were written objectively and piloted prior to the actual interview process to avoid leading participants, the researcher may not have been able to prevent participants from forming opinions.

- To obtain permission the researcher received a contractors badge to be worn throughout the study and was identified by the internal review board to the healthcare professionals, which may have influenced doctors’ actions when the researcher was present.

- HIPAA regulations set forth by the healthcare industry to protect patient confidentiality may have influenced the way doctors responded to interview questions and how they
engaged in social interaction with other healthcare professionals when observed.

- Lastly, the community hospital was in the process of being considered as part of a potential merger initiated by a larger entity that could have eventually changed the scope of the environment. This impending factor may have influenced the knowledge sharing behaviors of medical doctors and specifically the types of knowledge and types of actions they share with other medical professionals.

From a theoretical perspective, this study emphasized the work of Habermas’ (1984) theory of communicative action as the theoretical lens used in understanding the knowledge sharing behaviors of medical doctors. Habermas (1984) assumed that effective knowledge sharing resulted when objective, subjective, and social perspectives were integrated, establishing intersubjective mutuality that enabled individuals to collaborate and coordinate action.

A limitation of Habermas’ (1984) theory was its presumption that individuals who engaged with one another shared common goals and that their intentions were genuine and transparent. According to this theory, an implied set of rules existed based on “universal pragmatics” that represented the “ideal speech situation” where meaning and interpretation were collectively defined based on reasoning and evidence to achieve rational consensus. Reality was a socially derived process that resulted from the dynamic interplay among individuals to construct their environment through shared meaning and interpretation that was facilitated by language and argumentation.

In contrast, the theory of communicative action (Habermas, 1984) failed to recognize personal gains and motivation as influential factors that can impact behaviors. It also assumed that intersubjectivity meant consensus when it may have simply reflected common understanding by assuming the “truth” without questioning the motives. If the competence, credibility or the
intentions of a speaker were in question, the effectiveness of collaboration and coordination of their actions could have been diminished. According to the theory, language shaped the meaning of utterances. Each utterance represented either objective, empirical, scientific data or linguistic know-how that was symbolic in nature. Individuals rationally reconstructed their environment to make sense of these utterances through a process of social deliberation. Each speech act represented a locutionary, illocutionary, or perlocutionary action and was deemed as successful only if it influenced the receiver(s) as intended by the receiver. The theory argued that validation could only have occurred through mutual understanding of intention.

Despite some of the potential limitations to this theory, it was assumed that the actions of medical doctors and medical professionals were bounded by the normative traditions and expectations that underlay the healthcare industry, traditions and expectations that dictated the behaviors and actions of healthcare professionals when they collaborated and coordinated patient care. It was assumed in this research, that the types of knowledge and types of actions medical doctors used to share knowledge reflected these traditions.

From a broader perspective, a social constructivist approach to patient care was aligned with the goals of the Affordable Care Act of 2010; hence effective collaboration and coordination among medical professionals was perceived as an integral component of improving the overall quality of patient care. Habermas (1984) pursued justice and solidarity through democracy where members of the community intersubjectively defined their lifeworld or context in an attempt to reach a broader social consensus. As individuals engaged in social dynamics their personal identities, values, and perceptions of the world were subject to diversity and change as they strived to reach intersubjective mutuality.
Delimitations. Certain delimitations were developed to narrow the scope of the research for this study.

- First, the focus of this case study had a narrow scope where only one of two hospital locations served as the context for the research site, which meant that only medical doctors who practiced at the selected site were candidates for the study, limiting the number of potential recruits.

- Second, age, culture, and professional specialty were not part of the sample criteria for the semi-structured interviews. Although each of these demographics were represented in the study (observations and interviews), they were random. The population sample was purposeful and only included participants who had at least two years of clinical experience, different reporting structures, and a mix of gender which further decreased the pool of potential recruits.

- The focus of the study was to understand the knowledge sharing behaviors of medical doctors, specifically the communication processes and knowledge flow among medical doctors and other healthcare professionals. As a result, this excluded other variables such as group dynamics, positional status and power, professional job description, cross-functional diversity, intellectual capacity, rewards and motivation, structure, leadership, and culture. These variables must be acknowledged as potential influencers that may have impacted knowledge sharing behaviors.

- Lastly, the study only employed qualitative methods to explore and describe the phenomenon under study. A qualitative design provided insight into the phenomenon through the rich descriptions of the participants who served as primary data sources. Although this method provided the most in-depth method for understanding the
behavioral aspects of the phenomenon by going beyond simple categorical responses, it ultimately provided a smaller representation of the population compared to that of survey instrumentation where a quantitative design would have yielded a larger segment of the population. Comparatively, a mixed-methods approach would have provided a more holistic approach to explore the phenomenon. For example, a mixed-methods strategy would have provided both an in-depth understanding about the phenomenon and insight about the underlying causes of certain behaviors that took place, but time constraints made this initiative a challenge. Also, qualitative methods were subject to varying interpretations influenced by human instrumentation that may have biased the results.

In summary, this chapter provided an in-depth discussion on the research methodology used for this study. The design and tradition, data collection strategies, sample and recruitment and access, data storage, data analysis, trustworthiness, protection of human subjects, position statement, and the limitations and delimitations of the research were discussed. These methods were used to explore the knowledge sharing behaviors of medical doctors in a community hospital, specifically the types of knowledge and types of actions they used to share knowledge with other healthcare professionals.
Chapter 4: Data Analysis

Part I. Introduction

This chapter is a presentation of the broad emergent themes and initial findings that were identified from the three phases of data analysis (documentation review, observations, and semi-structured interviews) of this study. The chapter is organized into four parts. The first part of this chapter provides a broad description of the research context and a general analysis of the process. The second part of this chapter provides an overview of the four broad emergent themes that were identified from the whole analysis process followed by three subsections as a presentation of the findings organized by the sequence of data collection and data analysis process. For each phase, “primary themes” and initial findings were identified using a first round of initial coding followed by a second round of axial coding. Phase II also included descriptive coding in addition to, initial coding which was used to describe the non-verbal behaviors observed. Themes identified during each phase were referred to as “primary” themes since they only reflected data coded for that particular phase. The first subsection of part two is a presentation of the eight documents analyzed. The data is presented first by each document type analyzed (monthly newsletters) then across all document types to identify the key emergent themes. The second subsection of part two is an overview of the general observations captured across the organization then followed by a presentation of the thirty-one observations analyzed. The third subsection of part two is a presentation of the participants’ profiles and a presentation of the fourteen semi-structured interviews that were analyzed. Each subsection provided an overview of the primary themes and initial findings, an in depth narration by technique, a presentation of the data analysis by each technique, and a presentation of the initial findings aggregated across all data for each phase. The initial findings from each phase were iterative and
served to inform each subsequent phase(s) of the study. Each phase included a presentation of the primary themes that were identified from the data analysis, and the mechanics that were used to organize and distinguish between conceptual categories. The third part of the chapter presents the data analyzed across all three phases (documentation, observations, and semi-structured interviews) of the study to identify the broad emergent themes and initial findings of the study using thematic analysis. During thematic analysis conceptual themes were identified across all three phases of the study and then combined to further refine the data based on similar patterns. This process ultimately resulted in the four broad emergent themes that evolved from the study. This process provided a broader overview of the initial findings across each of the data collection phases, and provided deeper insight into the broad themes identified across all three phases which enabled a better understanding of the knowledge sharing behaviors of doctors and the types of knowledge and types of actions they used. This process also identified whether there was evidence from each of the phases that could be linked to each of the four broad emergent themes that evolved from the study. Also a subsection was designated in this part of the chapter to identify significant insights that evolved from the data analysis process; these findings were outside the scope of the research questions but had relevant bearing on the overall findings of the study, and thus were included. In addition, the third part of this chapter presents an aggregated analysis across the main research questions to identify how the initial data findings were relative to the primary research questions of the study and to identify whether there was evidence that could be linked back to the main research questions that could be used to respond to them.

The final part of the chapter summarizes the data and is a presentation of the general findings and broad emergent themes that were identified as initial interpretations. Data analysis was aggregated across all three phases (documentation, observations, and semi-structured
interviews) to identify similar patterns and trends and then interpreted to provide initial findings. The general conclusions and initial key findings are presented at the end of the chapter and further explored in chapter five of the study.

The purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital. Specifically to study the types of knowledge and types of actions they use to share knowledge. Focus was on the mechanics of the communication processes and the dynamic interplay between medical doctors and other healthcare professionals who engaged in social interaction. The data was collected over three phases and was iterative which served to inform each subsequent phase(s) of the study. The researcher used three types of qualitative data collection techniques (documentation review, observations, and semi-structured interviews).

This section highlights the analytic process used for this study to explain how the data analysis was organized. Data emerged directly from the participants who described their lived experiences about their knowledge sharing behaviors that provided a deeper understanding about the phenomenon from a behavioral and cognitive perspective. The data analyzed from each phase was iterative and served to inform each subsequent phase(s) of the study. For each phase of the study, the data was described, analyzed, and interpreted. The process included narration which provided an overview to describe the general context for each phase of the study (documentation, observations, and semi-structured interviews), and to identify the key themes that evolved from the data analysis of each phase including how often the themes appeared and how they evolved. For each phase of the study, a narration and summary of the data analysis pertaining to each technique (e.g. different observational venues) was used to describe how the categories evolved and were combined using thematic analysis where data emerged into broad
emergent themes including tables and graphs that illustrated the general findings and other notable mentions such as, secondary themes. For each phase, narration was used to describe the data aggregated across each of the techniques, e.g. all of the observations (public and private) using tables and figures to identify the key themes followed by a summary of the general findings. Lastly, the data were aggregated across all three phases of the study using thematic analysis where were conceptual themes were combined and further refined to provide deeper insight across all three phases which was described using narration and a table that identified the broad emergent key themes and initial interpretations of the findings and how they would be further explored in chapter five. Multiple coders were used for inter-rater reliability for all three phases of the data analysis to ensure consensus that the codes were accurately identified and that they were not biased or distorted. In addition, a field expert reviewed the thematic analysis process to confirm that theme development was reliable and valid and that each category was unique with distinct properties and boundaries that ensured against overlapping.

Part II. Emergent Concepts and Themes

This section is a presentation of the data analysis and the initial findings for this study specifically, an overview of the four broad emergent themes that resulted from the entire data analysis process. In addition, a discussion of the secondary themes is presented at the end of the chapter to provide insight on how they were linked to the broad emergent themes. Overall, there were four broad emergent themes that were identified from the entire data analysis process of Phases I, II, and III. Some of the broad emergent themes also served as secondary themes in addition to being identified as key themes from the data analysis of the semi-structured interviews. Those themes were associated to collaboration based on evidence-based medicine, organizational culture, and reflective learning.
Emergent theme one: Interdisciplinary collaboration emphasized evidence-based medicine to coordinate action.

This broad emergent theme was identified as the most predominant from the whole data analysis process and appeared on twenty-four occasions while in addition served as a secondary theme on three additional occasions from the semi-structured interviews conducted in Phase III and resulted from interview questions one, nine, and eleven. It was identified as a key theme in all three phases of the study, and described doctors’ initiatives to engage with other healthcare professionals who engaged in collaborative behavior emphasizing an evidence-based medicine approach to coordinate patient care.

From the data analysis, it appeared that collaboration and coordination occurred simultaneously with one another which suggested that the terms were inextricably linked. For example, doctors’ efforts to collaborate were directed towards initiatives to coordinate patient care. In addition, those efforts were accomplished through an evidence-based medicine approach as noted by Doctor # 4 who argued that “physicians’ reflect upon various empirical studies to inform on the delivery of patient care.” These initial findings were consistent throughout all three phases of the study where collaboration and coordination appeared to be driven by evidence-based medicine and best described the doctors’ actions and the types of knowledge they shared to facilitate patient care. For example, these actions were explicitly stated in the documentation as noted on the corporate website (2014) “collaboration involves interdisciplinary work with colleagues.” Similarly, these actions were illustrated as doctors engaged with other healthcare professionals in their natural setting as noted in observation ten when the cardiologist engaged with the nurse on patient assessment and noted “let’s run some more labs that are more specific; that should give us more data” while the nurse indicated
consensus and noted “I definitely agree we should re-visit ‘L’ labs” and the doctor responded “agreed, let’s do the tests and reconvene when we get the results.” Lastly, this behavior was described in the interviews as noted by Doctor # 10 for example, who stated “work as a team…team approach” when the doctor was asked how she engaged with other healthcare professionals to establish common understanding on test and lab results. The thematic analysis process provided deeper understanding into how evidence-based medicine was linked to collaboration and coordination where overlapping properties enabled integration into one broad emergent theme which best described the concepts.

The doctors described their knowledge sharing behaviors as collaborative in nature where initiatives were taken to engage the viewpoints of other healthcare professionals within and across interdisciplinary domains and with various external stakeholders to coordinate patient care. This was articulated in an external news article that recognized the hospital for its “team approach to care where physician collaboration is emphasized throughout the cardiac and endovascular center and physicians routinely work together to provide highest level of care (MD News, 2011)” while at the community level the hospital engaged with community members to identify potential healthcare needs as noted “we collaborate with our communities to provide education (Corporate Website, 2014).” The initial findings also suggested that the types of knowledge shared by doctors and other healthcare professionals were technical, practical, reflective, and contextual in nature and were based on an evidence-based medicine approach where the latest scientific findings from the healthcare industry and profession of medical science provided valuable insight on the latest preventions, diagnostics, and treatments used for the delivery of patient care.

As part of their collaborative efforts, doctors took measures to establish common
understanding with other healthcare professionals to ensure that knowledge acquisition and knowledge application were enacted as intended. Doctors described various initiatives to create shared meaning when they engaged with other healthcare professionals. They described their actions as explaining, clarifying, and interpreting when they engaged with other healthcare professionals to share perspectives that provided insight into medical-related matters which enabled them to “understand the scope” as noted by Doctor # 5 to provide the highest quality of patient care.

Doctors perceived practical insight and reflective knowledge as information that added value to inform when they engaged in clinical assessments as noted in the interview when Doctor # 3 emphasized “practical insight puts the data in to context” and argued “use past experiences all the time to help us kind of form treatment plans for current situations.” In addition, some doctors referenced practical insight as a guidelines to respond to similar situations they had experienced in the past as noted by Doctor # 6 who noted “it’s your intuition that will tell you it’s not happening right….it’s all about predicting” while Doctor # 8 argued that experience provided a “rule of thumb” that guided her decisions on how to handle various medical-related situations.

These actions were consistent with those observed at the nurses’ station. For example, in observation ten the cardiac fellow noted “I’m concerned why the patient is experiencing these symptoms since the patient has been on medication” while the nurse added perspective to inform on the matter as she noted “well, did the patient tell you that they have been experiencing ‘s’ symptoms for a few days, as well” while in observation four the hospitalist expressed concern that immediate action was needed “I think we need to do this as soon as possible otherwise, it may result in further complication.”
Doctors also noted that through collaboration they were able to “keep each other in the loop” as noted by Doctor # 14 who argued that by sharing information and keeping one another updated it enabled them to cooperatively work together to identify the ‘best course of action’ to coordinate patient care. This behavior was consistent with that espoused in the literature that emphasized teamwork and cooperation enabled healthcare professionals to effectively collaborate and coordinate patient care as noted “we are very proud of the hard work and collaboration that all of the staff at every level of the hospital has put forth to implement this very important step toward enhancing the patient care in our hospital (Hospital Magazine, fall, 2012).” In addition, doctors were observed collaborating with other healthcare professionals on “how to proceed” that was illustrated in observations twenty-seven where the doctor noted to the nurse “well, since the patient is stable they do not need procedure ‘p’; so I think it’s the right thing to do given the situation.” The doctor's response from this observation was both collaborative to inform the nurse and also suggested some level of normative behavior since he proceeded to justify his decision and appeared to be emphasizing "the right thing to do."

In addition, the majority of doctor’s noted that social rapport played a key role towards facilitating social relationships with other healthcare professionals which enabled them to develop personal communication channels that ultimately facilitated collaboration and coordination as noted by Doctor # 11 who emphasized “because of the personal communication channel with specialist…able to facilitate the plan” while Doctor # 8 noted “I know she (specialist) will be responsive….can see her notes, she can see my notes if there’s a question we can flag each other.” This implied that since the doctor had a relationship with the specialist it enabled her to share perspectives and information to better coordinate patient care more effectively. Similarly, Doctor # 9 stated “If I have patient I follow mutually with
cardiology….and think there’s an issue….I’ll call and say patient …needs to be seen sooner; I’m very comfortable doing that.” This indicated that social rapport and personal communication channels were perceived as methods to establish working relationships with other healthcare professionals that ultimately resulted in better patient care as noted by Doctor # 3 who emphasized “main benefit is always the care of the patient…knowing that you’re working together on the same team for the benefit of the patient.”

Overall “best practices” was defined as the integration of multiple perspectives guided by the latest scientific evidence and relevant to the specific context where initiatives were taken by doctors to coordinate action through interdisciplinary collaboration and cooperation. The theme was a product of collaboration and coordination which was identified six times from the documentation analysis, 15 times from the observations, and three times from the data analysis of the interview questions. The theme was a product of evidence-based medicine that was identified from the data analysis on nine occasions; five from the interview process in Phase III and twice each from the documentation and observations in Phases I and II. This theme most importantly indicated that doctors engaged in actions that were best described as collaboration and coordination using an evidence-based approach which indicated the types of knowledge shared when they engaged with other healthcare professionals. The information presented from all three phases was consistent with the responses articulated by the doctors, captured from the observations, and described by the literature and served as the most prevalent broad theme across all phases of the study.

Emergent theme two: Continuous verbal and electronic communication driven by audience awareness and message continuity.

This broad emergent theme was the second most frequently identified theme from the
data analysis across all three phases and best described doctors’ initiatives to establish contact with other healthcare professionals to collaborate and coordinate patient care. This theme emphasized communication (both verbal and electronic) and was identified from the interview questions as a key component of organizing critical consultations in addition to everyday routine collaboration to coordinate patient care. The doctors’ responses varied when asked to describe the measures they took to engage other viewpoints where direct, indirect or informal communication channels were the main mediums identified to initiate contact with other healthcare professionals.

Direct communication was emphasized as the preferred channel of communication 79% of the time as noted by Doctor # 3 who stated that “with physicians, namely one way is direct communication face-to-face or over the telephone” using verbal communication while others referred to accessing physicians’ notes in the computer as noted by Doctor # 8 who stated “indirectly through the patient’s electronic chart to see what the other physician has written in the electronic record.” In addition, some physicians’ argued that informal communication such as “curbside consults” were very valuable and served to provide insight on various medical-related problems from a general standpoint where doctors engaged in serendipitous encounters and shared non-specific information to enlighten one another on various medical-related topics.

This theme was identified on three occasions from the data analysis of the semi-structured interviews and described the types of actions doctors took to initiate contact with other healthcare professionals to collaborate and coordinate patient care. Specifically, question one inquired about the measures doctors took to engage other viewpoints where communication served as the primary method while question three inquired about what efforts to clarify language to ensure accurate interpretation where communication was identified as the basis for
ensuring common understanding where initiatives were taken to avoid certain language as Doctor # 2 said “saying it in plain English” while others took proactive measures such as Doctor # 4 who said “if somebody doesn’t understand they will just TELL me either by phone or by email.” Lastly, question eleven inquired about the measures doctors took to organize critical consultations where communication was the number one response and a telephone call was identified 100% of the time.

Similarly, communication was emphasized on six occasions from the data analysis from the observations captured in the corridors outside of doctors’ office areas, in the cafeteria, and before and after lobby events. For example, observation nineteen was captured in the corridor near the doctors’ office areas where individuals serendipitously met and communicated with one another to facilitate future consults this behavior was also observed in the lobby before and after Grand Round events as noted in observation two. Similarly, communication was also identified from observations in the cafeteria. Observations twenty and twenty-one featured individuals who serendipitously met and engaged in social interaction face-to-face to communicate on potential interests to meet regarding a work-related matter where context familiarity existed as noted in observation twenty when the nurse asked “can we meet regarding the patient with the catheter would like to update you on his progress.” This social encounter not only enabled them to establish social rapport but also afforded an opportunity to discuss a mutual patient where previous familiarity with the context pre-existed. This suggested that serendipitous encounters provided opportunity for doctors to establish contact on work-related matters while they engaged in a social environment. This was noted by Doctor # 3 who emphasized in his interview that a “good deal of social interaction with nurses and doctors; helps get comfort level with the other person…establishing a good social interaction is key to good communication” while Doctor # 4
argued that “if another healthcare professional knows you, they have more confidence, certainty, and acceptance of what you say.”

Computer-mediated communication was identified from the documentation analysis on three occasions (hospital magazine, knowledge base, and from external recognition). This was significant because computer-mediated communication was highly institutionalized as part of the culture where individuals were expected to update and share information to ensure access of data with their colleagues as noted by Doctor #13 who emphasized that the “primary care physician was required to ‘click’ and update all patient information…to communicate among each other through the electronic system.” Computer-mediated communication was identified as a subtheme of communication from the documentation analysis during Phase I of the study. Leadership articulated the importance of the electronic medical record (EMR) system as a key component of collaboration and coordination among healthcare professionals that facilitated knowledge sharing across various platforms of the organization. The electronic medical record (EMR) was perceived as an intermediary collaborative tool that integrated data across various networks and platforms, providing “network-wide data visibility” (External Newspaper, July 31, 2013) and enabling connectivity among healthcare professionals and various external stakeholders in the community. Computer-mediated communication was identified from the data analysis of the quarterly magazine where various references were directed towards enlightening internal and external audiences about the systems capabilities while also noting that the hospital utilized the latest technology, including “leading edge diagnostics [that] enable physicians to collaborate” (Hospital Magazine, Fall, 2012), which suggested initiatives that also facilitated collaboration and coordination based on an evidence-based approach where the latest technology identified “how to proceed” with the knowledge base (computer system). The American Hospital
Association, (2014) also recognized the hospital as being “most wired” consecutively over the past four years. Although communication was not identified as a key theme from the data analysis of the documentation, it was implied that it served to connect individuals and was a vital component to collaboration and coordination; as noted in the Hospital Magazine (Fall, 2012), documentation “optimizes patient flow and communication,” while the American Hospital Association noted that information systems enabled hospitals to provide “better coordinate care across settings” (American Hospital Association, 2013). Overall, communication was identified as a key theme on ten occasions across all three phases of the study while on three occasions computer-mediated communication served as a subtheme and was identified from the documentation.

The initial findings suggested that communication played a vital role to connect doctors with other healthcare professionals, enabling them to initiate collaboration, organize critical situations, establish rapport, facilitate tasks, and clarify meaning, through direct, indirect or informal channels of communication whether verbal or electronic in nature. In addition, communication also played a role in facilitating action as was implied on several occasions and often accompanied other key themes. For example, organizational culture was identified as a key theme from the data analysis of the hospital quarterly magazine and monthly newsletter, which emphasized structure and formal protocol while the object of the conversation was focused on communication. Similarly, organizational culture was identified as the key theme that best described the social climate, yet communication was emphasized as the medium in which it took place. This was also consistent with the initial findings from the interviews where doctors were asked to describe occasions when they justified their actions to other healthcare professionals; the responses they described meant to clarify, interpret, and explain, suggesting
that they engaged in actions to communicate the reasons behind their behaviors.

Emergent theme three: A cultural environment characterized by transparency and shared values bounded by normative traditions.

This broad emergent theme best described the hospital’s organizational culture. Specifically, the shared norms, values, and beliefs collectively held throughout the organization that served to guide the behavioral expectations of its employees. It was identified as the broad theme on thirteen occasions, but as a secondary theme on two occasions; it resulted from the data analysis in all three phases of the study. Specifically, the theme appeared on four occasions from the data analysis of the documentation that described the type of social environment across the organization and the normative traditions, shared values, and underlying assumptions that guided the behavioral expectations of its employees. This was espoused on the corporate website (2014) as “deep commitment throughout the system; embedded within the system; shared goals and objectives; look at each other’s workflow to ensure they are all in sync.”

Comparatively, the culture played a key role that guided the actions of the doctors where actions were consistent with those of normative traditions set forth by the organization and the healthcare industry. From the data analysis of the observations conducted in Phase II, organizational culture was identified as the key theme on three occasions and best described how decisions were guided by normative traditions. This was most evident in observation twenty-seven where the specialist noted “well, since the patient is stable they do not need procedure ‘p’; so I think it’s the right thing to do given the situation.” Observation one best described initiatives taken to enact shared values that were espoused by the organization as noted by the doctor who stated “it is important that we practice what we preach.”

Similarly, organizational culture was identified from the data analysis of the interview
questions on six occasions where the culture played a key role in encouraging knowledge sharing among doctors and other healthcare professionals. When responding to question nine Doctor # 11 profoundly emphasized that “environments that are transparent and supportive are good ... if not, there’s no improvement everyone is afraid; we have a pretty ‘open’ environment.” which best summarized the type of culture that existed.”

The organizational culture was described as the formal policies and guidelines that were institutionalized as part of the organization through routines that were embedded within the structure. The initial findings from the interviews indicated that routines defined expectations as noted by Doctor # 1 who emphasized “routinely do this with nurses” while Doctor # 8 noted “I rationalize routinely” when asked about when she justified her actions to other healthcare professionals. Justifying behaviors appeared to be frequent and was consistent the responses obtained from the interviews. For example in observation thirteen the specialist noted “I did procedure because I thought the patient may be experiencing condition ‘c’, but I did not see any trace so I ruled it out for now but will monitor because sometimes things change” while similarly in observation eighteen where the specialist explained to the nursing staff “this procedure is being done because ...”

Organizational culture also played a key role in defining formal structures that facilitated knowledge sharing such as meetings, events, and professional development sessions. For example, doctors were expected to attend Grand Round sessions for professional development and licensure renewal: the sessions served as a professional educational initiative where doctors were informed of the latest evidence-based findings to define “how things were done,” as noted by Doctor # 13 who stated “I become aware of the latest evidence-based technical data that says...you should do this with this data...then, I implement into my practice.” Most recently, the
hospital emphasized the Ebola crisis at the Grand Round session to enlighten the doctors on the pandemic outbreak of Ebola where evidence-based information was presented to provide both historical and present perspectives. In addition, doctors were informed about specific measures that were being institutionalized, measures on how to handle potential cases; they were also told of what types of information to gather from potential victims. The attendance for this meeting was at capacity and was headed by the chief of infectious disease.

Comparatively, formal initiatives such as communication protocol required doctors to update and share information through the electronic medical record (EMR) system which was mandatory as noted by Doctor # 13 who said “Quality Committee is a system to make sure…all healthcare providers engage into this model to collaborate.” In addition, formal departmental and interdepartmental meetings were regularly scheduled which enabled doctors to engage with one another to share information as noted by Doctor # 10 who said “at weekly Tumor Board meetings…we meet as a group.” Most importantly, the culture was perceived by doctors as being transparent, in which open communication was encouraged among the employees in order to share personal experiences, as noted by Doctor # 11, who said “we have a pretty open environment.” This indicated that the organization emphasized disclosure among its employees, fostering a transparent social environment where individuals felt comfortable to share their experiences. As a result, organizational culture was identified as the broad theme from questions six and twelve where individuals were asked about how social conversation and personal communication channels fostered their working relationships with other healthcare professionals. Responses used to describe the benefits of social conversation included “building social rapport makes people feel like part of a team” as noted by Doctor # 11, and “helpful because barriers are dropped” as noted by Doctor # 5. In addition, social conversation created a comfort zone that
fostered relationships among healthcare professionals as noted by Doctor # 2: “if you have a comfort level … people feel more comfortable asking about technical things they might not otherwise bother doing.” Social conversation served as a type of knowledge that enabled individuals to establish trust which was as Doctor # 3 noted “key to good communication.”

Even though the climate fostered an ‘open’ environment, formal communication protocol set the tone and defined expectations as noted in the hospital monthly newsletter and espoused through corporate compliance. For example, corporate compliance espoused that individuals must “identify concerns and questions … directly to managers or administration (Corporate Website, 2014); this message was also articulated through the monthly newsletter and served to consistently reinforce that “speaking up…involves chain of command” (Monthly Newsletter, August 2013).

The organizational culture also served to define how to treat particular medical-related situations or conditions. For example, when doctors were asked when they did not engage the viewpoints of other healthcare professionals, the majority indicated there was an underlying assumption among colleagues that in routine situations doctors were not expected to engage other viewpoints and managed situations independently, as noted by Doctor # 12 who stated “when things are typical straightforward presentations” while similarly Doctor # 13 who was a surgeon specialist noted “straightforward general surgery cases.” In critical situations it appeared there was an understanding among doctors that underpinned their actions where one had not taken the initiative to seek input since time was not afforded as noted by Doctor # 3: “when it’s a life or death decision have to be made in a matter of seconds or minutes… don’t have time to consult with other individuals.”

Normative traditions defined how things were done as noted in observation seventeen
where it appeared that it served as a guideline for taking action while similarly, in observation twelve the doctor noted how to determine with the nurse when the patient goes home. In addition, normative traditions guided ethical decisions as was noted in observation twenty-seven where the doctor’s decision was aligned with the goals of the organization, noting that it was “right thing to do.” The cultural environment was characterized by transparency and shared values bounded by normative traditions. Most importantly, individuals felt comfortable to share experiences and lessons-learned with other healthcare professionals, enabling mutual trust, teamwork, and collegiality which ultimately improved the overall quality of patient care and enabled organizational learning.

Emergent theme four: Continuous inquiry and reflection enhanced insight.

This broad emergent theme was identified on six occasions from the data analysis across all three phases of the study and best described the types of knowledge doctors reflected upon from past experiences and “lessons-learned” to inform clinical decisions. In some instances, it also served as a secondary theme as were the initial findings from the data analysis of question nine where the interview question sought to explore situations in which doctors justified their actions to other healthcare professionals. The responses from this interview question indicated that doctors felt the organizational culture created a transparent social environment that set the tone for ‘open’ disclosure among colleagues, encouraging knowledge sharing through reflective learning, which served as a means to share past experiences that enabled both individual and organizational learning.

Reflective learning was best described as actions associated to continuous learning, where an individual reflects upon past experiences in hindsight or in retrospect to make sense of past outcomes on how and why they occurred, serving as an educational guideline that is used to
make future decisions. Reflective learning was referenced in all three phases of the study (documentation, observations, and from the semi-structured interviews). For instance, in observation eleven the cardiologist used storytelling as a means to reflect upon past experiences and lessons-learned as noted by the cardiologist who stated “let me share an interesting story of a situation that happened…it will illustrate case point.” This was consistent with the responses generated from question eight as doctors described when lessons-learned added value to inform and the types of information they shared. Specifically, Doctor # 5 noted “ten percent that is not straight-forward… I use that experience to explain to other physicians who are expecting the usual course of events that these ‘curve balls’ can happen” while comparatively, the monthly newsletter (July, 2013) emphasized “we need….to learn from near misses…create an environment …will be constructive.” Observation eleven as well as the documentation “learn from near misses” (Monthly Newsletter, July, 2013) was consistent with Doctor # 3 who noted that “I use past faults or mistakes to help teach my students about clinical scenarios and possible pitfalls and how to best avoid them.” Doctor # 3 provided context that enabled students to learn from past mistakes, which served as a valuable teaching tool and was consistent with the cardiologist in observation eleven who shared past experiences through storytelling to enlighten the students.

Doctors indicated that they reflected upon empirical findings as evidence to guide their decisions; thus, the types of information shared were objective, technical, and emphasized an evidence-based approach as noted by Doctor # 1: “reflect on published experience out of the science of profession of medicine has determined as its experience with that procedure.” In addition, since initiatives were taken to access guidelines, the behavior suggested that it was normative in nature, as well. The insight provided by the doctors through their descriptions of
when they used reflective learning was consistent with initiatives observed at Grand Round professional development sessions where doctors were encouraged to reflect upon scientific evidence using the latest empirical findings to guide their behaviors and actions. This was verbally articulated during the sessions by the speaker who presented the latest data that defined protocol on “how to” or “when not to” based on the latest statistical findings that established guidelines for prevention and intervention for the delivery of patient care.

Reflective learning was used as an effective learning tool that enabled doctors to share and reflect upon past experiences to inform present matters. Doctors described that lessons-learned enabled them to make sense of unexplained events or outcomes, provided familiarity with medication side effects, discern abnormal findings and symptoms, and to evaluate potential treatments. In addition to the four broad emergent themes, there were secondary themes that were identified from the data analysis, as well. These themes were only observed during the observations in Phase II of the study and were thus identified as secondary since there did not appear to be any reference to either of these during the semi-structured interviews with the doctors or anything explicitly stated in the documentation.

Secondary theme # 1: “Data exchanged as assessment in patient care delivery.”

This theme was identified as a secondary theme on six occasions from the data analysis of the observations in Phase II of the study and best described the actions of doctors who engaged with other healthcare professionals to exchange clinical data used in patient evaluation for clinical assessment. The types of actions observed and used as categories were best defined as clinical perspective and clinical evaluation. Clinical data was exchanged to provide insight on clinical inquiries, status, medications and treatment, as well as clinical protocol on how to treat a particular situation where actions were normative in nature. Clinical assessment was always
observed simultaneously with one of two key themes; either it appeared with actions that were associated with collaboration and coordination or when initiatives were taken to instruct on how to proceed with the delivery of patient care. When accompanied by collaborative efforts, the clinical assessment served as segue for further discussion where individuals engaged in social interaction to provide their perspectives where shared meaning and interpretation enabled them to define context to coordinate action. When observed simultaneously with physicians’ orders it served as information used to provide instructions on how to fulfill orders based on clinical protocol. In such cases communication appeared one-sided and controlled by the physician and involved giving instructions to the recipient healthcare professional to fulfill patient care delivery. The actual data exchange was transactional in nature and served to fulfill an instrumental purpose.

Secondary theme # 2: “Clinical know-how bounded by protocol driven patient care.”

This theme best described actions where doctors provided clinical instructions to other healthcare professionals to fulfill in the delivery of patient care. This behavior was only identified during the observations in Phase II and thus, not identified as a broad emergent theme. This theme also suggested that one-way communication where a doctor assessed and prescribed patient care and the recipient healthcare professionals appeared to engage in behaviors that supported a physician’s orders. The types of actions observed when physicians’ orders were initiated included clinical instructions from the physician to the healthcare professional to facilitate tests and laboratory procedures, initiate clinical priorities, obtain clinical affirmation, and fulfill requests. Their actions were also described as normative in nature where clinical protocol served as guidelines for clinical evaluation and assessment which defined how to treat, for example. In addition, the actions observed appeared dramaturgical in nature where positional
status of the doctor appeared to drive behaviors. Observation twenty-four was an example of this when the specialist said to the hospitalist “the patient should not be on medicine ‘m’ because that was stopped….I have listed the medicines to be taken on the chart…let’s go with this plan for now.”

There were three other secondary themes that evolved from the documentation review: employee empowerment, knowledge management, and standards. Employee empowerment was identified as the hospital’s initiative to engage its employees’ viewpoints and feedback. Knowledge management reflected efforts to create knowledge structures that facilitated knowledge acquisition, knowledge application, and knowledge retention through actions where individuals engaged in knowledge sharing. Lastly, standards served as guidelines to meet benchmarks and achievement that reflected the overall mission of the organization.

The following three subsections are a presentation of the initial findings from the data analysis of each phase (documentation, observations, and semi-structured interviews), which is organized by the sequence of data collection and data analysis process beginning with the data analysis of the documentation review.

**Phase I. Documentation Review**

This sub-section is an in-depth presentation of the documentation review that was conducted to provide the context of this study. The purpose of this study was to explore the knowledge sharing behaviors of medical doctors, specifically, the types of knowledge and types of actions they use to share knowledge with other healthcare professionals. A documentation review was conducted to gain insight into the hospital environment and culture, leadership, the organizational structure, communication channels, and the organization’s commitment to the community and its stakeholders. The documentation review also provided information about the
physical layout of the hospital and the location of “public spaces” (cafeteria and lobby events) and semi-public spaces (corridors outside of doctors’ office areas, nurses’ station, and the intensive care unit) in which to conduct behavioral observations in Phase II. The documentation review represented mostly public documents but included some internal hospital sources, as well. Various internal and external documents were purposefully selected to ensure that the data collected added value to the study. There was a plethora of documents published internally by the hospital in addition to other vehicles used to convey message content such as the corporate website, social media, and various signage used as visual artifacts throughout the facility. A total of eight documents types were reviewed and analyzed; the mission statement, espoused values, corporate compliance, hospital quarterly magazine, hospital monthly newsletter, knowledge base (computer system), community outreach programs, and external recognition from outside sources (accreditation, online journals, and local news sources). In addition, other literature were reviewed to gain some general background information about the organizational structure and environment, such as the organizational chart, code of standards, corporate website, bulletin board, employment environment and diversity commitment, partnerships and affiliations, and various social media that the hospital engaged such as You Tube, Twitter, and Facebook.

**Overview of initial findings from the documentation review.** There were five primary themes identified from the data analysis of the documents reviewed for Phase I. In some instance, the themes resulted from more than one document type. The following section illustrates the breakdown of these themes. Primary theme one was collaboration and coordination. Collaboration and coordination was the most predominant theme and was identified on six occasions from the data analysis. For this study, collaboration and coordination served as a broad emergent theme where the two terms (collaboration and coordination) were
inextricably linked and had to occur simultaneously to optimize efficiency. Individuals had a
genuine interest to achieve common goals through intersubjective mutuality where language and
argumentation were used to create shared meaning and interpretation to define context which
was used to effectively coordinate action. This theme was aligned with the current goals and
objectives of the healthcare industry and was aligned with best practices that sought to increase
efficiencies across the healthcare spectrum by maximizing the overall quality of patient care
through effective collaboration and coordination among healthcare providers. Collaboration and
coordination was identified from the data analysis that pertained to the hospital’s espoused
values, hospital monthly newsletter, hospital quarterly magazine, community outreach, and
recognition from external sources.

Primary theme two was organizational culture. Organizational culture appeared on four
occasions from the data analysis of the hospital’s espoused values, hospital quarterly magazine,
monthly newsletter, and corporate compliance and was concurrent with properties that
emphasized collective behavior among individuals in an organization who shared norms, values,
vision, and beliefs. Primary theme three was evidence-based medicine. Evidence-based
medicine appeared on 2 occasions and resulted from the data analysis of the hospital quarterly
magazine and recognition from external sources. Evidence-based medicine was an approach to
medicine based on the latest scientific evidence generated from empirical research, clinical
expertise, and was applied relevant to the patient context. Primary theme four was computer-
mediated communication. Electronic communication was identified as a primary theme on three
occasions and resulted from the data analysis of the hospital’s quarterly magazine, knowledge
base (computer system), and recognition from external sources. This theme was concurrent with
properties associated with computer-mediated communication where human communication
occurred through the use of two or more electronic device and recognized by the hospital as an
electronic intermediary collaborative tool that facilitated communication across various
platforms of the organization, enabling doctors to share and access information using the
electronic medical record (EMR) system. Primary theme five was reflective learning. Reflective
learning was identified as a primary theme and was concurrent with a capacity to learn using
lessons-learned and story-telling to reflect upon past experience. This theme was identified from
the data analysis of the hospital monthly newsletter.

Routines were in place for sharing information face-to-face and electronically. Knowledge management referred to structures that were in place to capture and retain
intellectual knowledge assets, and that encouraged collaboration among healthcare providers that resulted in efficient knowledge acquisition and application to ensure meaning was maintained in its initial and intended format. Standards reflected the hospital’s ability to create a culture that emphasized working together to attain benchmarks that ultimately led to a higher quality of patient care through effective communication and collaboration among the employees. These themes were identified as having an indirect influence on knowledge sharing processes as discussed within the following sections. The following is a presentation and in depth discussion of the primary initial findings that evolved from the documentation reviewed during Phase I of the study.

_Mission statement and values_. The hospital’s organizational mission was to provide the highest quality of healthcare in the region and served to guide the intentions, motivations, and behaviors of leadership and its employees. A segment of this mission statement articulated a commitment to the community through teamwork and collaboration among stakeholders especially during local or national crisis. The data analysis from the mission statement described
the hospital’s efforts to engage in collaboration with community partners to receive input on community needs and how best to meet them. Collaboration and coordination was identified as the primary theme and was concurrent with knowledge sharing as a transformational process based on the presupposition that individuals had a genuine interest to achieve common goals through intersubjective mutuality where language and argumentation were used to create shared meaning and interpretation to define context to effectively coordinate action. Efforts to collaborate and coordinate patient care reflected the hospital’s mission to provide the highest quality of healthcare through its commitment to engage with its community stakeholders to identify their needs and provide resources to improve the quality of healthcare.

**Organizational values.** Complementary with the mission of the organization were the core values of the organization. The “Five Cornerstones” of the organization (people, quality, service, growth, and finance) served as the pillars of the institution (Corporate Website, 2014). These values were framed and visually displayed throughout areas of the hospital. From a human relations standpoint, leadership recognized employees who enacted the values of the organization into their daily routines by presenting them with the “Health Hero Award” and or “Way to Go Recognition” (Corporate Website, 2014). In addition to recognition, The Leadership Academy was established to provide training initiatives that reflected the shared values embedded within the culture and was aligned with the organizational goals (Corporate Website, 2014). A level of trust based on shared values existed among healthcare professionals who believed in the character, competence, leadership, and critical thinking ability of their colleagues (Corporate Website, 2014). The CEO (Hospital Magazine, Fall 2013, p.2) emphasized it’s a “team sport” when asked to describe his philosophy of healthcare delivery.

Collaboration and coordination was identified as the primary theme and resulted from the
category of interdisciplinary collaboration that reflected the commitment of healthcare professionals to work together to accomplish common goals and objectives across functional boundaries. The hospital was “committed to collaboration with the entire health care team” (Corporate Website, 2014) and “promotes and encourages each stakeholder’s contribution where collaboration involves interdisciplinary work with colleagues to negotiate and resolve conflict within and across borders” (Corporate Website, 2014).

Organizational culture was also a primary theme from the data analysis and was concurrent with collective behaviors among individuals in an organization, individuals who shared the same norms, principles, values, vision, and beliefs across the organization; the values were “shared throughout the system to achieve excellence” (Corporate Website, 2014) and were “embedded within the culture of the hospital system and drive the entire clinical team” (Corporate Website, 2014). From the data analysis, it appeared there was a strong commitment that existed between hospital management and its employees based on common goals and shared values that drove the types of behaviors that took place among individuals which enabled them to work together to collaborate within and across multiple disciplines to effectively coordinate patient care.

Organizational structure. The organizational structure of the hospital was illustrated by the organizational chart (Corporate Intranet, 2014) which defined the chain of command and formal reporting structure of the organization. The organizational chart illustrated that the hospital had a hierarchical structure with multiple layers of management across various divisions of the organization. Each division was overseen by a senior manager who ultimately reported directly to the Chief Executive Officer. The CEO was appointed by the Board of Directors who was responsible for overseeing all hospital operations.
Organizational communication. This section provided insight about the communication initiatives, strategies, and info-structure that facilitated the communication processes at the hospital and what impact they had on the types of knowledge and types of actions shared throughout the organization. Leadership was committed to providing various strategic communication initiatives to facilitate “transparent” and “open” communication among individuals in the organization. Over the past three years, it appeared that the hospital had shifted commitment towards a communication strategy that emphasized collaboration and coordination of patient care over previous campaigns that emphasized clinical and technical expertise. This shift appeared to have been aligned with the recent goals of the healthcare industry as noted in the hospital magazine (2010-2014).

A Physician Partnership and Strategic Advisory Board was created as a communication initiative to facilitate face-to-face collaboration and coordination of common goals among doctors, nursing, executive, and administrative leaders (Annual Report, 2012) while systems integration had enabled communication among community stakeholders through the patient portal (Annual Report, 2012). In addition, physicians were recognized for engaging in transparency and meaningful use of electronic records management by Medicare and the hospital (Annual Report, 2012).

While the organization strived to maintain a transparent environment, formal structures were in place that defined the communication protocol among members of the organization. For example, all incidents and feedback for improvement were to be directly reported to supervisors through a formal chain of command (Corporate Compliance, 2014, Hospital Safety Newsletter, 2013-2014). This formality was consistent with the healthcare industry requirements to comply with the laws mandated by the Health Insurance Portability and Accountability Act of 1996. The
corporate website provided current information about various hospital initiatives such as programs, services, technological advancements, events, outreach, recognition of effort, and patient information on preventive care, diagnostics, treatments, and support centers while the hospital quarterly magazine and monthly newsletter featured current newsworthy information on topics of interest.

**Hospital quarterly magazine.** The magazine provided information about technological advances, availability of new treatments, and patient testimonials while in addition it provided information in recognition of healthcare professionals, philanthropic contributions, event recaps, new programs, services, and centers that were dedicated towards improving the quality of patient care (Hospital Quarterly Magazine, Winter, 2014). Data analysis of the hospital magazine was conducted to explore the types of knowledge shared with potential audiences using the magazine as a communication medium and to identify the types of actions doctors used to engage with other healthcare professionals to collaborate and coordinate patient care.

Collaboration and coordination was identified as a primary theme from the data analysis of the 2012 to 2014 issues of the Hospital Quarterly Magazine and resulted from the category that identified teamwork as the operative force driving the behaviors of hospital employees. The magazine celebrated the teamwork, the “hard work and collaboration that all of the staff at every level of the hospital has put forth” (Hospital Quarterly Magazine, Fall, 2012) and the “collaboration among parents, athletes, coaches, and specialty doctors to educate on how to prevent injuries” (Hospital Quarterly Magazine, Fall, 2012). Organizational culture, computer-mediated communication, and evidence-based medicine were also identified as primary themes.

Organizational culture resulted from open communication and described the organization’s effort to establish a transparent culture for its employees as noted in the hospital’s
magazine statement: “our goal is to manage this transitional process of change with transparency and thoughtful preparation” (Hospital Quarterly Magazine, Spring 2013). Computer-mediated communication reflected the use of electronic data sharing: “diagnostic technologies enable physicians to collaborate using high tech to enhance clinical assessments” (Hospital Quarterly Magazine, Fall, 2012). Evidence-based medicine incorporated the latest scientific findings from empirical research, clinical expertise, and specific patient-context design, in order to identify optimal patient care practices. Doctors were then able to “come up with comprehensive treatment plan that will outline how best to attack the cancerous cells”; a “multidisciplinary team made up of …experts in radiation oncology pride [themselves] on being patient-focused …where people aren’t just a number” (Hospital Quarterly Magazine, Spring, 2013).

**Hospital newsletter.** The monthly newsletter was dedicated to hospital safety and prevention. It emphasized human interest stories based on testimonials and case studies, conveying knowledge on preventive care to ensure the highest quality of patient care. The newsletter was reviewed to identify the types of knowledge content conveyed and to describe the types of actions its hospital professionals used to execute various safety initiatives.

Organizational culture served as a primary theme and reflected the hospital’s effort to establish formal communication structure and protocol that defined how individuals shared knowledge throughout the organization. Specific communication channels were to be followed in the organization: “speaking up involves a chain of command such as going to your director or supervisor” (Hospital Newsletter, August, 2013). Organizational culture created a transparent social environment that encouraged individuals to engage in open discussions: “Speak up for safety: Know what to do, then do it” (Hospital Newsletter, August, 2013). The newsletter encouraged activism: “if you see something, say something, combat bystander apathy, and
improve safety” (Hospital Newsletter, November, 2013). Feeling safe was also a major point: “We want to create a comfortable environment …to engage in open discussion” (Hospital Newsletter, December, 2013), and “we must create a culture in which everyone feels empowered and supported in speaking up without fear of retribution” (Hospital Newsletter, December, 2013). This suggested that the hospital fostered an open environment that set the tone to encourage employees to engage in “transparent” behavior and to share all types of knowledge without fear of retribution as long as proper protocol was followed.

Collaboration and coordination was another primary theme that was identified from the data analysis. Employee engagement described how leadership engaged the viewpoints of their employees: “board members [have] an opportunity to have direct conversations with the staff” (Hospital Newsletter, November, 2013). Teamwork was identified to emphasize that effort took place across the organization to work together to achieve goals: “always work as a team” (Hospital Newsletter, August, 2013). Knowledge sharing described how family members were encouraged to provide personal insight: “family sometimes speak up when hearing the report to share with us clarifications of new information” (Hospital Newsletter, August, 2013). The newsletter also supported efforts to engage diverse viewpoints to improve the quality of patient care: “discussions that occur at the committee focus on different approaches that may lead to a better outcome” (Hospital Newsletter, December, 2013). Teamwork and communication among healthcare professionals across the organization was deemed a vital component of collaboration and coordination. Individuals were encouraged to build rapport and camaraderie and to engage in knowledge sharing to improve the quality of healthcare which would enable them to work more efficiently in critical situations.

Reflective learning was also identified as a primary theme that stemmed from the
category of past experience and resulted from the subcategories awareness, lessons-learned and meaning-making. Awareness reflected the hospital’s initiative to use past experiences to create awareness among individuals, “heightening their awareness through education,” while lessons-learned reflected the importance of sharing hindsight, past learning experiences: “we need…to learn from ‘near misses’ and errors so that we can make care safer and better” (Hospital Newsletter, July, 2013); “we are trying to create an environment where staff can make a mistake, self-report it, and feel that it will be a constructive” (Hospital Newsletter, January, 2014). Meaning-making described how narratives were used to provide understanding by sharing examples or experiences: “stories…really resonate with all those who interact with patients” (Hospital Newsletter, March, 2014). The newsletter was used as a medium to articulate how storytelling was used as a communication strategy to improve the quality of patient care and to facilitate incident prevention. The newsletter served as a vehicle that conveyed information about the types of knowledge and types of actions shared among healthcare professionals to ensure safety prevention.

**Bulletin board.** The bulletin board was another communication medium that visually displayed message content such as newsworthy events, programs, services, notices, and recognition; the bulletin boards was located at the entrance of the hospital cafeteria where information was displayed. A banner hung across the top of the bulletin board and read “Your Comments Direct Our Commitment” (Hospital Cafeteria, 2013). This indicated that the hospital encouraged its employees to participate in the decision making process by inviting them to share their insights and feedback, in order to improve the work environment and patient care. It was suggested that the hospital advocated employee empowerment through participatory management by encouraging its employees to provide feedback through open communication
that fostered a team environment.

**Social media.** Social media (You Tube and Facebook) was used to facilitate outreach to the community as part of the hospital’s educational initiative to inform the public on various healthcare programs, and Twitter enabled direct interaction with various stakeholders, enabling immediate collaboration (Corporate Website, 2014). In addition, direct mail campaigns such as “You’re Not Alone” (Physicians’ News, January 2012) was used to emphasize the hospital’s commitment to partnership and teamwork and was aligned with the mission of the organization.

**Knowledge base.** The knowledge base (computer systems) facilitated connectivity across various platforms and enabled access to financial, administrative, and clinical data that united the hospital with its employees and outside stakeholders. The knowledge base was analyzed to understand the types of knowledge that were accessed and specifically, to identify the types of actions that the system enabled users to complete. The hospital was recognized as “Most Wired Hospital” (Corporate Website, 2009-2013) based on leading edge technologies that enabled them to effectively engage in collaboration and coordination of care. The electronic health record was a shared database that interfaced across various platforms and locations to connect members of the organization and outside stakeholders. The system was highly recognized by leadership as a central artery used to facilitate knowledge sharing and collaboration among medical staff (Corporate Website, 2014).

The data analysis identified Electronic Communication as a primary theme identified from the data analysis of the knowledge base (computer system). Data sharing served as a category that housed three subcategories. Data Flow optimized patient communication through network availability: “information technology … optimizes patient flow and communications” (Corporate Website, 2012). Data sharing described how electronic record-keeping system
(EMR) enabled access to patient data across the organization: “increased network-wide data visibility improves care coordination” (External Newspaper, July, 2013).

The knowledge base provided connectivity across multiple disciplines through data integration that enabled individuals to strategically collaborate and share data with various members of the organization. The type of knowledge shared was codified and included clinical, practical and historical patient content. Information was protected from unauthorized users through various data security initiatives where certain data restrictions only enabled specific audiences within the healthcare community to have access. The measures taken by the hospital to ensure data security and patient confidentiality served to reinforce certain behavioral expectations and protocol that had to be followed when employees accessed the system to maintain discretion and patient confidentiality. These boundaries defined the types of knowledge and the types of actions employees used to share knowledge with other healthcare professionals. Data flow, data integration, and data transfer and described the electronic collaborative tools that facilitated knowledge sharing.

**Corporate compliance.** The corporate compliance espoused the hospital’s goal to meet codes ethics and professional standards which served as the guidelines that defined organizational behavior. The hospital had a strict formal policy that required mandatory compliance training of all hospital employees in local, state, and federal regulations. This included rules requiring physicians to attain one hundred credit hours of continuing medical education for license renewal every two years (Corporate Intranet, 2014). Specifically, the data analysis provided insight about how corporate compliance impacted the types of knowledge and the types of actions healthcare professionals used to share knowledge.

The primary theme identified from the data analysis was organizational culture which
resulted from two categories: formal communication channel and policies and procedures. Formal communication channel reflected the hospital’s initiative to define the formal guidelines that dictated how employees were to communicate in the organization: “employees [were] empowered to identify concerns and [submit] questions for improvement directly to managers or administration without fear of retribution” (Corporate Website, 2014). Policies and procedures reflected how the hospital took initiatives to meet mandatory compliance: “[the hospital workers must] familiarize [themselves] with the laws and regulations” (Corporate Website, 2014). The data analysis of this question indicated that the hospital encouraged its employees to engage in knowledge sharing however formal communication structure guided by normative traditions guided the actions of all employees.

**Work environment.** The overall work environment and climate of the organization reflected the goals of the organization which was to achieve the highest quality of patient care through collaboration and coordination among individuals at all levels of the organization through “transparency” and “open” communication (Corporate Website, 2014). This objective was explicitly stated: “there are some common themes that describe a culture of safety…teamwork and mutual respect, communication, data and information, leadership, and transparency” (Hospital Newsletter, July 2013). From a human relations standpoint, the hospital was recognized by external sources as “top place to work” (Regional Newspaper, 2010-2013), “best place to work” (Business Journal, 2003-2013), and by Workplace Dynamics (2013) as “the only healthcare organization in the region to be recognized as a national top workplace.” It was apparent that there was consistency between internal and external sources, that the hospital was proactive towards defining and establishing a culturally diverse workplace environment.

**Community outreach.** To fulfill its commitment and corporate citizenship to the
community, the hospital provided various outreach programs to its stakeholders. The hospital contributed to various philanthropic movements such as the “Stride for Healthwalk,” Food Bank for WIC, American Red Cross (to coordinate blood drives), and other “signature community outreach programs” to promote wellness (Corporate Website, 2014). Collaboration and coordination was identified as the primary theme from the data analysis of the community outreach initiatives taken by the hospital. Community engagement reflected the hospital’s initiative to collaborate with key community stakeholders to “better understand the needs and assets of the communities” (Corporate Website, 2014) and “to identify the specific needs of underserved populations” (Corporate Website, 2014). Hospital leadership, healthcare professionals, and community stakeholders engaged in collaboration to coordinate programs through organizational partnerships that would meet the needs and demands of the community.

**Hospital recognition from external sources.** The community hospital selected for this study was recognized on numerous occasions for its ability to provide exceptional care through outstanding services. Specifically, they received recognition from external sources that distinguished them as a leader in the healthcare industry. Various documents pertained to these achievements and were reviewed to gain further insight into how the organization was perceived by external sources and, specifically, which types of actions the hospital engaged in to earn this recognition. Collaboration and coordination was identified as a primary theme from the data analysis, indicating that individuals engaged with one another through teamwork and cooperation to coordinate action. External sources recognized the hospital for effective “team training” where individuals engaged in collaborative behaviors to “take a team approach to care” (MDNews.com, 2011). This was consistent with the message content espoused by the hospital on their website, a message that emphasized that “physicians routinely work together”
Computer-mediated communication was identified as the primary theme and stemmed from the hospital attaining external recognition for earning the status of “most wired” by Hospitals and Health Networks, (2011-2014) which is presented only to an elite group of hospitals. This award recognized what “hospitals, their clinicians and their communities are doing tremendous work to enhance their IT systems in ways that support care and delivery improvement, and patient engagement goals.” Data sharing was used to describe the actions that took place among healthcare professionals who electronically engaged with one another to coordinate patient care across various organizational platforms and levels of the organization, in order to “better coordinate care across settings” (American Hospital Association, 2013). Data sharing was indirectly linked to collaboration and coordination since it served as a collaborative tool to facilitate knowledge sharing among healthcare professionals via electronic record keeping. Evidence-based medicine was identified as a primary theme and reflected the hospital’s initiative to implement the latest scientific instrumentation for patient diagnostics and procedures as noted by the American College of Radiology (ACR, 2005-2013). The following sub-section is a presentation of themes that were identified across the various types of documents reviewed.
Data analysis aggregated across all types of documentation. Table 4.1 illustrated the primary themes that emerged across the various types of document reviewed.

<table>
<thead>
<tr>
<th>Primary Theme</th>
<th>Document Type</th>
<th>Encourage Knowledge Sharing</th>
<th>Types of Knowledge Shared</th>
<th>Type of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration and Coordination</td>
<td>Espoused Values, Monthly Newsletter, Quarterly</td>
<td>Yes</td>
<td>Technical, Practical; Emancipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td></td>
<td>Magazine, External Recognition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidence-Based Medicine</td>
<td>Quarterly Magazine, External Sources</td>
<td>Yes</td>
<td>Technical, Practical, Emancipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Computer-Mediated Communication</td>
<td>Quarterly Magazine, Knowledge Base, External Source Recognition</td>
<td>Yes</td>
<td>Technical, Practical, Emancipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>Espoused Values, Newsletter, Corporate Compliance</td>
<td>Yes</td>
<td>Technical, Practical, Emancipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Reflective Learning</td>
<td>Monthly Newsletter</td>
<td>Yes</td>
<td>Technical, Practical, Emancipatory</td>
<td>Communicative</td>
</tr>
</tbody>
</table>

Table 4.1 Primary Themes

As noted in Table 4.1 knowledge sharing was encouraged among health care professionals as noted across all of the documents reviewed and occurred 100% of the time through communicative action that took place among individuals who engaged in collaboration and coordination of patient care while evidence-based medicine served as the foundation for their decisions. Each of the primary themes identified from the documentation review either directly or indirectly influenced communication flow among healthcare professionals.

The knowledge base, specifically, the electronic record-keeping system (computer system), provided electronic communication and served as an intermediary collaborative tool that enabled healthcare professionals to share technical, practical, and reflective patient
information. This electronic medical record (EMR) system served as a knowledge repository where information was routinely captured and codified by healthcare professionals and accessed across various platforms that facilitated knowledge sharing among individuals within the organization.

The organizational culture set the tone for knowledge sharing among individuals where normative traditions provided communication protocols both verbally and electronically. Hospital leadership created a transparent communication environment that advocated transparent ‘open’ communication among individuals and encouraged sharing of past successes and failures with colleagues to improve the quality of healthcare. In conjunction, formal channels of communication defined the protocol for incidental reporting and feedback; guidelines were explicitly espoused on the corporate website as part of corporate compliance and appeared in various issues of the employee safety newsletter, as well.

Lastly, reflective learning served as primary theme and indicated that the hospital took proactive measures to provide continuing education to their doctors through formal programs such as professional development, on-the-job training, and case studies. Reflective learning was based on storytelling and lessons-learned which served as emancipatory knowledge where hindsight was reflected upon as part of the learning process while educational initiatives combined technical, practical, and reflective knowledge to facilitate the learning process.

**Summary of data analysis for documentation review.** The data analysis from the documentation reviewed for Phase I identified five primary themes and two secondary themes that provided some initial insight about the knowledge sharing behaviors of medical doctors, specifically, the types of knowledge and the types of actions they used to share knowledge with other healthcare professionals. The most prevalent theme was collaboration and coordination,
which was identified on six occasions from the data analysis from the documentation reviewed. This suggested that the hospital was a strong proponent of knowledge sharing among its healthcare professionals. Individuals engaged in communicative actions that combined objective, subjective, and social perspectives to coordinate action. Collaboration took place among healthcare professionals where they shared diverse clinical perspectives based on the latest scientific research findings to form treatment plans that were relevant to the context that enabled them to coordinate patient care. This behavior was consistent with the concept of evidence-based medicine, where empirical findings combined with clinical expertise relative to the patient context, served to define the delivery of patient care. As a result, evidence-based medicine was identified as a primary theme twice and suggested that the hospital organization, its doctors, and other healthcare professionals were proponents of using this type of approach to practicing medicine.

Organizational culture was identified on four occasions from the data analysis and described the collective behaviors that took place among individuals in the hospital organization based on common goals, shared values, vision, norms, and beliefs. The culture defined the types of actions that healthcare professionals used to communicate throughout the organization and defined the proper protocol for communicating incidental reporting. The organization set the tone by fostering a transparent environment that was conducive to collaboration and coordination of patient care. In addition, the hospital was a strong proponent of managing information using electronic record keeping (EMR) as a formal knowledge repository that was used by the doctors and other healthcare professionals to update and access information that enabled them to coordinate action.

Computer-mediated communication was identified on three occasions from the data
analysis which described the organization’s initiatives to provide electronic communication through info-structure that facilitated knowledge sharing among its staff. Computer-mediated communication described the initiatives that individuals took to communicate with one another across various platforms of the organization using the electronic medical record (EMR) system, which served as an intermediary collaborative tool that enabled individuals to share and have access to patient information with the exception of certain confidential information. Lastly, reflective learning was identified once and served as an educational tool that enabled organizational learning where individuals shared knowledge about past experiences through storytelling that created awareness for disease prevention, diagnostic testing, and treatments (Hospital Newsletter, April, 2014). The types of knowledge shared were technical, social-practical, and self-critical in nature and served as hindsight through lessons-learned that appeared to enlighten individual and organizational learning.

The documentation reviewed for Phase I provided some initial insight about how knowledge was shared and specifically, the types of knowledge shared and the types of actions used to share knowledge among healthcare professionals as explicitly espoused by the organization. This data was used to inform Phase II and Phase III of the study.

**Phase II. Observational Process**

This subsection is a presentation of the data analysis and initial findings of the observations captured in Phase II of the study. Phase II of the study involved observations of doctors as they engaged with other healthcare professionals in their natural setting. Thirty-one unobtrusive non-participatory observations were captured in public (lobby events and cafeteria) and semi-public spaces (nurses station, intensive care unit, corridors outside of the doctors’ office areas) to explore doctors’ knowledge sharing behaviors. Phase II provided some initial
insight about the communication processes and knowledge flow that took place among medical doctors and other healthcare professionals and specifically their knowledge sharing behaviors and the types of knowledge and types of actions shared.

**Overview of initial findings from observational analysis.** The nurses’ station was found to be the most advantageous place to capture observation among doctors and other healthcare professionals since there appeared to be more social interactions among healthcare professionals given the nature of the work context. As a result, additional observations were conducted at the nurses’ station to gain a deeper understanding of how doctors engaged with other healthcare professionals. In contrast, the observations in the cafeteria, corridors near the doctors’ office areas, lobby events, and ICU appeared redundant after a few observations and thus fewer observations were required. The observations captured the rich descriptions of verbal sound-bites and nonverbal gestures that were exchanged among doctors and other healthcare professionals. This data provided insight on the types of knowledge and types of actions that medical doctors used to share knowledge in a community hospital setting. There are seven primary themes that emerged from the data analysis of the observations. The primary themes that were identified from the data analysis were: collaboration and coordination, communication, organizational culture, reflective learning, and evidence-based medicine.

Primary theme one was collaboration and coordination. Collaboration and coordination was identified on fifteen occasions from the data analysis and was concurrent with properties associated with communicative action. This communicative action presupposed individuals had a genuine interest in achieving common goals through intersubjective mutuality where language enabled them to create shared meaning and interpretation to define context in order to coordinate action. The theme was also aligned with the current goals and objectives of the healthcare
industry where collaboration and coordination among healthcare professionals was perceived as critical components that served to maximize the quality of patient care. This theme was identified from the data analysis captured from observations conducted at the nurses’ station, intensive care unit, and the cafeteria.

Primary theme two was communication. Communication was identified on six occasions from the data analysis of the observations that were captured in the lobby before and after professional development meetings, social networking events, doctors’ office areas, and in the cafeteria. Communication was concurrent with properties that emphasized the exchange of information through a common system of signs, symbols, behaviors, and activities served as a means by which people are linked together to coordinate common goals.

Primary theme three was reflective learning. Reflective learning was identified from the data analysis on four occasions and resulted from four separate observations at the nurses’ station and from a professional development session and was concurrent with the properties associated to learning from lessons-learned and story-telling to reflect upon past experience.

Primary theme four was organizational culture. Organizational culture was identified on three occasions from observations captured before and during a professional development session, and in the intensive care unit and was concurrent with collective behaviors among individuals in an organization who shared the same norms, values, vision, and beliefs. While it was only reflected as a primary theme on three occasions it underpinned the actions observed on many other occasions throughout the observational phase and thus deemed as a primary initial finding. In addition there were three other themes identified from the data analysis of the observations: clinical assessment, physicians’ orders, and evidence-based medicine.

Primary theme five was clinical assessment. Clinical assessment was identified as a
primary theme and appeared on six occasions from observations captured at the nurses’ station and Intensive Care Unit (ICU). Clinical assessment was concurrent with properties that provided an evaluation of a patient’s physical condition and prognosis based on information gathered from physical and laboratory examinations and the patient’s medical history. Clinical assessment was identified by a doctor on staff as “being either objective or subjective in nature where both perspectives served to enhance the clinical evaluation of a patient’s condition”. The broad theme of clinical assessment, for this study, specifically reflected the transactional processes that took place among healthcare professionals when they exchanged data to update each other on a patients’ status. A clinical assessment was teleological in nature and purpose-driven where data was perceived as an instrumental piece of evidence used in patient’s evaluation. Clinical assessment simply referenced the exchange of data among healthcare professionals and described the mechanics of the process. It was always accompanied either by communicative (collaborative) or teleological (non-collaborative) action when observed as a social interaction among healthcare professionals.

Primary theme six was physician’s orders. Physicians’ orders was identified as a primary theme on five occasions and resulted from observations at the nurses’ station, Intensive Care Unit (ICU), and doctors’ office areas and was concurrent with the order details and fulfillment that defined medical care and medications needed by a particular patient.

Primary theme seven was evidence-based medicine. Finally, evidence-based medicine was identified as a primary theme on two occasions during the observational phase and was consistent with an approach to medicine that emphasized the latest scientific findings combined with clinical expertise and relevant to the patient context. This theme was consistent with the initiatives observed during “Grand Round” professional development sessions where doctors
were encouraged to practice this approach in the delivery of patient care. Evidence-based medicine emphasized decision making that was based on the latest scientific evidence, clinical expertise, and patient context.

Data analysis of the observations identified four other themes that evolved: social events, medical credentials, exercise, and administrative procedures. These themes reflected the types of dialogue that took place among doctors at various professional and social events or in the cafeteria and served to establish common grounds that enabled doctors to establish rapport with one another. Doctors were observed speaking about upcoming social events sponsored by the hospital as a common interest and often their conversations evolved into other work-related discussions such as electronic administrative procedures or when doctors spoke of their medical backgrounds or credentials that enabled them to share their specialty and provided them with information on who to contact when in need of “curbside knowledge” regarding specific clinical expertise.

The observational phase provided insight about the general context and social environment of the organization. From a broad observational standpoint, there appeared to be a strong emphasis on collaboration that resulted through teamwork and communication among individuals across the organization to coordinate patient care. On numerous occasions, it appeared that hospitalists (in house doctors) engaged with specialists such as cardiologists, gastroenterologists, pulmonologists, etc. to share perspectives while nurses frequently initiated dialogue with other nurses and physicians to coordinate patient care. The social climate encouraged social interaction among colleagues regardless of positional status.

From an intra-departmental perspective there appeared to be a great deal of communication and general awareness among healthcare professionals to familiarize themselves
with one another’s patients, situations, and general happenings through collaborative efforts. For example, it appeared that nurses were always ready to assist other nurses as noted by a charge nurse who said “nurse ‘x’, please check on patient ‘p’ because I hear their alarm and I just want to check that they are okay.” In addition, there was a general camaraderie among doctors and nurses to assist when needed not only with patients but with various administrative or procedural tasks. For example, the charge nurse noticed the telemetry equipment was malfunctioning so she took initiative to remedy the situation as noted “I think the batteries for the telemetry equipment need to be changed because I notice the monitor appears to be lagging.” From the initial observations, it appeared that doctors and nurses worked closely together as a team by asking, explaining, interpreting, clarifying, and justifying their perspectives to create shared meaning that enabled them to effectively coordinate patient care. Healthcare professionals appeared to avoid “patient-specific” conversations in public areas where confidentiality was at risk such as the cafeteria and the lobby where it appeared that individuals generally engaged in non-medical related conversations or social pleasantries. At the nurses’ station and ICU, it appeared that dialogue was patient-specific due to the nature of the environment where doctors and nurses congregated on various patient-related matters.

**Overview of nurses’ station observations.** Observations at the nurses’ station were conducted early in the morning between 7 and 9 am and in the afternoon between 3:30 and 6:30pm which was when the doctors were most frequently present. Observations were conducted on various days of the week and included weekends to ensure optimal data collection and consistency.

Collaboration and coordination was the most dominant theme that was identified from observations at the nurses’ station where doctors and healthcare professionals socially interacted
in their natural setting while immersed in their daily routines. A total of fourteen observations took place of which collaboration and coordination was identified on eleven occasions as a primary theme. This indicated that doctors and other healthcare professionals took initiative to engage in collaborative behaviors to coordinate action.

Clinical assessment was identified as a primary theme on four occasions which indicated that doctors engaged in social interaction to exchange clinical data relevant to the delivery of patient care. Clinical assessments were observed simultaneously either preceding collaboration and coordination or when physicians’ orders were delegated to fulfill tasks or patient care. From the observations, clinical assessment appeared to be those actions where doctors exchanged clinical information (labs, tests, and examinations) with other healthcare professionals that was relevant to a patient’s status but the interaction did not appear to engage the viewpoints of those whom they interacted with other than that of the actual data exchange.

Physicians’ orders was identified as a primary theme in three observations and resulted from when doctors initiated contact with nurses to provide clinical instructions that needed to be fulfilled. This behavior suggested that doctors assessed and prescribed patient care while nurses engaged in a support role to administer and fulfill doctors’ requests. Lastly, reflective learning was as a primary theme identified on two occasions from observations at the nurses’ station and observed when doctors were either training other doctors on-the-job or when doctors explained or reasoned their actions regarding patient care.

*Data analysis from observations at the nurses’ station.* The following observations provided insight on how doctors engaged with other healthcare professionals at the nurses’ station and specifically, the types of knowledge and types of actions they shared that best described their behaviors. The observations at the nurses’ station featured various scenarios that
captured social interactions among different healthcare professionals. The following examples serve to illustrate how the primary themes emerged from various scenarios. For example, observation four provided an example of how specialty doctors engaged with hospitalists and or with nurses to consult on patient status where collaboration and coordination was identified as a primary theme. The reason “hospitalists”’ actions were of interest was because they played an important role to oversee in-patient care and were in charge of day-to-day medical care of patients who were hospitalized. These in-patients were most often under the care of several physicians who coordinated care with the hospitalist which meant they had to be in sync to effectively facilitate and coordinate mutual patient care. As a result, observing the social interactions and communication exchanged among them provided valuable insight. In this observation, collaboration and coordination was at the center of the interaction that took place between a male hospitalist and female nurse seated in front of a computer as they engaged in dialogue regarding a patient’s status. The hospitalist provided clinical perspective (“looks like a bit of an infection going on”) and pointed to the clinical report on the computer screen to illustrate his point. In addition, he proceeded to add practical perspective to inform on the matter by noting “I know this usually happens when condition ‘ccc’ occurs.” Meanwhile, the nurse asked various questions to clarify her understanding of the hospitalist’s explanation by noting “so, does this mean we need to prescribe medication” while the hospitalist provided clarification to the nurse, as noted “yes, I will prescribe something that will offset the infection” which enabled them to establish mutual understanding. Furthermore, the doctor noted the importance of taking action and supported his decision by noting “I think we need to do this as soon as possible otherwise, it may result in further complication.” He provided practical perspective based on past experience to justify his actions noting “I know this usually results when condition
‘c’ happens.” The doctor’s actions were consistent with communicative behavior since he provided reason for his rational and took time to establish common ground with the nurse by providing explanation to her. As a result, collaboration and coordination served as a theme that best described the doctor’s initiative to share meaning and interpret findings with the nurse which enabled them to effectively coordinate patient care.

In observation thirteen the specialist engaged in collaborative behavior with the gastroenterologist and the hospitalist where each of the individuals appeared familiar with the context. The doctors engaged in social interaction by engaging each other’s viewpoints to provide practical context that could be used to inform on the matter. For example, the psychiatrist noted “yes, I think that it will help with the ongoing problem” while the hospitalist questioned the gastro doctor “so, you didn’t find the patient to be experiencing ‘c’ condition” which indicated he was surprised that his initial diagnosis was different from the procedural findings. It appeared that the team engaged in collaborative behavior to provide practical insight to inform the situation.

In addition, it appeared that each specialist felt compelled to justify their actions when questioned on their thought processes as was the case when the hospitalist asked the gastroenterologist “so, you didn’t find the patient to be experiencing condition ‘c’?” and the gastroenterologist responded “I did procedure ‘p’ because I thought the patient might be experiencing condition ‘c’.” Their behavior was communicative in nature where doctors appeared to explain, justify, and clarify actions to establish mutual understanding with other healthcare professionals. In addition, their actions suggested a level of normative behavior since individuals’ expended effort to reaffirm and justify their positions on “how and why things were done” which was consistent with normative traditions.
Observations at the nurses’ station also included social interactions captured among various interdisciplinary specialists where collaboration and coordination was identified as the primary theme. Observation five was an example of a gastro specialist (female) who paged the cardiologist (male) to discuss an urgent situation regarding a patient’s heart function that was questionable. Collaboration and coordination was the primary theme that best described the actions of the two specialists as they engaged in dialogue to understand the readings from the EKG report. The cardiologist proceeded to explain his use of clinical data in this circumstance. Although the cardiologist acknowledged the numbers from the EKG were puzzling as noted “yes, I agree they seem a bit off” (glancing down at the report) he emphasized that the data served as an objective baseline to proceed with patient care “let’s consider this data “real” until proven otherwise.”

The cardiologist acknowledged that a historical perspective would help to inform the context: “it would be nice to see the historical records just to see how things were in the past; this will provide a more definitive understanding about this patient and provide context.” This indicated he was open to previous knowledge about the patient that could add value and provide a more holistic understanding about the context of the situation. From the observations at the nurses’ station it was also apparent that the cardiologists on staff played a significant role in the organizational culture even though they had a different reporting structure within the organization. They were perceived as highly skilled professionals with a great deal of tacit and experiential knowledge that provided a sense of confidence among the staff who looked to them for direction, as one nurse noted “you guys are the best; we count on you to give us your valuable input” or “we know that if anyone can help the patient it’s you guys.”

Observation eighteen illustrated a cardiologist who called an impromptu meeting with the
nursing staff to provide an update on a patient that was admitted for a surgical procedure. The cardiologist proceeded to explain the events that preceded having to do the procedure and referred to clinical testing and historical data (two-subcategories) as part of his explanation and reasoning on why and how things were done which was normative in nature while the nurses was invited to ask questions “any questions” which indicated that the doctor encouraged their input. Their behavior was consistent with communicative action since the doctor had an opportunity to present and explain his perspective while the nurses were encouraged to participate with questions and input to ensure mutual understanding was achieved among the team. The cardiologist ended their meeting by noting “let’s make sure to keep good notes and let me know of anything unusual; that’s the game plan.” This further indicated that the cardiologist valued the nurses’ input and that he would need their documentation and practical insight to effectively coordinate patient care thus referring to their “game plan.” As a result, this exchange was an example of collaboration and coordination where the nurses had opportunity to inquire and to present their perspectives after the cardiologist initiated the interaction and initially did most of the speaking to update the nursing staff.

Observation eight featured a male cardiologist who interacted with a female nurse regarding a patient’s discharge from the hospital. The data analysis identified physicians’ orders as a theme that stemmed from the category of clinical instruction. In this instance, the doctor’s response was declarative about the patient’s status and did not invite the nurse’s perspective. The doctor’s actions were purpose-oriented and provided information on what the nurse was to do, as he noted “Not yet, I would like to do ‘p’ and ‘pp’ procedures first, then I will let you know”; and prescriptive (normative), because he noted “how things were going to be handled” as noted by his clarification to the nurse “here is the chart and specific instructions on which tests I
want done.” This social exchange appeared to be very transactional in nature and mostly one-sided from a communication standpoint where the doctor did most of the speaking while the nurse listened for instructions. The nurse appeared to understand her instructions as was noted from her nonverbal expression (nods head and motions palm upward while speaking) and her verbal response: “great, I will get right on it and will let you know when the results are in.” This social interaction did not appear communicative since the doctor did not seek input on how to proceed with patient care. As a result, physicians’ orders served as the broad theme that best described the actions taken to facilitate orders and instructions in the delivery of patient care.

Observations seven and eleven captured at the nurses’ station illustrated how knowledge was shared as part of training initiatives. Observation seven illustrated how clinical data were used to provide on-the-job training where the cardiology fellow (male) explained to a medical student (female) how to interpret an EKG. This was noted by the fellow who noted “see this…this is how we know that the cardiac function is normal” while he pointed to the numbers on the EKG report to illustrate his verbal message. Clinical assessment was identified as a secondary theme and described the actual exchange of data (empirical findings) between the cardiology fellow and the medical student as part of the training initiative for diagnosing a patient’s heart function. Reflective learning was identified as a secondary theme and stemmed from the category of ‘lessons-learned’ where individuals shared past experiences to enlighten their colleagues. This was noted by the cardiac fellow who said “meanwhile knowing the history of this patient means we need to keep an eye on the risk factors to make sure they remain stable since this was an issue previously and resulted in condition ‘c’ which resulted in us having to do ‘p’ procedure.” Lastly, collaboration and coordination was identified as the primary theme that best described how the cardiac fellow initiated dialogue with the medical student as part of a
learning initiative through on-the-job training.

The observation suggested that the fellow and student engaged in social deliberation and shared perspectives as indicated by the categories from the data analysis, while encouraging viewpoints best described the fellow’s initiative to engage the student’s perspective when he asked “tell me what you think is going on” and “does it appear normal, abnormal, your thoughts?” The student responded and asked for clarification which enabled them to achieve consensus through intersubjective mutuality. This behavior was consistent with properties associated to communicative action and described the doctor’s initiative to explain, interpret, and clarify the situation within normative guidelines, exemplified by the doctor saying “here’s how to” when showing and explaining to the student how to read a clinical report.

In observation eleven the cardiologist (male) shared a story with two cardiac fellows (males) about a specific set of events that took place with a patient, without identifying the patient’s name. The doctor reflected upon ‘lessons-learned’ based on past experience through storytelling which was identified as a sub-category to provide insight on how to treat a patient with a recurring medical condition. As a result, reflective learning was identified from the data analysis as the primary theme where lessons-learned and story-telling facilitated learning. It was evident that the story had a compelling impact since one of the fellows responded “wow, seems like one thing kept happening after the next” and noted at the end “knowing the history added value in this case.” In this case, the communication was mostly one-way where the cardiologist did most of the talking; this was consistent with storytelling where lessons-learned are shared with others and purpose-oriented.

*Data aggregated across all observations at nurses’ station.* It was obvious that most of the observations at the nurses’ station illustrated actions consistent with collaboration and
coordination among healthcare professionals where individuals were given equal opportunity to share objective, subjective, and social perspectives that were integrated to define context and enabled them to coordinate action. In some instances, clinical assessment simultaneously accompanied collaboration and coordination and specifically referred to the actual clinical data exchange (objective and subjective evaluations) that took place among healthcare providers which directly focused on the physical or emotional condition of a patient. An exemplar was observation ten when the doctor said “I’m concerned why the patient is experiencing these symptoms since the patient has been on medication” and the nurse responded “well, did the patient tell you that they have been experiencing “s” symptoms for a few days, as well?” The nurses’ practical insight added value to their understanding of why the patient was acting out of the ordinary. Lastly, reflective learning was identified as primary theme once and secondary theme once and described either using lessons-learned for educational initiatives or served as past experiences that were shared inform on patient-related matters. Doctors engaged with one another to interpret clinical data (lab reports and test results) while sharing practical and historical information when they perceived that it added value to their evaluations. Their behaviors were collaborative in nature which enabled them to define context and to coordinate action especially when there was clinical abnormality.

Table 4.2 summarizes the fourteen observations completed at the nurses’ station. The table includes a brief overview of the caption, whether knowledge sharing was encouraged, and the types of knowledge and types of actions observed among medical doctors and other healthcare professionals. As noted previously, the nurses’ station provided the most lucrative space to observe social interactions among doctors and other healthcare professionals because it provided insight into how doctors engaged with one another when engaging in a work-related
context which was considered their natural setting. This data added the most significant value to the study since it depicted doctors within their professional mode and provided insight to respond the research questions for this study.

Table 4.2 Summary of Observations at Nurses Station

<table>
<thead>
<tr>
<th>Observation Nurses Station</th>
<th>Observation Type</th>
<th>Primary Themes</th>
<th>Encourage Knowledge Sharing</th>
<th>Types of Knowledge Shared</th>
<th>Types of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ob# 4</td>
<td>Hospitalist engages Nurse re: patient status</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical; Practical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 5</td>
<td>Specialist engages Specialist re: patient status</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 6</td>
<td>Specialist engages hospitalist re: patient status</td>
<td>Collaboration and Coordination, Reflective Learning</td>
<td>Yes</td>
<td>Technical, Practical, Emanipatory (Reflective)</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 7</td>
<td>Specialist Fellow engages with Medical Student re: training</td>
<td>Collaboration and Coordination, Reflective Learning</td>
<td>Yes</td>
<td>Technical, Practical, Emanipatory (Reflective)</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 8</td>
<td>Specialist engages Nurse re: patient status</td>
<td>Physicians’ Orders</td>
<td>No</td>
<td>Technical</td>
<td>Theological</td>
</tr>
<tr>
<td>Ob# 9</td>
<td>Hospitalist engages Nurse re: patient status</td>
<td>Collaboration and Coordination, Clinical Assessment</td>
<td>Yes</td>
<td>Technical, Emanipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 10</td>
<td>Two Specialists engage with Nurse re: patient status</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical, Practical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 11</td>
<td>Specialist engages with 2 Specialists follows re: training</td>
<td>Reflective Learning</td>
<td>No</td>
<td>Technical, Emanipatory</td>
<td>Theological; Normative</td>
</tr>
<tr>
<td>Ob# 12</td>
<td>Intern engages with Nurse re: patient status</td>
<td>Clinical Assessment, Physicians’ Orders</td>
<td>No</td>
<td>Technical</td>
<td>Theological; Normative</td>
</tr>
<tr>
<td>Ob# 13</td>
<td>Specialist engages with Hospitalist and Psychiatry re: patient status</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical, Emanipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 14</td>
<td>Surgeon engages with Nursing Team re: patient update</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical, Practical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 15</td>
<td>Intern engages with 2 Nurses re: patient status</td>
<td>Collaboration and Coordination, Clinical Assessment</td>
<td>Yes</td>
<td>Technical, Practical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 16</td>
<td>Specialist engages with Nursing Team re: critical coordination</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob# 23</td>
<td>Hospitalist engages with nurse re: clarification on how to perform labs</td>
<td>Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical</td>
<td>Communicative</td>
</tr>
</tbody>
</table>

Types of actions used to share knowledge at the nurses’ station. Figure 4.1 illustrates that communicative action was dominant among doctors and other healthcare professionals who
engaged in social interaction at the nurses’ station based on fourteen observations. As noted, 79% of the actions observed were communicative in nature and more than triple compared to that of teleological action which only occurred 21% of the time. The graph clearly shows a heavy emphasis on communicative action that occurred among doctors and other healthcare professionals which means that most of the time they engaged in collaboration to coordinate action, whereas only a small number of social interactions appeared to be teleological in nature in which communication was one-sided and purpose-driven and doctors engaged in directing or requesting other healthcare professionals to simply fulfill orders as part of accomplishing task.

Figure 4.1 Types of Actions Using Communicative Action

Figure 4.2 illustrates that technical (test and lab results) knowledge was the most dominant type of information and was shared 100% of the time during all of the observations at the nurses’ station. More specifically, technical knowledge served as the only source of knowledge 36% of
the time while in combination with other types of knowledge (practical or reflective) the remainder of the time. When referring to practical knowledge, doctors referred to technical (test and lab results) 29% of time and when they referred to emancipatory (historical/reflective) knowledge they used it in combination with technical knowledge 21% of the time while a combination of all three types of knowledge were observed 14% of the time. Technical knowledge always accompanied practical and or emancipatory knowledge when either was present.

Figure 4.2 Types of Knowledge Shared Using Communicative Action

The data analysis from these initial observations at the nurses’ station provided some understanding about the types of knowledge and the types of actions doctors used to share knowledge with other healthcare professionals and was used to develop the interview questions to further explore the knowledge sharing behaviors of medical doctors in Phase III of the study.

Figure 4.3 illustrates a conceptual understanding of how knowledge was shared among medical doctors and other healthcare professionals at the nurses’ station. The figure represented a
typical example of the communication and knowledge flow that took place among medical doctors and other healthcare professionals. Each circle represented a medical professional who provided perspective on a medical condition (middle). Technical (clinical) data was the primary source of information (center) accessed and used as a baseline to coordinate action. Shared meaning and interpretation was intersubjective where individuals’ added practical perspective or historical insight to enhance the understanding of the clinical data. Note that each individual’s personal perspective was based on their personal frame of reference that shaped and defined their interpretation of the clinical data. As noted, clinical (objective and subjective) data served as a nucleus and baseline for decision-making while practical and historical data provided context to coordinate action.
Lobby observations.

The lobby area was chosen as a public space to observe the social interactions among doctors who attended professional development educational meetings, Grand Rounds or Physicians networking social events. Observations were captured either before or after an event while doctors exchanged dialogue over coffee or lunch. In addition, the researcher was permitted to attend Grand Rounds sessions where attendance was restricted to only doctors as part of continuing education and considered formal events; this was considered a semi-public space. From the observations, it appeared that doctors found these events as an opportunistic time to establish social rapport with colleagues and to discuss various unrelated medical matters.

Figure 4.3 Conceptual illustration of knowledge sharing at the nurses’ station.
The events were considered formal since they were organized by the hospital but the attendees were random and meetings were serendipitous in nature among colleagues who engaged in social dialogue as a result of this common space. Much of the social interactions before and after an event revolved around social pleasantries and was normative in nature. For example in observation one several doctors emphasized that the food for the luncheon had nutritional value and was consistent with the topic “Obesity: Consequences and Cures.” One doctor said “well, it’s better than eating pizza” and stated “pizza is more caloric and less nutritious.” Enacted values served as a sub-category under the category of values after one doctor said “it is important that we practice what we preach,” while organizational culture was identified as the primary theme and was concurrent with collective behaviors among individuals in an organization who shared the same norms, values, vision, and beliefs.

In other instances, doctors established social rapport and then proceeded to engage in medical dialogue. For example, in observation two a couple of doctors engaged in dialogue to arrange a future meeting on a task-related matter as noted “need to speak with you about various procedural matters.” Their actions were best described by communication which was identified as the primary theme which illustrated their efforts to exchange information with one another to identify a potential meeting date. In this case, navigation of the new electronic software was prescribed for the entire hospital was the basis for their social interaction which was purpose-driven to accomplish a task, and normative since one doctor was going to show the other as noted “here’s how it is done.” Their immediate goal was to communicate with one another to determine when they could meet but their long term goal was to collaborate on how to use the new software.

Observation three illustrated an example of how a serendipitous meeting afforded the
opportunity to schedule a future consult. In this case, two doctors (male and female) planned a get together among themselves and other physicians to ensure they were on the same page about on a specific medical-related matter. The intern noted “I spoke with Dr. D who spoke with Dr. DD regarding the medical matter…both indicated that they want to meet as a group regarding the matter to make sure we are on the same page” while the intern responded “great, I was thinking the same; I will send an email to coordinate the meeting and provide some potential meeting times for getting together.” As a result, communication was identified as the primary theme and best described how individuals’ engaged communication to arrange future meetings. The type of knowledge shared during the immediate observation was technical in nature where individuals communicated with one another on potential meeting dates for their meeting.

In observation fifteen, one doctor said to another “we got the new equipment installed wanted to meet and discuss with you since you are already using it in your office.” As a result, communication was identified as the primary theme which served to describe how doctors used serendipitous encounters to establish rapport with others by initiating communication with one another to schedule future meetings.

Data analysis aggregated across all lobby observations. Table 4.3 is a summary of the data analysis for observations completed at lobby events.
The lobby served as an area where doctors socialized before, during, and after events. Most of the conversations were social or purpose-oriented while normative in nature, as noted in observations one and two where either the topic revolved around enacting values or setting-up formal meetings. Dialogue featured two-way conversation where each party had equal opportunity to provide information. Topics introduced at Grand Round events were medical in nature since the doctors were expected to fulfill educational credit hours for licensure renewal while social networking events emphasized building social rapport among colleagues where they could establish personal communication channels that ultimately improved their working
relationships. This was observed in observation fifteen during a physicians’ networking event when one doctor said to the other “I wanted to meet and discuss with you since you are already using it in your office.”

The types of actions observed were 100% normative while 50% engaged in teleological behavior, as well. This suggested that social dialogue enabled colleagues to establish rapport based on normative traditions that served to reinforce behavioral expectations such as “the way things are done” or “we must practice what we preach.” This behavior served to establish communication that often led to other more work-related purpose-oriented matters such as arranging for future meetings and consults. The type of knowledge shared was mostly technical in nature where 75% of the time individuals engaged in social dialogue that was either related to one’s medical background and credentials, planning meetings or requesting administrative assistance. In contrast, 25% was practical where individuals engaged in dialogue that was social in nature and served to establish rapport with colleagues. The data collected from these observations were used to inform the development of the interview questions for Phase III of the study.

*Observations at professional development sessions.* In addition, observations were conducted during three of the professional development sessions to understand the types of knowledge shared with other doctors for professional development and the types of actions encouraged as part of the medical profession. In observation fourteen it was evident from the lecture that evidence-based medicine was emphasized as a “best practice” model for professional development of healthcare professionals and identified as the broad theme. The philosophy behind evidence-based medicine was a combination of proven scientific methodology based on the latest research and findings from the medical profession, a clinician’s personal expertise, and
a clinical assessment that was relative to the patient’s status to provide context for treatment.

Statistical data were used to discuss mortality rates, risk reduction, reoccurrence, and prognosis. Doctors were encouraged to routinely check clinical labs on patients with historical problems to ensure they were within the latest numerical guidelines established by the American Medical Association, and to consider specific context when taking action. An example was observation fourteen, where the speaker referred to the effects of therapy based on clinical findings as noted “well, there is a 52% risk reduction with optimal blood pressure control which means therapy includes a combination of blood pressure medications (statins), along with aspirin, and exercise relative to the patient’s status for maximum risk reduction.” Similarly, observation twenty-eight was consistent with observation fourteen where evidence-based medicine served as the primary theme and best described the events observed at a Grand Round event as noted when the speaker responded to the doctor noting “important to take the patient’s personal history into account when developing a treatment plan.”

In contrast, the Grand Round event from observation thirty-one was more conceptual in nature. The topic was the impact of culture on incidental reporting and communication in the healthcare industry. Organizational culture was a primary theme that emerged from the data analysis and best described the speaker’s initiative for a cultural transition in the healthcare industry that advocated a shift towards a “culture of safety” from a “culture of blame.” The importance of incidental reporting and transparent communication were emphasized when the speaker noted “poor communication resulted from ‘groupthink’ where everyone thinks they see the same thing and a ‘culture of safety’ will encourage physicians to report errors which will lead to error reduction.” To make a compelling argument, the speaker referenced past experiences based on historical findings (e.g., “according to the Institute of Medicine (2000) 44,000 – 98,000
deaths annually due to adverse medical events due to human error”) to persuade the audience. As a result, reflective learning was identified as a second broad theme.

It appeared that the professional educational initiative provided physicians with the latest research findings from scientific studies that were empirically-based to inform their practice in disease awareness, prevention, intervention, and diagnostics and treatment using new innovations. In addition, they advocated the need for a cultural transition towards transparency and “open” communication where a “culture of safety” would replace a “culture of blame” that traditionally held the healthcare industry captive from engaging in incidental reporting. They emphasized that a transparent culture could ultimately reduce the overall number of medical errors and improve the quality of patient care. A strong emphasis on communication and knowledge sharing among healthcare professionals was emphasized as key to facilitating this process.

*Data analysis aggregated across observations at professional development sessions.*

Table 4.4 illustrates the types of knowledge and actions shared for continuing education of medical doctors.
As noted, the type of information shared at Grand Round events was technical in nature that emphasized evidence-based research from the latest scientific research and findings to inform doctors about the latest trends in healthcare. Generally, the type of actions observed were one-sided since the speaker did most of the talking during the sessions although some practical insight was shared to add value to the empirical findings such as in observation thirty-one where the speaker emphasized that a culture of secrecy was detrimental to healthcare and noted current culture in the healthcare industry perceives that “well trained and vigilant professionals don’t make mistakes.” In addition, the speaker’s actions were normative in nature since he made reference to shared values and traditional cultural perceptions that existed in the healthcare industry, noting “traditionally the healthcare industry has reflected a ‘culture of blame’ and ‘culture of secrecy’ as the norm” while “poor communication has resulted from ‘groupthink’ where everyone thinks they see the same thing.” Although the actions of the speaker were
teleological in nature during each of the observations at Grand Round events, the goal of the message content was to encourage doctors to engage in knowledge sharing with other healthcare professionals to coordinate action that could ultimately improve the quality of patient care. This behavior was consistent with that identified from the documentation reviewed in Phase I.

**Observations in corridors near doctors’ office areas.** Observations were captured in the corridors near the doctors’ office areas which were considered a semi-public space. The goal of conducting observations in this setting was to determine how doctors initiated contact with other healthcare professionals to facilitate work processes or to provide insight on medical matters. Observations were conducted during office hours between 10am and noon and 2 pm and 3:30pm, and only on Monday, Tuesday, and Thursday when the doctors were most likely to be present. It appeared little social interaction took place in this work-related context which was moderately busy with patients waiting to be examined. It appeared that the social interactions among doctors and medical technicians were transactional in nature and purpose-oriented where most actions were to complete task. From a general observational standpoint, it appeared that doctors requested administrative functions be performed by medical technicians who played a supportive role to fulfill their requests.

For example, observation twenty-two featured a cardiologist who asked a technician to schedule a follow-up procedure, noting “I want for you to schedule this procedure ‘p’ for the patient.” The cardiologist proceeded to instruct “I want it done as soon as they have an opening see what the schedule is like.” This social exchange was best described by the category that emphasized clinical orders where the subcategories clinical instructions, schedule procedures, and clinical priority were combined to describe physicians’ orders that served as the primary theme. Physician’s orders best described a doctors’ initiative to delegate instructions to their
staff to facilitate the delivery of patient care.

In observation nineteen, it was said “was going to give you a call…glad we ran into one another; do you have time for us to meet regarding our previous discussion?” and “ah, do you have a few minutes at the end of the day that we could talk about patient ‘x’?” The data analysis from this observation identified communication as the primary theme and best described the actions of the two doctors to exchange information on when they could meet to further engage in conversation. The initial findings from observations in the office areas were further explored through the interview questions in Phase III to gain further insight.

**Data analysis aggregated across observations in corridors near doctors’ office areas.**

Table 4.5 is a summary of the data analysis for the observations completed in the corridors near the doctors’ office areas. As noted, the actions observed in both scenarios were 100% teleological and normative in nature: teleological because each situation served to facilitate some task (arrange meeting, fulfill clinical request), and normative because their actions aimed to reinforce expectations that were part of the organizational culture (proper behavior, timely actions) which was consistent with the findings from Phase I. The type of knowledge shared in this environment was technical in nature and provided specific information either about the time or content of an upcoming meeting or to provide details about a procedural request.
Table 4.5 Summary of Observations in Corridors near Doctors’ Office Areas

*Observations in the cafeteria.* The cafeteria was chosen as a public space to observe medical doctors and other healthcare professionals who engaged in a social context. The goal of conducting observations in the cafeteria was to determine how doctors established rapport with other healthcare professionals, and to identify the actions they took to initiate contact and the types of information they shared when doing so. The observations were conducted during lunch which ranged from 11:30 am to 1:30 pm, which was identified during Phase I as the most likely time that doctors visited the cafeteria. It appeared that medical doctors did not spend a great deal of time socializing in the cafeteria; they simply purchased meals and left while simply acknowledged other medical staff with social pleasantries. This type of behavior was normative in nature as observed when a doctor simply stated “how are you doing” or “nice day outside… I’m ready for summer.” In some instances, the social environment enabled individuals to engage in dialogue that often ended in hospital-related content.

In observation twenty-one, the doctor and nurse scheduled a consultation to meet on a mutual patient. The doctor engages the nurse by suggesting “I wanted to see if we could meet to
discuss patient ‘x’ later on this afternoon.” “I wanted to share my thoughts and get your opinion.” In this instance, their immediate actions were purpose-oriented while their long-term the goal was to engage in collaboration and coordination on some medical-related matter where it appeared that eventually their intention was to engage in collaborative behavior. The meetings in the cafeteria created serendipitous opportunities for doctors to engage with colleagues and to arrange future consults. Usually actions were purpose-oriented in nature where dialogue was purpose-oriented and task-related but in some instances normative traditions such as social pleasantries created a foundation for individuals to develop rapport that eventually led into discussions that were more work-related in content.

Observation twenty was an example of a doctor who serendipitously met a nurse in the cafeteria, taking time to engage with her in social dialogue, then scheduling a meeting where they could discuss further a mutual patient they had been monitoring. The nurse noted “can we meet regarding patient ‘x’ with the catheter -- would like to update you on the patient’s condition.” As a result, communication was identified as the primary theme that best described their social exchange and was transactional in nature since efforts were directed towards facilitating a work-related task. This serendipitous encounter occurred because both individuals made contact in a common space for dining. In addition, this interaction was also collaborative in nature since the doctor and nurse proceeded to engage in conversation to ensure that nothing critical had occurred as noted when the doctor remarked “has anything radical happened?” Because this behavior was communicative in nature, collaboration and coordination was identified as a secondary theme. These types of situations were observed over a period of several weeks where it appeared the actions were repetitive in nature.

Data analysis aggregated across all observations in the cafeteria.
Table 4.6 illustrates the data analysis from the observations captured in the cafeteria.

<table>
<thead>
<tr>
<th>Observation Cafeteria</th>
<th>Observation Type</th>
<th>Primary Themes</th>
<th>Encourage Knowledge Sharing</th>
<th>Types of Knowledge Shared</th>
<th>Types of Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ob # 20</td>
<td>Specialist engages with Nurse Re: patient Status</td>
<td>Communication Collaboration and Coordination</td>
<td>Yes</td>
<td>Technical; Practical</td>
<td>Communicative</td>
</tr>
<tr>
<td>Ob # 21</td>
<td>Doctor engages with Nurse Re: upcoming social event</td>
<td>Communication</td>
<td>Yes</td>
<td>Technical</td>
<td>Teleological, Normative</td>
</tr>
</tbody>
</table>

Table 4.6 Summary of Observations in the Cafeteria

Both scenarios indicated that knowledge sharing was encouraged. Technical knowledge was shared in both cases, while 50% of the time (observation twenty) it was combined with practical knowledge as noted in observation twenty which was identified as communicative in nature. While practical knowledge was not shared during the actual observation that took place in observation twenty-one, plans were scheduled to do so in the near future. Observations 20 and 21 were both normative in nature where social pleasantries were exchanged and served as the initiative of their communication. Observation twenty suggested communicative action since their actions appeared to be instrumental, social, and normative while in observation twenty-one their actions were indicative of instrumental and normative behavior. The data analysis from the initial observations of doctors who engaged with other healthcare professionals in the cafeteria was further explored through the interview questions developed for Phase III to gain further insight on how social interaction served as a communication channel that facilitated working-relationships.

*Observations in the intensive care unit (ICU).* Observations were conducted in the
intensive care unit (ICU) to explore how doctors engaged with other healthcare professionals in a critical situation. ICU was considered a semi-public space restricted to only select visitors but since some visitors were allowed access it meant that a certain level of discretion had to be maintained for confidentiality. The observations were consistent with those observed in the nurses’ station where clinical data served as a baseline for decision making. Collaboration and coordination took place 50% of the time where doctors engaged with other healthcare professionals, while 50% of the time their actions were purpose-oriented in nature where decisions appeared critical with a sense of urgency which explained why doctors took command to delegate orders on patient care.

Since doctors only visited ICU in the early morning, all of the observations were done between 8 and 10 am since afternoons were deemed as “quiet time” and doctors visited in the early morning hours. The overall atmosphere in ICU was subdued where conversations were low-key and serious in tone given that most patients were either in serious or critical condition. From observation, it appeared physicians had a routine when visiting patients in ICU which consisted of reading the telemetry monitors to check a patient’s heart condition and then checking the white board to identify the attending nurse from which they would then seek further information to update their understanding on a patient’s status.

It appeared nurses were very explicit and forthcoming when they responded to a doctor’s inquiry about a patient’s condition. Dialogue between the nurses and doctors appeared to be explicit in nature where most of the conversation revolved around the presentation of clinical data and evaluations. In some instances, practical context was provided by the nurse to inform on a medical situation where actions appeared collaborative in nature if it appeared that it added value to an assessment. For example, in observation twenty-nine the nurse responded to the
doctor’s inquiry on the patient’s condition by providing practical insight which emphasized the patient’s psycho-emotional state: “well, he has seemed a bit passive.” Historical data were not emphasized in any of the six observations completed in the ICU where the type of knowledge shared appeared to emphasize clinical data (tests and evaluations).

In contrast, observation twenty-four featured a specialist who engaged with a hospitalist about a patient’s status and treatment. It appeared the specialist first retrieved clinical data then initiated dialogue with the hospitalist to inquire further about the patient’s condition. In this case, the social interaction was one-sided where the conversation appeared to be driven by the specialist who asked the hospitalist a series of questions to further inquire about the patient’s status. As a result, physicians’ orders were identified as the primary theme that resulted from the category of clinical instructions that originated from the combination of the subcategories medication instructions and clinical instructions.

The social interaction was teleological in nature since the hospitalist was attentive to the directions of the specialist and normative in nature since the hospitalist inquired on “how to” which was prescriptive (e.g., “do you want me to hold the medications”) while their behaviors suggested some element of dramaturgical behavior since delineation of role was unclear between the two doctors where one was clarifying meaning to the other. Since the hospitalist was going to administer clinical instructions it was critical that the specialist provided explicit directions on the patient’s chart for the hospitalist to follow: the specialist noted “I have listed the medicines to be taken on the chart…let’s go with this plan for now.” The type of knowledge shared during this interaction was technical where explicit clinical instructions were provided that stated the specific medications to be administered.

Comparatively, observation twenty-seven was instrumental in nature since the specialist
initiated contact with the nurse to inform her on the patient’s status but was also indicative of normative behavior since the specialist noted twice “it’s the right thing to do.” Although the specialist initiated dialogue with the nurse stating his intentions “I think I am going to leave patient ‘x’ alone and not do procedure ‘p’ it’s the right thing to do,” he did not engage the nurse’s perspective since he merely noted his intentions. Meanwhile, the nurse’s response “okay”, how is the patient doing overall” appeared normative since the nurse acknowledged the patient’s status as a response to the doctor who initiated the conversation. The data analysis from this observation identified organizational culture as the broad theme which stemmed from the category of norms that described the normative behaviors, “right thing to do”, that were present and driving their actions throughout this social exchange.

In contrast, observation twenty-six featured a specialist who initiated dialogue with an attending nurse on a patient’s condition by asking “how has patient “x” been doing” where he not only engaged with the nurse to obtain clinical data (“what is her H & H”) but also welcomed her practical perspective by asking “how has the patient responded to eating and trying to get up” In turn, the nurse responded to the doctor by inquiring on his perspective “pretty well, actually, should we keep the patient up here or transfer to the floor” This observation was communicative in nature since both parties cooperated with one another to share information that enabled them to effectively coordinate action. In addition, their interaction was normative in nature because efforts were identified on “how to” proceed with the patient.

It was apparent that empirical data served as a foundation for how to proceed in this situation although practical insight was taken into consideration to inform as noted when the doctor inquired from the nurse “how has the patient responded to eating, getting up” and the nurse responded “okay still weak but seems to be coherent.” Both appeared familiar with the
context and proceeded to engage in a clinical assessment where they exchanged clinical data and examined the x-ray results on the computer screen to better understand what was going on with the patient. Their actions became communicative when the hospitalist provided insight to the nurse to explain what happens when a condition is present and how to treat following her inquiry on “what happens if this were to get worse.” In addition, the hospitalist invited the nurse’s response when he asked “does this make sense to you?” He looked directly at her to await her response to ensure that she clearly understood his approach. Their actions were also consistent with normative behavior as well since the doctor provided a prescriptive explanation to the nurse to explain what to do when faced with a particular situation. The doctor’s explanation provided meaning and interpretation through sense-making to achieve mutual understanding and was communicative in nature since both individuals equally engaged in providing insight to define context that enabled them to coordinate patient care. As a result, collaboration and coordination was identified as a second broad theme.

**Data analysis aggregated across intensive care unit (ICU) observations.** Table 4.7 illustrates the data analysis of the six observations in the Intensive Care Unit (ICU).
Table 4.7 Summary of ICU Observations

Figure 4.4 illustrates how often knowledge sharing took place among medical doctors and other healthcare professionals in the intensive care unit.

![ICU Observations Knowledge Sharing Observed](image)
As noted, 50% of the time social interactions among medical doctors and other healthcare professionals involved knowledge sharing where communicative action took place as noted by the primary theme of collaboration and coordination of patient care. The remaining half of the time social interactions were initiated by a doctor who proceeded to explain, assess, and provide instructions to another healthcare professional. In those instances, it appeared that little knowledge sharing took place where communication was one-sided and the physician provided instructions to other healthcare professionals to fulfill as identified by the broad theme physicians’ orders.

Figure 4.5 presents a bar graph that illustrates a breakdown of the types of knowledge shared during all six observations in the intensive care unit (ICU).

As noted, technical (clinical) data was shared 100% of the time while 50% of the time it was combined with practical (subjective) knowledge as part of a clinical assessment.
Data analysis aggregated across all observations. Table 4.8 illustrates the data analysis across different observation types (public and semi-public spaces).

<table>
<thead>
<tr>
<th>Broad Emergent Theme</th>
<th>Observation Type</th>
<th>Total # Times Primary Themes Observed Across Obs.</th>
<th>Encourage Knowledge Sharing</th>
<th>Type of Knowledge Shared</th>
<th>Type of Action Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration and Coordination</td>
<td>Nurses’ Station ICU Cafeteria</td>
<td>15</td>
<td>Yes</td>
<td>Technical; Practical; Emancipatory</td>
<td>Communicative</td>
</tr>
<tr>
<td>Physicians’ Orders</td>
<td>Nurses’ Station ICU Office areas</td>
<td>5</td>
<td>No</td>
<td>Technical</td>
<td>Teleological; Normative; Dramaturgical</td>
</tr>
<tr>
<td>Clinical Assessment (collaboration and coordination)</td>
<td>Nurses’ Station ICU</td>
<td>2</td>
<td>Yes</td>
<td>Technical</td>
<td>Teleological</td>
</tr>
<tr>
<td>Clinical Assessment (physicians’ orders)</td>
<td>Nurses’ Station ICU</td>
<td>4</td>
<td>No</td>
<td>Technical</td>
<td>Teleological; Normative</td>
</tr>
<tr>
<td>Communication</td>
<td>Lobby Office Areas Cafeteria Social Networking</td>
<td>6</td>
<td>Yes</td>
<td>Technical; Practical</td>
<td>Communicative; Teleological; Normative</td>
</tr>
<tr>
<td>Reflective Learning</td>
<td>Nurses’ Station Professional Development</td>
<td>4</td>
<td>Yes</td>
<td>Emancipatory</td>
<td>Communicative; Teleological; Normative</td>
</tr>
<tr>
<td>Evidence-Based Medicine</td>
<td>Professional Development</td>
<td>2</td>
<td>Yes</td>
<td>Technical</td>
<td>Teleological</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>Lobby Professional Development ICU</td>
<td>3</td>
<td>Yes</td>
<td>Practical; Technical</td>
<td>Normative</td>
</tr>
</tbody>
</table>

Table 4.8 Summary of Data Analysis Aggregated across all Observations
*Total number of observations public/semi-public spaces = 31

Nurses’ station (work-related) =14, ICU (work-related) = 6, Corridors (work-related) = 2,
Cafeteria (social) = 2, Lobby (social) = 3, Professional Development (social) = 3, Social Network Event (social) = 1.

Note: Broad theme clinical assessment occurred only in combination with collaboration and coordination or with physicians’ orders.

Knowledge sharing was encouraged in 84% of the total number of observations. As noted, the broad theme of collaboration and coordination was most prevalent in work-related environments (nurses’ station and ICU) 70% of the time (20 observations) while clinical assessment accompanied collaboration and coordination 14% of the time. This indicated that an exchange of clinical data took place among doctors and other healthcare professionals who then proceeded to engage in communicative action by sharing different perspectives that enabled them to establish context to effectively coordinate action. This behavior was consistent with evidence-based medicine where clinical assessment, clinical expertise, and patient-specific data served as best practices for identifying optimal patient care. Evidence-based medicine was emphasized on two out of three occasions at professional development meetings or 67% of the time where doctors were trained to engage in this type of behavior. Most interestingly, healthcare professionals used serendipitous occasions to establish communication with other healthcare professionals that enabled them to plan future consults with the intent of engaging in collaboration and coordination 54% of the time when they interacted with colleagues in a social environment. This reverted back to the fact that social interaction enabled individuals to communicate to plan future related meetings.

Contrary to this behavior, 23% of the social interactions that took place among doctors and other healthcare professionals in semi-public space (nurses’ station, ICU, office corridors) resulted in teleological behavior where communication was generally one-sided and driven by physicians’ orders. As indicated by this broad theme, doctors provided instructions (medication,
testing and treatment) to other healthcare professionals to fulfill orders but did not engage in communicative behavior while 18% of physicians’ orders were accompanied by a clinical assessment. This behavior indicated that a minimal level of dialogue took place among doctors and other healthcare professionals in exchanging objective or subjective data for a clinical assessment or for other medical task-related matters, but in these instances, they did not seek other perspectives to inform their understanding.

**Summary of the data analysis from the observational phase.** There were seven primary themes identified from the data analysis across the different types of observational areas (public and semi-public). These primary themes are all relevant to the purpose of this study and provide insight about the knowledge sharing behaviors of medical doctors and specifically, the types of knowledge and types of actions they use when they engage with other healthcare professionals. Collaboration and Coordination was identified as a primary theme on fifteen occasions and was predominately observed among doctors who engaged with other healthcare professionals in a work-related context (nurses’ station 79% of the time) and (ICU where 50% of the time). This was most obvious when doctors encouraged their colleagues to provide diverse perspectives, provided explanation to clarify meaning and to achieve shared understanding, justified actions to provide insight and lessons-learned, and engaged in prescriptive behavior on “how to” or “what to do” with their fellow peers. While collaboration often included practical and historical perspective to provide context, empirical data (technical knowledge) appeared to be the most often referenced as a baseline for decision-making. Most interestingly, it was observed that doctors provided meaning and interpretation of clinical data (lab reports, test results) to other medical professionals to establish mutual understanding across interdisciplinary
functions where meaning needed interpretation to ensure that doctors and nurses were in sync and to avoid efforts that were at cross purposes.

Clinical assessment was observed on six occasions and was always identified as a secondary theme that served to inform other actions that accompanied their interaction whether collaboration and coordination or physicians’ orders. The clinical assessment referred to the actions observed among doctors and other healthcare professionals who engaged in face-to-face social interactions to exchange clinical data for patient evaluation and assessment. Clinical assessment was only observed (a) when accompanied by actions that indicated an intention to collaborate or (b) in situations where a clinical evaluation appeared to support physicians’ initiatives to assess and prescribe care where clinical data were exchanged as part of the process to inform.

Physicians’ orders were identified on five occasions as a primary theme from the data analysis of the observations during Phase II of the study. Orders was identified as being a secondary theme because it was specifically only identified from the data analysis of the observations captured during Phase II of the study. In addition, the theme was only identified five times out of 31 observations (16%), a low value. Physicians’ orders described the social interactions that featured one-sided communication when a physician assessed and prescribed patient care and provided orders to other healthcare professionals to fulfill the delivery of patient care. This was most prevalent in observational areas such as the corridors near doctors’ office areas (semi-public spaces) or in the intensive care unit where dialogue appeared to be limited due to the nature of the environment. Communication was explicit, direct, and task-oriented and generally took place to fulfill some instrumental purpose, e.g. fulfill physicians’ request or to schedule consults.
Reflective learning was identified as a primary theme and appeared as part of an on-the-job learning initiative as observed at the nurses’ station where doctors engaged with medical students and fellows to provide instruction using story-telling, narration, and past experience. The type of knowledge shared was emancipatory and based on lessons-learned that served to illustrate training initiatives. Similarly, reflective learning was identified as a primary theme from a professional development session where the speaker argued that learning from past mistakes would play a key role in error reduction but noted that it would require a cultural transition in the healthcare industry.

Lastly, organizational culture was identified as an emergent theme on three occasions, which illustrated that the culture played a significant role on organizational behaviors. For example, in observation one “practice what we preach” was deemed important while at a professional development meeting the speaker advocated the need for a transition towards a “culture of reporting” through organizational change. In observation twenty-seven the doctor’s decision to leave the patient alone, noting “it was the right thing to do,” was obviously influenced by normative traditions that dictate ethical behaviors. These initial findings were explored further through the semi-structured interviews in Phase III, interviews that provided further insight into the types of knowledge and types of actions doctors shared with other healthcare professionals. The following section provides an in-depth data analysis of the semi-structured interviews that took place with medical doctors for this study.

**Phase III. Semi-Structured Interviews**

The following subsection is an in depth presentation of the semi-structured interviews that were conducted with medical doctors from the community hospital to explore their knowledge sharing behaviors and, specifically, the types of knowledge and types of actions they
used to share knowledge with other healthcare professionals. The semi-structured interviews were considered the primary source of data used to inform the study because it came directly from the *in vivo* of the participants who provided their rich descriptions about their knowledge sharing behaviors based on their recollections of how they shared knowledge with other healthcare professionals. The interview questions were iterative and developed from the initial findings generated from the documentation review and observations completed in Phases I and II of this study. The goal of the interviews was to attain an in depth understanding of doctors’ knowledge sharing behaviors based on their recollection and rich descriptions used to detail their lived experiences.

Part I of the interview was used to capture general information about each participant’s background. The objective of this section was to establish rapport with the medical doctors and to obtain some basic background information about each participant such as the number of years with clinical expertise and to identify each doctor’s particular area of specialty. Part II was divided into three sections. The first section explored how doctors perceived their knowledge sharing behaviors with other healthcare professionals. The goal of the first section of the interview questions was to explore the doctors’ behaviors from a broad perspective. The intention was to gain insight about how they engaged the viewpoints of other healthcare professionals, what measures they took to ensure that a message was interpreted and applied as intended, what measures they took to clarify language to ensure shared meaning and common understanding of technical data such as clinical reports or test results when they engaged with other healthcare professionals.

The goal of the second section of Part II of the interview questions was to identify the types of knowledge doctors shared with other healthcare professionals and how it added value to
patient assessment. Specifically, the questions explored the benefit of practical insight, reflective knowledge, and how doctor’s established common understanding when interpreting empirical data. In addition, this section explored the value of social content and its influence on working relationships among healthcare professionals. The last section Part II of the interview questions explored the types of actions that doctors used to share knowledge with other healthcare professionals. This goal of this section was to understand when and why doctors rationalized their actions to other healthcare professionals, what measures they took to organize critical consultations, and the benefit of establishing personal communication channels in the workplace. Finally, this section explored on what occasion doctors did not seek external viewpoints from other healthcare professionals.

**General overview of the interview process.** Ten out of the 14 (71%) semi-structured interviews took place in each doctor’s respective office while four (29%) were in one of the conference rooms. The participants chose the location of the interview, and each appeared comfortable and content to engage in the interview. Social talk at the beginning of the interview was limited since the doctors had busy schedules although they were very cordial and willing to provide as much information needed and indicated willingness for future contact in the event any additional questions were needed. The actual interview process (including the signing of the informed consent) was an average of 25 minutes in length.

As part of the interview protocol, caution was exercised to avoid distorting or overstating the purpose of the study for personal gains. In addition, efforts included avoiding or leading the participant’s towards desired outcomes for subjective purposes or from creating an inappropriate or threatening environment for the participant as a way to gain insight. In addition, emphasizing the benefits of the research over the potential risk was not done, and incentives or gifts were not
offered to those who participated in the study since bribery was non-permissible.

**Overview of the participants.**

**Doctor # 1.** Doctor # 1 was a male doctor with 40 years of clinical experience and who specialized in infectious diseases and was employed directly by the hospital. The doctor was a strong proponent of collaboration among healthcare providers. He emphasized the importance of working together and sharing information especially with the nursing staff who served as the “bedside caregivers” to the patients twenty-four hours a day. The doctor emphasized that direct communication ensured that instructions were understood and applied as intended and noted “I’m old-fashioned I pick up the phone; I just don’t write the order” and “to be accurate I talk with nurses” and “describe to the nurse the specific details of what I’m looking for.” In addition, the doctor argued that personal and reflective knowledge added value to clinical assessments stating “the patient is more than just the sum of their laboratory values.” He emphasized that social interaction with nurses meant “not only sharing information but sharing of understanding” where social rapport among healthcare professionals enabled them “to functionally co-exist not simply to just co-exist with one another” where they worked together to share information and perspectives to effectively coordinate action. The doctor noted that in the past doctors would socialize and say “gee, I had a case like this have you ever seen a case where this…very informal, but very useful.” He noted that present industry regulations restrict collaboration “whether it’s in the lobby or wherever… clearly you have to be discreet… that’s the intent of HIPAA…it has gotten totally out of hand.”

**Doctor # 2.** Doctor # 2 was a male doctor with 30 years of clinical experience who specialized in geriatric psychiatry and served as the Chief of Psychiatry directly employed by the hospital. The doctor was a strong proponent of collaboration and coordination but noted that
industry regulations to protect patient confidentiality restricted the types of knowledge shared: “I’ll be prescribing care without the full picture because of the patient’s preference.” Since the medical records of mental health patients were privy only to mental health professionals, he argued that direct communication, such as using the telephone, with non-mental health professionals ensured common understanding. To underscore this he noted “I make some extra phone calls so the other colleagues are clear what’s happening” and “I’ll try to be as thorough as possible including getting collateral information from family, friends, medical record, and from other healthcare professionals.” He also emphasized that building social rapport with other healthcare professionals was beneficial to patient care: “if you have a relationship before with another healthcare professional they’re going to be much more likely to impart information.” He added “I’ll be more comfortable contacting them; it goes both directions.”

**Doctor # 3.** Doctor # 3 was a male cardiologist with 14 years of clinical experience who specialized in cardiovascular diseases with a sub-specialty in Transesophageal Echocardiography. He resided at the hospital, but reports directly to the chief of cardiology whose services were contracted by the hospital to provide cardiovascular care. The doctor was a strong proponent of collaboration and coordination. During the interview, he emphasized various initiatives taken to engage the viewpoints of other healthcare professionals. For example, he argued that message consistency was the key to effective communication and noted "I do not veer from my spoken message ... or my written message in the permanent medical record” and used confirmation to ensure mutual understanding. He argued that “The Gold Standard” was to “follow-up or to look back on the patient to ensure that verbal and written recommendations are being enacted in the way you intended”; this was the key to effective communication. In summary, the doctor emphasized that effective communication among
healthcare professionals required explaining impressions, clarifying meanings, achieving mutual understanding, and referencing past experiences in order to provide a higher quality of patient care.

**Doctor # 4.** Doctor # 4 was a male gastroenterologist with 35 years of clinical experience and resided at the hospital as Chief of Gastroenterology although he was an independent contractor. His sub-specialties were diseases of the intestinal tract and liver. As a contractor, the doctor was appointed chief of his specialty and oversaw the team of GI specialists. The doctor was a strong proponent of collaboration among healthcare professionals. He emphasized the importance of engaging in direct verbal communication either face-to-face or by telephone and noted that direct conversations with other healthcare professionals enabled him to ask “did you see this?” He also noted it was important to rationalize his actions to other healthcare professionals so that they clearly understood why he had taken certain actions. He noted that he had taken the initiative to explain why certain decisions were made and the cognitive processes behind his decisions. Throughout the interview redundancy, confidence, and trust among colleagues were cited as the critical components of effective collaboration and coordination of patient care.

**Doctor # 5.** Doctor # 5 was a male cardiologist with 25 years of clinical experience who served as the Chief of Cardiology at the hospital and resided at the hospital as an independent contractor. Although contracted by the hospital, his group was highly respected and perceived as an integral part of the organizational culture. The doctor emphasized that collaboration among healthcare professionals was important, but seemed rather frustrated that practical insight was met with resistance and noted “I think in healthcare… people aren’t really open to other peoples’ experiences or inputs; already formed their own opinion…a lot of self-bias…people
think that how they approach things is the right way and if you want to discuss anything that veers, a defense mechanism comes up to shut that down.”

When asked to describe a typical situation when doctors rationalize their actions, he responded: “wish we did it more often than we do…don’t do it enough and when we do have an opportunity to go through what we’re thinking and why we did what we did…usually in a negative context” and “usually because some case has been singled out and something bad has happened.” He noted he was usually a recipient of collaborative consults and did not initiate them as he explained: “if I feel reasonably confident …don’t consult other consultants; go with my own knowledge base and experience…rarely do I pick up the phone and ask another doctor usually other doctors ask me… because I’m the senior guy…haven’t done that for twenty years.”

When asked about the use of language and the measures he took to ensure common understanding he emphasized that communication should be direct and explicit and noted that it was “not that they didn’t understand the mechanics of what was said, but that they didn’t understand the concepts” and added “don’t assume they are going to know what I’m talking about…spell it out… I won’t use abbreviations” and “go through a differential …establish common understanding to make sure we are looking at the abnormal…so that we understand the scope.”

Regarding social conversation the doctor noted that it “helps a lot in the sense that it encourages a teamwork mentality” and “if you have established communication with a group of physicians you feel part of the same team which is very important.” The doctor emphasized that he was a strong proponent of social conversation and argued that it contributed toward facilitating working relationships: “when you put the white coats down and we’re out in a social it’s perceived as a level playing field … barriers are dropped and hopefully when you come into
a working environment the barriers stay dropped.” He stated that “once you’ve established communication with a group of physicians you feel part of the same team which is very important.”

**Doctor # 6.** Doctor # 6 was a male hospitalist with 10 years of clinical experience who specialized in internal medicine and was contracted by the hospital as Director of the Division of Hospitalists. The doctor acknowledged that it was very important to engage the viewpoints of other healthcare professionals and noted “we speak to the nurses every day because nurses are the front line to our patients for delivery of care.” He emphasized “direct communication, face-to-face, was more effective than looking at the chart to see what their impression was or what they were thinking about the patient.” He also noted that it was important to explain the cognitive processes behind his actions and noted if there was any confusion “we will start the whole process again including the thought behind what I am doing and what it means…helps us get on the same page.” He also said that language often needed clarification because of “accents…they can always be a sort of confusion” and noted that with patient names and medications it was important to “spell it out.”

When asked on what occasion he used practical insight to add value to a clinical assessment, he noted that “intuition will tell you that it’s not happening right” and emphasized that “intuition is a big thing in medicine…it’s all about predicting.” He added that his decisions were usually aligned with industry standards because he often sought out “the data in the US, and why should we be doing this…it’s about some regulation to be met…it’s about expectation.” When asked about how social conversation and personal communication channels benefit the work relationship, he responded that it’s “important to establish relationship with consultants and nurses who are mutually taking care of my patient…helps with easiness with which you could
reach a consultant, strike conversation, and get down to business.”

**Doctor # 7.** Doctor # 7 was a geriatric psychiatrist with 18 years of clinical experience who was on staff at the hospital and served as the Director of Psychiatry who reported directly to the Chief of Psychiatry. The doctor noted the importance of collaboration and noted “much of the interaction is face-to-face which can take the form of interdisciplinary team meetings, rounds, and nursing reports” and added “there is a fair amount of discussion and information sharing that happens in an informal way…walking into the nursing units.” The doctor noted that “email is used in a very limited capacity because of confidentiality issues.” When asked about the benefits of social conversation, the doctor emphasized that as a director his time was limited to socialize with other healthcare professionals unlike the staff psychiatrists who often engaged with the nursing staff. He felt it was important to acknowledge that collaboration varied among physicians and noted that in some specialties, like dermatologists, there was little need to collaborate with other physicians due to the nature of their specialty.

When asked about what measures were taken to ensure message clarity, he noted there was “interplay among interdisciplinary team members” that enabled them to clarify meaning and he added that “people can use words in a colloquial way…and can imply a myriad of different things…so it’s important to clarify meaning to ensure common understanding.” When asked about how he used clinical data to assess patient care, he noted “lab data has to be put into the context of the overall assessment and the overall formulation of that particular situation.” He argued that collaboration and coordination among healthcare professionals was important and noted there was “no question that having direct lines of communication with colleagues in different areas of practice is very important in taking care of patients,” but argued that because of the change in the hospital landscape “there are more silos of care now” and less face-to-face
collaboration with healthcare professionals since hospitalists were responsible for inpatient care. Thus, communication was usually “through the electronic healthcare record where physicians have the ability to message other physicians about questions and issues, but…anonymity may or may not be preserved in that situation.”

**Doctor # 8.** Doctor # 8 was a female endocrinologist with 7 years of clinical experience who was on staff and reported directly to hospital leadership. She acknowledged that knowledge sharing was important because it enabled doctors to stay informed about mutual patients, but noted “I generally don’t involve the primary care physician … because I'm the specialist, and they have sent the patient to me to find out what to do.” She proceeded to say, “I generally don’t engage the other physician face-to-face or directly, I do it indirectly through the patient's electronic chart seeing what the other physician has written and what their specific question or concern is” and if there was an issue “I document what I'm doing ... send a flag directly to the person through electronic record if I think it was something that needs to be addressed.” The doctor appeared to be a very strong proponent of electronic communication and noted “a lot of stuff can be accomplished through the electronic medical record.”

When asked about the benefits of social conversation, she noted “it makes you more comfortable calling that person for ‘curbside information’ and say ... I have this patient that seems weird to me, is it something you should see” but emphasized that recent organizational changes that eliminated pharmaceutical luncheons limited the opportunities that doctors had to socialize with other physicians. Thus, the electronic record keeping system served as the main communication medium among healthcare professionals.

**Doctor # 9.** Doctor # 9 was a female internist with 28 years of clinical experience who specialized in emergency medicine and who reported directly to hospital leadership. She
indicated that she was a strong proponent of electronic communication and noted “I tend to send flags to providers who use the same electronic health record that I do which assures the security of the information.” She noted that the system was convenient “in this day and age” to facilitate knowledge sharing, but most importantly, “assured security of the information.”

When asked about the measures she took to ensure message clarity and appropriate knowledge application, she noted “I presume that if there’s a question that the other person was going to call me directly,” which emphasized an indirect approach to corroboration. However, she noted “if I don’t understand what the person is saying or they don’t understand what I’m saying … I just pick up the phone and talk to them directly.” When asked how she used clinical data to assess patient care, she noted “you can’t look at a patient … and tell if their diabetes is in control so I’ll use a blood test to determine the treatment plan.” When asked about the benefit of social conversation and personal communication channels, she responded “all of the sort of lends itself to the facility of just reaching out and talking to a person” and “it enables you to give much better care.” The doctor emphasized that she rationalized her actions to other healthcare professionals based on the industry standards that were used to guide her decisions.

**Doctor # 10.** Doctor # 10 was a female breast surgeon directly employed by the hospital with 27 years of clinical experience as a general surgeon specializing in breast diseases. She strongly emphasized team collaboration and noted “we have a philosophy approach to certain ways of treating patients and so we know what we’re talking about.” She emphasized that during the meetings doctors referenced the latest evidence-based medicine and said we “perhaps bring up a recent study where you can bring in the scientific data that is what you can rely on the most.” She also noted to ensure clarity and common meaning among one another “we all agreed as a group of what the important things are and the descriptive terms, and if there’s questions we
just call and say I just wasn’t sure what you meant about this.” She noted that she often shared practical insight to diagnose the extent of an illness based on how patients would react to certain treatments and noted that “I’ve seen it in the past; this is helpful” and argued that she often reflected in retrospect to guide present decisions referencing “cases where you thought you could have done better … and say well, I’ve tried that before, but this seems better.”

When asked to describe how clinical data was used to assess patient care, she responded “it is used as a background” so “each person is an individual so you have the data, you go to annual conferences specializing in breast cancer, but then you always apply it to the individual.”

When asked to discuss a typical situation where she rationalized her actions to other healthcare professionals, she noted “during surgery there are decisions to be made…immediate decisions based on your experience, your data…then you sit together as a group…and try to rationalize.”

When asked about the benefits of social conversation the doctor noted that it was “used as a distraction method with patients during procedures” while “meeting with the core group …usually multidisciplinary … benefit the patient who will get the best standard of care.” This created personal communication channels that “without that there would be silo over there silo over here ….so there is no communication.”

**Doctor #11.** Doctor #11 was a male internist with 33 years of clinical experience who specialized in infectious disease and served as the Chief of Infectious Disease with a sub-specialty in HIV and travel medicine. Doctor #11 was also the Chief of Medicine and reported directly to hospital leadership. The doctor was a very strong proponent of collaboration and coordination among healthcare professionals. He emphasized that direct communication was the best way to ensure message was understood and applied as interpreted and noted that “if I get a call from a primary care physician on which antibiotic product to choose, rather than just give
them the answer, I tell them why I was doing it” and went on to say that “it is my contention that if it’s a ‘number three consult,’ which is considered critical, there ought to be phone calls directly from the doctor who’s ordering it to the doctor who’s on the other end.” He added that “one has to be mindful all the time of who they’re speaking to, their language and the level of knowledge capabilities”

When asked about how he used clinical data to assess patient care he noted “using your knowledge of disease states, you can achieve a fair amount of precision in what is likely based upon simple hypothesis generation” and then “given the hypothesis, does the exam support or dispute hypothesis to achieve a diagnosis.” When asked about a typical situation when doctors rationalize their actions to other healthcare professionals, he noted that “often it occurs when you’ve made the wrong decision” and added “we hold exercises in medicine; long standing conferences called Morbidity and Mortality sessions where physicians bring up mistakes…what did we do wrong or why didn’t it work out right.” He noted that “when you make an error you want to share that fact with other physicians” and emphasized “environments that are transparent and supportive are good, if not, there is no improvement because everyone is afraid.” Additionally he noted “we have a pretty open environment here at the hospital.”

When asked about the benefit of social conversation he noted that “building social rapport makes people feel like part of a team and makes them understand that you may have some of the same vulnerabilities that they have ... takes courage to expose yourself, but once you get over that rigidity you feel connected.” He also noted that personal communication channels with other specialists enabled them to create a bond where they could call one another to coordinate treatment plans that were most effective for the patient. He added that “by adding that personal touch I think you are in a much stronger place!”
**Doctor # 12.** Doctor # 12 was a female gastroenterologist and hepatologist with 3 years of clinical experience and reported directly to hospital leadership. She was a strong proponent of using the electronic record keeping system to communicate with other healthcare professionals except when organizing critical consults when she contacted the physician directly. Being a specialist, “sometimes I call only if I think it is needed; usually I don’t need to do that.” She said that she used an indirect approach to corroborate whether her message was understood and applied as intended and noted “I’ll usually do it through the patient or check the chart in the electronic health record.” She also noted “I try to be thorough in my electronic notes to explain what we are looking for and the purpose of whatever medical plan I have.”

When asked how she used clinical data to assess patient care, she responded “we use the data that we get (blood work, endoscopy) to help tease out what the diagnosis is.” She noted that “it is useful to know in a practical sense based on my experience if I think someone can tolerate the diagnostic work-up … practical cue that you just know.” She also noted that lessons-learned enabled her to “express to doctors that what a lot of what a patient is feeling is something that has been seen multiple times in the past.” When asked to describe when she rationalized her actions to other healthcare professionals, she said “if you had a bad outcome with a patient.” She also explained that “as a young physician, it is important to touch base with my other GI colleagues about certain difficult cases … way of learning other people’s approach to things and perspective about things” while also noting that by establishing personal communication channels “people become more trusting of your care and so they’re more likely to send you more patients.”

**Doctor # 13.** Doctor # 13 was a female oncologist with 2.5 years of clinical experience as a breast and endocrine surgeon who specialized in breast pathology, and thyroid benign and
malignant diseases. She reported directly to hospital leadership. She was a strong proponent of collaboration and noted that on a regular basis multidisciplinary colleagues had the opportunity to socially engage at formal meetings where they shared knowledge and feedback with one another, but noted that for common everyday matters collaboration usually took place either by telephone, especially for organizing critical consults, or through the computer where documentation was shared. She emphasized that when corresponding with other physicians she provided “the latest evidence.” She also noted “interactions are at monthly meetings…to share knowledge and feedback from the internists … it is important that we share information …the latest screening for diseases … the latest in treating diseases; this happens face-to-face.” She also mentioned “we also have the Quality Improvement Meetings … committee of physicians, specialists, and internal medicine, as well as, nurse practitioners and administrators that all engage in how we practice evidence-based medicine … system to make sure … all healthcare providers engage into this model to collaborate.” In addition, “weekly tumor board meetings, GI meetings, and Grand Round really keeps us up-to-date … these are invited disciplines from higher institutions that are at the forefront of research … we invite speakers … to review the latest in their specialty.”

When asked about the measures taken to ensure that a message was understood and applied as intended, she said “that there is a routine in place….Quality Committee installed software in the electronic medical record system for tracking … primary care physicians are required to ‘click’ and update all patient information.” The doctor said that “jargons … can get a little bit confusing; semantics; meaning varies from one specialty to another” and she noted that to establish common understanding it is imperative “that we must be on the same page.” and strongly emphasized that “it’s really critical that we meet and look at the same study and we
evaluate because abnormal results can fall through the crack if the radiologist reads something that I misinterpret as not concerning … best way is to interact face-to-face.”

When asked to discuss how she used clinical data to assess patient care she emphasized that “data is published and these publications become available to us as community surgeons via national meetings so that’s where I become aware of the latest evidence-based technical … you should do this with this data … then I implement into my practice” and added “data plays absolutely an important role … if you think it is necessary you run tests and the data either confirms or declines your hypothesis.” When asked to describe a typical situation when practical insight was used to add value to a clinical assessment, she replied “you can’t just say, the literature states this so this is what I’m going to do so practice experience is very valuable.” She said that she rationalized and justified her actions to the multidisciplinary board prior to taking action to ensure that there was consensus among the team noting it was “important to justify before the event especially in terms of legal issues it is always best to have the documentation.” When asked to describe the benefit of social conversation she said that “it brings humanity to our profession” and it “builds trust.”

Doctor # 14. Doctor # 14 was a female physician with 18 years of clinical experience who specialized in internal medicine and reported directly to hospital leadership. She was a strong proponent of electronic communication among healthcare professionals and emphasized the benefits of using the computer as an intermediary collaborative tool to engage with colleagues. The doctor described a typical system entry as “I send flag using electronic medical record if they are in the same system…usually not face-to-face” and noted “I only see other physicians at meetings or Ground Round where we can talk for a few minutes but that is not regular.” The doctor noted that a change in routine was because “doctors no longer go to the
hospital to admit patients anymore…where used to see the doctors on the floor…hospitalists now take care of that.”

When asked what measures she took to ensure that messages were understood and applied as intended, she noted “I follow-up with patients so I close the loop on everything; we have measures in place…we have referral tracking” When asked what types of measures she took to establish common understanding with other healthcare professionals, she responded “I am very explicit and detail exactly what I am looking for because I don’t want them to order the wrong test.” When asked about the benefits of social conversation with other healthcare professionals, she noted that “it improves the relationship.” She emphasized that establishing personal communication channels with colleagues was “a huge asset” and noted that communication “happens right away…people know you and they’ll send you a flag right back.”

**Overview of initial findings from interviews.** There were five primary themes that evolved from the data analysis of the semi-structured interviews; four of the themes were repeated more than once. The most predominant theme was organizational culture which was identified on five occasions. The following section illustrates the breakdown of these emergent themes. Organizational culture was identified on six occasions from the data analysis of the semi-structured interviews and was concurrent with properties that emphasized collective behavior among individuals in an organization who shared norms, values, vision, and beliefs.

Communication was identified on four occasions as a primary theme. The theme was concurrent with properties involving the exchange of information through a common system of signs, symbols, behaviors, and activities that served to link together people to achieve common goals. Evidence-based medicine was identified on five occasions and was concurrent with integrating individual clinical expertise with the best available external clinical evidence from
systematic research and applying this data relative to the patient context. Collaboration and coordination was identified on three occasions and were concurrent with properties that were consistent with a presupposition that individuals had a genuine interest to achieve common goals through intersubjective mutuality. In these cases language and argumentation were used to create shared meaning and interpretation to define context to effectively coordinate action. Reflective learning was identified once from the data analysis and was concurrent with properties associated to learning from lessons-learned and story-telling to reflect upon past experience.

**Data analysis aggregated across all semi-structured interview questions.** This subsection is a presentation of the data aggregated across all twelve interview questions. The following summary table illustrates the data analysis. Each of the interview questions was designed to gain a better understanding into the doctors’ knowledge sharing behaviors based on their lived experiences and recollections from their experiences and the descriptions of these accounts to provide insight to inform the study. As noted in the Table 4.9, the responses across all twelve of the interview questions suggested that knowledge sharing was encouraged in 11 out of 12 questions or 92% of the time. The goal of question 10 (which indicated knowledge sharing was not present) was to gain a deeper understanding about when doctors did not seek external viewpoints. As a result, the purpose of asking the question was achieved as doctors responded to various reasons for not seeking consultations including the most popular response where they indicated that the situation was routine.

Each of the questions contributed towards understanding the types of knowledge doctors shared with the exception of question two which was designed specifically to explore knowledge sharing behaviors. In addition, six of the eight questions initially designed to explore knowledge
sharing behaviors and types of actions also identified the types of knowledge shared by doctors as well. Ten of the 12 questions or 83% identified the types of knowledge shared among doctors and other healthcare professionals which provided insight not only from a cognitive perspective to understand their behaviors and actions, but also to identify what types of information they shared with one another when collaboration took place.
<table>
<thead>
<tr>
<th>Primary Theme</th>
<th>Secondary Theme</th>
<th>Interview Questions</th>
<th>Encourage Knowledge Sharing</th>
<th>Type of Knowledge Shared</th>
<th>Type of Action Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Collaboration and Coordination, Organizational Culture, Evidence-Based Medicine</td>
<td>Q1. Describe how you engage the viewpoints of other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Collaboration and Coordination</td>
<td>Communication, Organizational Culture</td>
<td>Q2. Describe what measures you take to ensure that your message is understood and applied as intended when you communicate with interdisciplinary healthcare professionals?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Communication</td>
<td>NA</td>
<td>Q3. Describe a typical situation where language needed clarification to ensure shared meaning among healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Collaboration and Coordination</td>
<td>NA</td>
<td>Q4. Describe what measures you took to establish common understanding with other healthcare professionals when you discuss lab reports and test results?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Evidence-Based Medicine</td>
<td>NA</td>
<td>Q5. Describe how you use clinical data to assess and prescribe patient care when you engage with other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>NA</td>
<td>Q6. Based on your experiences, describe what benefit social conversation has contributed to your working relationships with other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Evidence-Based Medicine</td>
<td>NA</td>
<td>Q7. Describe a typical situation where you would provide practical insight to add value to a clinical assessment when you engage with other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reflective Learning</td>
<td>Evidence-Based Medicine</td>
<td>Q8. Describe a time when you reflected upon “lessons-learned” to consult on a medical matter and tell me what types of information you provided that added value to your discussion with other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>Collaboration and Coordination, Reflective Learning</td>
<td>Q9. Describe a typical situation when doctors rationalize their actions to other healthcare professionals?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>NA</td>
<td>Q10. Describe a typical situation when doctors assess and prescribe patient care without any external input?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Communication</td>
<td>Collaboration and Coordination</td>
<td>Q11. Describe what measures doctors take to organize a critical consultation?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Organizational Culture</td>
<td>NA</td>
<td>Q12. Describe the benefits of establishing personal communication channels with other healthcare professionals and how it fosters your working relationships?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 4.9 Summary of Primary Themes across all Interview Questions
The data analysis of the semi-structured interviews conducted in Phase III reinforced the initial findings presented in Phases I and II of the study, and additionally provided further insight to better understand doctors’ knowledge sharing behaviors and specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals in a community hospital. Five primary themes were identified from the data analysis: organizational culture, communication, collaboration and coordination, reflective learning and evidence-based medicine. These themes best described the doctors’ responses and provided insight into their knowledge sharing behaviors and specifically, the types of knowledge they shared and types of actions they used to share knowledge within a community hospital.

The data analysis across all of the interview questions suggested that the organizational culture played a big role on how doctors engaged with one another and specifically the types of knowledge shared and the types of actions used to share knowledge with other healthcare professionals. For example, doctors responded favorably towards the organizational culture and noted that it fostered a positive environment which encouraged transparency among healthcare professionals, as noted by Doctor # 11 who said “we have a pretty open environment.” As a result, the organizational culture was identified as a primary theme that resulted from the data analysis across all interview questions on four occasions and also appeared as a secondary theme on two other occasions or 50% overall. The culture was perceived by doctors as playing an integral part of the organization that fostered knowledge sharing among individuals. Specifically, the organization encouraged individuals to engage with one another through formal events and meetings that served as formal structures that enabled opportunities for individuals to engage in social interaction. In addition, info-structure enabled information flow electronically across multiple platforms of the organization that connected individuals with one another and
enabled them to collaborate. The electronic medical record (EMR) was highly emphasized throughout the interview process by the doctors and regarded as an intermediary collaborative tool that provided connectivity with their peers. For example, doctors could send a flag to their colleagues to attain diverse perspectives without having to physically visit with those individuals, as noted by Doctor #14 who stated “sent flag using EMR” and emphasized the system facilitated information sharing because “it’s incorporated as part of the electronic medical record so I have access,” which enabled doctors to get an update on a mutual patient from their desktop. The electronic medical record (EMR) system was an institutionalized process that served as a tradition that required employees to enter patient-relevant data into the system, and served as a knowledge structure embedded as part of the culture to facilitate knowledge retention. Doctors argued that the EMR served as routine and enabled them to share information with other healthcare professionals, as noted by Doctor #13 who emphasized “the Quality Committee installed software in the electronic medical record (EMR) system for tracking … we are required to ‘click’ and update all patient information.”

Computer-mediated communication has extended the traditional landscape of face-to-face communication that once served as the primary method for initiating contact. The healthcare industry shifted over the past decade which reduced the opportunities for physicians to engage with colleagues face-to-face since doctors did not frequent the hospital as often. As a result, formal meetings were perceived by doctors as opportunities to engage with other healthcare professionals within and across disciplines. The EMR system automated the communication process among healthcare professionals which enabled them to maintain rapport they established with other individuals at formal meetings. These formal structures created opportunities for doctors to establish relationships face-to-face and cultivate online. For
example, 57% of doctors responded that by having the opportunity to socialize they established personal communication channels with other healthcare professionals that enabled them to be “more responsive to their colleagues” while 36% noted that it “enabled better patient care”.

Organizational culture was emphasized in responses to questions six and twelve where doctors noted that the social climate encouraged social rapport enabled them to establish relationships that could be transferred to the work environment. Organizational culture also emerged as a primary theme when doctors rationalized their actions to other healthcare professionals. As described by Doctor # 11, “transparency and ‘open’ communication is encouraged among colleagues to share mistakes as part of the learning process,” this indicated that the culture advocated proactive behavior as part of individual and organizational learning.

Organizational culture also served as a secondary theme on two occasions. For example, in question one, doctors were asked to describe how they engaged the viewpoints of other healthcare professionals. They identified opportunities that resulted from formal meetings, events, and communication structures that facilitated communication processes. As an example, Morbidity and Mortality sessions served as formal open forum structure embedded within the system where doctors met regularly and reflected upon past experiences. These sessions also enabled organizational learning, as noted by Doctor # 11 who said “once a mistake is made, find out why so we can all move forward together.”

Similarly, organizational culture was identified as a secondary theme in question 10 when doctors described times when they did not seek external viewpoints. From the initial responses, there appeared to be an underlying assumption that existed among doctors in the organization that if a situation was identified as routine they were expected to self-manage the situation because they were perceived as being competent. The initial findings aggregated across all
interview questions suggested that the organizational culture provided formal structure and a
social environment where the climate encouraged collaboration among healthcare professionals
driven by transparency and “open” communication where individuals shared experiences,
practical insight, and lessons-learned to improve the quality of patient care.

Communication was identified as a primary theme from the data analysis on four
occasions or 33% of the time overall. This suggested that effective communication played an
important role when doctors and other healthcare professionals collaborated with one another.
For example, the types of communication strategies that doctors chose to initiate contact, the
types of communication medium or channels they chose to engage viewpoints and to organize
critical consultations, and the techniques they selected to corroborate information were critically
important to ensure accurate translation and application of meaning within and across
interdisciplinary teams. For example, communication was identified from question one where
doctors described the measures they took to engage the viewpoints of other healthcare
professionals on medical-related matters. Notably 79% of them responded that they initiated
direct communication (verbal or written) with other healthcare professionals while 21% noted
they indirectly accessed patient notes from other healthcare givers on the electronic medical
record (EMR), while Doctor # 2 noted it “depends on the clinical context.”

Similarly, communication was identified as a primary theme from the analysis of question
three where doctors described the types of occasions where language needed clarification to
ensure common understanding. It appeared from the responses that the majority of doctors
agreed language could change or alter the intended meaning of a request or claim when they
engaged with another healthcare professional. They cited technical jargon and figurative
language as being the biggest culprits and noted the potential of misinterpretation and argued that
clarification enabled them to establish common meaning which ensured that information transferred among individuals was utilized as intended. In addition, the initial findings suggested that some doctors were more proactive than others in taking measures to clarify the meaning of language when they engaged with other healthcare professionals. For example, Doctor #1 noted “I’m the bridge between the laboratory and the nurses… bring clinical information…from my field and ask them the questions about what I need to know.” In contrast, Doctor #9 noted “I presume if there’s a question they will call me directly” indicated a more reactive approach. The types of proactive measures that doctors took to ensure language clarification were described as clarifying ambiguous meaning, avoiding technical jargon and figurative language, and exercising caution when using abbreviations to account for audience-awareness.

Lastly, when doctors were asked about the measures they took to organize a critical consultation in question 11, communication was identified as the primary theme, as well. Doctors described their experiences to initiate contact with other healthcare professionals as being direct, indirect or informal. In a critical situation, doctors described that they exchanged various types of information to inform a situation. For example, attaining clinical data was critical as noted by Doctor #2 who took measures in “getting collateral information; medical records and information from other healthcare professionals.” In contrast, Doctor #1 noted that he provided practical information because it helped “explain what it is and why I’m concerned….not to direct their answer, but to let them know why I’m concerned.” In addition, doctors accessed historical data to provide insight about a patient’s history to inform a decision, as noted by Doctor #4 who emphasized one should “look at the medical history.”

Communication also served as one of the primary theme that resulted from the data analysis of question two when doctors were asked to describe the measures they took to ensure
meaning was interpreted and applied as intended. Doctors referred to various communication
techniques that ensured message clarity such as audience-awareness, message continuity, and
using explicit language. In some instances, doctors noted that they engaged in direct
communication (verbal or written) to corroborate or to obtain feedback from other healthcare
professionals while in contrast, some of the doctors used an indirect approach to corroborate
whether their actions were enacted by asking the patient as opposed to the other healthcare
provider as noted by Doctor #3 who argued “the ‘gold standard’ is to make sure to follow-up or
look back on the patient to ensure that your recommendations are being enacted on the way you
intended.” Indirect corroboration was identified 36% of the time as being the method used to
corrobore on mutual patients that indicated over one-third of the doctors preferred asking the
patient rather than the mutual physician on the case to avoid direct confrontation on whether
their orders had been enacted.

Collaboration and coordination was identified three times from the data analysis of the
interview questions as a primary theme and on three occasions as a secondary theme and was
identified a total of 42% overall. Like communication, collaboration and coordination served as a
primary theme in question two where the doctors described the measures they took to ensure
their message was understood and applied as intended. Responses emphasized behaviors that
required them to engage in meaning clarification and interpretation to attain mutual
understanding while in some instances, they shared their cognitive processes to provide insight
into their reasoning processes and intentions that guided their actions.

Collaboration and coordination was also identified as a primary theme from the data
analysis of question four when doctors were asked to describe the measures they took to
establish common understanding on lab reports and test results with other healthcare
professionals. Similarly, doctors noted the importance of confirmation and redundancy to corroborate meaning and described that they engaged in clarification, explanation, and interpretation to ensure everyone was “on the same page,” as noted by Doctor # 3 who emphasized “If talking with nurse about sodium level, make sure that we’re talking about same sodium level, same blood test, for the same patient” and noted “lots of confirmation between myself and other healthcare professional.”

In addition, collaboration and coordination also served as secondary theme on three occasions and was observed as an action that supported various processes. For example in question one, the initial findings indicated that doctors engaged in collaborative behavior when they engaged the viewpoints of other healthcare professionals and thus, served as a secondary theme that enabled communication to take place. The doctors described how they explained, interpreted, and clarified perspectives to establish mutual understanding when collaborating with others, as noted by Doctor # 12 who said “if further clarification is needed I email … specific questions using electronic medical record (EMR) or call them.”

Collaboration and coordination was also identified as a secondary theme in question nine when doctors were asked to explain when they rationalized their actions to other healthcare professionals. Although the culture set the tone and boundaries for social interaction, collaboration and coordination was used to describe the actions that doctors took to justify their decisions and reasoning processes to other healthcare professionals. For example, doctors shared personal perspectives with other healthcare professionals to inform on medical-related matters and then proceeded to explain their reasoning or cognitive processes behind those approaches to provide further insight. An illustration of this was noted by Doctor # 13 who stated "when there is three or four ways of managing this exact case … that’s when I justify to the multidisciplinary
board this is the way I would like to proceed with this patient’s surgery."

Similarly, collaboration and coordination was also identified as a secondary theme in question eleven where doctors were asked to describe the measures they took to organize a critical consult with other healthcare professionals. Although communication served as the primary theme from the data analysis of this question, the actions described by the doctors were collaborative in nature while the content emphasized evidence-based findings. For example, they shared diverse perspectives to identify the best course of action, gathered patient information to inform the context, and engaged in intersubjective mutuality to achieve consensus that enabled them to define the scope of a problem: Doctor 4 suggested the one "speak with the emergency room doctor and nurse ... look at record ... get an idea of what the patient suffered from ... medical history."

Evidence-based medicine was identified as a primary theme once and also as a secondary theme twice where it was observed 33% of the time overall. In question five, it served as the primary theme and described how doctors exchanged information that was consistent with the concept of evidence-based medicine. Doctors engaged with one another to reflect upon the latest scientific evidence and clinical expertise relevant to patient context in order to coordinate patient care. This was best described by Doctor # 13 who noted “data is published ... via national meetings ... this is how I become aware of the latest evidence-based technical data ... should do this with this data ... then I implement into my practice."

Similarly, evidence-based medicine was also identified as the primary theme from the data analysis of question seven and best described the measures doctors took to share practical insight with other healthcare professionals to inform on a clinical assessment. Doctors perceived practical insight as adding value to a clinical assessment when they were evaluating potential
conditions and treatments as noted by Doctor # 5 (“what somebody has …how they’re going to treat it or how they should treat it”) and Doctor # 7 (“having taken care of patients in similar situation … something you bring to the discussion”), while similarly, Doctor # 13 noted “I’ve always managed these patients in this way and it’s always been successful.”

Evidence-based medicine was also identified twice as a secondary theme on two occasions. For example, in question one, it was used to describe the types of information that doctors referenced when they engaged the viewpoints of other healthcare professionals on medical-related matters, as noted by Doctor # 13: “engage in how we practice evidence-based medicine…what’s the latest in every specialty.” Similarly, evidence-based medicine also appeared from the data analysis of question eight where doctors were asked to describe on what occasions they reflected upon lessons-learned to inform on clinical assessments. Doctor # 4 noted that “physicians reflect upon various studies to inform on the delivery of patient care… controlled and uncontrolled scientific studies, expert opinion studies, and meta-analysis… data provides the latest scientific evidence as an objective measure.”

Lastly, reflective learning was identified as a primary theme from the data analysis of the interview questions on one occasion and once as a secondary theme, as well. In question eight, reflective knowledge served to illustrate the types of knowledge that doctors reflected upon when asked to describe a typical situation where they referred to lessons-learned to inform on a clinical assessment. Both tacit (abstract, intuitive, experiential) and explicit (codified, written) knowledge were identified by doctors who described the types of knowledge they reflected upon when they shared lessons-learned. For example, they referred to experiential knowledge that resulted from personal experience, as noted by Doctor # 3, who said “use past experiences all the time to help…form treatment plans for current situations.” Similarly, they used technical
knowledge that was objective in nature, as noted by Doctor # 11 (“symptom is a key attribute”),
practical knowledge where it resided at the cognitive level, but was converted to explicit when
shared at the collective level as noted by Doctor # 6: “I talk to the specialist and ask, have you
seen this before, what would you do in this situation.” Also, self-critical knowledge where
individuals reflected in retrospect was noted by Doctor # 9, who self-criticized (“wish I was
more aggressive, had listened, had sent her to the cardiologist earlier”). Contextual knowledge,
as noted by Doctor # 11, is the “key … to take all that knowledge and apply to this one patient.”

In addition, lessons-learned was perceived by the majority of doctors as adding value to a
clinical assessment and served to provide guidelines as Doctor # 5 noted: “I’ve seen that 10%
act differently … use that experience to explain to other physicians.” In addition, it provided
perspective to explain the actions and outcomes of a particular case; Doctor # 6 explained that
“clinically this is what the situation was, this was the lab monitoring, and then the patient did not
live.” This enabled sensemaking to understand what took place, as Doctor # 6 noted “anytime a
patient passes away in which it was not predicted or anticipated there’s a lesson to be learned.”
Doctor # 5 said “it’s a lesson-learned that I’ve learned from me.” In addition, doctors used
lessons-learned to inform other healthcare professionals about the side effects of prescribed
medications as noted by Doctor # 4 who reflected that “patients with pain …who take non-
steroidal medication … have side effects … start bleeding … became weak.”

Similarly, reflective learning was also identified as a secondary theme from the data
analysis of question nine where doctors were asked to describe situations where they justified
their actions to other healthcare professionals. For example, Doctor # 13 noted it’s “usually
discussed after the surgery … at Mortality and Morbidity sessions … now that I know things
went wrong what have I learned from this and what could I have done differently”
In conclusion, the most prevalent themes identified from the data analysis of the twelve interview questions were communication and organizational culture which appeared most frequently as the primary theme on four occasions while collaboration and coordination appeared on three occasions. Organizational culture, collaboration and coordination, evidence-based medicine, and reflective learning were also identified as secondary themes in some instances where they served to support the primary theme. The next subsection is a presentation of the initial findings from the data analysis aggregated across all three phases of the study.

**Summary of the data analysis of semi-structured interviews.** The following section provides a discussion of the data analysis for each interview question. The primary theme(s) from each interview question was presented in addition to narration and relevant data.

Question # 1: Describe how you engage the viewpoints of other healthcare professionals on medical-related consultations.

This question was designed to understand doctors’ knowledge sharing behaviors and the types of measures they employed to engage the viewpoints of other healthcare professionals to collaborate on patient care. Communication was identified as the broad emergent theme that evolved from the data analysis of this interview question while collaboration and coordination, organizational culture, and evidence-based medicine were identified as secondary themes. The initial findings suggested that the actions doctors took to engage the viewpoints of other healthcare professionals was either through direct or indirect communication using various communication mediums while communication structures such as interdisciplinary team meetings were imposed by the Quality Committee that required doctors to engage in collaboration using the latest scientific research as evidence-based medicine.

Participant responses varied on how doctors engaged the viewpoints of other healthcare
professionals. Respondents noted using either direct or indirect communication channels or as Doctor # 2 explained it "depends on the clinical circumstance.” Communication channel referred to the type of communication medium (physical or mechanical) used to communicate with other individuals. For example, physical included face-to-face interactions while mechanical included interaction over the telephone, facsimile, or email. Half of the doctors interviewed described that they engaged in direct communication such as face-to-face or via telephone to initiate contact with other healthcare professionals as noted by Doctor # 11 who emphasized “I do it in person and verbally ... more effective ... as opposed to using technology.” Doctor # 4 said that it was “quite common for me to get a hold of the other doctor ... usually by telephone” and Doctor # 7 noted “a fair amount of discussion and information sharing takes place in an informal way such as walking into the office of a social worker.” Alternatively, Doctor # 10 said at "weekly tumor board meetings we meet as a group ... open forum."

In contrast, indirect communication referred to communication that took place using intermediary tools (computer) to access a provider's written notes as noted by Doctor # 8 "indirectly through the patient's chart to see what the other physician has written in the electronic record." Overall, 29% of the total number of doctors interviewed expressed a preference for using indirect communication to engage the viewpoints of other healthcare professionals. Table 4.10 is an illustration of the varied responses that described the types of actions doctors took to engage the viewpoints of other healthcare professionals taken from responses captured in question one.
### Table 4.10 Actions Doctors took to engage other viewpoints

<table>
<thead>
<tr>
<th>Communication</th>
<th>Initiate Direct Communication</th>
<th>Depends on Situation</th>
<th>Rarely Initiate Direct Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor # 3: “namely one way is direct communication”</td>
<td>Doctor # 2: depends on the clinical context</td>
<td>Doctor # 5: “If it’s a consult that I feel reasonably confident, I don’t usually consult other consultants”, “Rarely do I pick up the phone and ask another doctor”</td>
<td></td>
</tr>
<tr>
<td>Doctor # 4: “quite common for me to get hold of the other doctor…usually by telephone”</td>
<td>Doctor # 6: “we talk to them…to see what their impression is or what they were thinking about”</td>
<td>Doctor # 8: “indirectly through the patient’s chart seeing what the other physician has written on the electronic record…“I generally do not engage the other physician face-to-face or directly”</td>
<td></td>
</tr>
<tr>
<td>Doctor # 5: “If it’s something I haven’t dealt with recently usually consult to get up-to-date”</td>
<td>Doctor # 7: “Fair amount of information sharing…in an informal way…walking into the office of a case worker or nursing units”</td>
<td>Doctor # 10: “at weekly board meetings”</td>
<td></td>
</tr>
<tr>
<td>Doctor # 6: “we talk to them…to see what their impression is or what they were thinking about”</td>
<td>Doctor # 11: “do it in person and verbally; more effective”</td>
<td>Doctor # 13: “on everyday basis a phone call is most effective”</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.10 Actions Doctors took to engage other viewpoints

Table 4.11 below provides a further breakdown of the type of communication channel preferred by each doctor that further illustrated specifically the type of medium used to initiate contact.

Preference of communication channel as noted by doctors.

<table>
<thead>
<tr>
<th>Primary Theme</th>
<th>Most likely face-to-face</th>
<th>Most likely electronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Doctor # 3: “With physicians or nurses usually face-to-face”</td>
<td>Doctor # 2: “access patient notes on the electronic medical record…may be by phone or pager”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 6: “it happens face-to-face…on rounds”</td>
<td>Doctor #3: “over the telephone”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 7: “interaction is face-to-face, interdisciplinary team meetings”, “walking into the office of a social worker or into the nursing units”</td>
<td>Doctor # 4: “usually by telephone”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 11: “do it in person and verbally”</td>
<td>Doctor # 5: “Google on that topic”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 13: “interactions at meetings…share knowledge and feedback”</td>
<td>Doctor # 8: “on patient chart…seeing what the other physician has written”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doctor # 9: “might call….fax letter…send an email…tend to send flags to providers who use the same electronic record system”,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doctor #13: “on everyday basis a phone call is most effective”</td>
</tr>
</tbody>
</table>

Table 4.11 Communication Channel Preference
As noted in Table 4.11, some doctors interviewed preferred face-to-face verbal discussions while others identified using electronic form of communication to initiate contact with other healthcare professionals. In some cases, it was noted that either face-to-face or electronic communication was appropriate, for example by Doctor # 3 who said “with physicians or nurses usually face-to-face or over the telephone” As figure 4.6 illustrates, 36% of the doctors preferred face-to-face interaction as their primary means of initiating contact with other healthcare professionals to engage other viewpoints while 50% preferred some form of electronic method of communication (telephone, email or fax). Two of the 14% indicated either way was acceptable.

Figure 4.6 Face-to-Face versus Electronic Communications

Figure 4.7 is a breakdown of the physicians who specified using only face-to-face communication. Those who identified using face-to-face communication were predominately
male doctors (80%) while more than half of those who chose some type of electronic communication medium were female doctors (57%). Of those interviewed 14% (male and female) noted they were indifferent and would use either medium.

![Type of Communication Medium By Gender](image)

Figure 4.7 Communication Medium Preferences by Gender

While doctors identified the types of actions they took to communicate with other healthcare professionals, the organizational culture played an important role in facilitating communication by establishing structures within the organization that created formal opportunities for doctors to meet with other healthcare professionals. In addition, a transparent environment set the tone that was conducive for individuals to socially engage with one another. The organizational culture was a subtheme identified from the data analysis of this interview question, which indicated that formal structure was imposed by the hospital to ensure that knowledge sharing took place among healthcare professionals through various formal meetings held weekly or monthly within or across interdisciplinary teams as noted, for example, by Doctor
# 7 who noted “interaction can take the form of interdisciplinary team meetings”

Also, evidence-based medicine was a subtheme identified from the data analysis and served as the forefront of knowledge sharing based on the latest scientific research (controlled and uncontrolled studies, as well as, expert opinion) findings that doctors shared with other healthcare professionals. Doctors described how evidence-based research was used to provide insight as noted by Doctor # 13 who noted “we engage in how we practice evidence-based medicine … what’s the latest in every specialty.” Initial findings suggested that the majority of doctors engaged the viewpoints of other healthcare professionals through various communication channels (direct, indirect, or informal) which served to facilitate the knowledge sharing processes. Doctors noted that following initial contact with other healthcare professionals they proceeded to collaborate and coordinate action that was consistent with evidence-based medicine while structures, routines, and processes that were embedded within the culture facilitated the overall communication process. Previous experience impacted whether a doctor initiated consultations as noted by Doctor # 5 who said “I’m the senior guy … usually doctors ask me.”

Question # 2: Describe what measures you take to ensure your message is understood and applied as intended when you communicate with interdisciplinary healthcare professionals.

This interview question was designed to understand the measures doctors took to ensure that knowledge acquisition and knowledge application were understood as intended when doctors engaged with interdisciplinary healthcare professionals. It was meant to explore the doctors’ knowledge sharing behaviors and how they engaged with others to facilitate the process to ensure knowledge was transferred, acquired, and applied as intended. Collaboration and coordination was identified as the broad emergent theme while communication and organizational culture served as secondary themes. The initial findings suggested that
collaboration and coordination took place among interdisciplinary healthcare professionals to ensure message clarity. Individuals engaged in various methods of direct or indirect methods of corroboration and in some instances a combination of both techniques. For example, Doctor # 4 noted “I make phone calls, email messages, sometimes a text message if that’s appropriate” which indicated that he engaged in direct corroboration; in contrast, Doctor # 5 used an indirect approach “I follow-up with patients to see what’s happened is what I want to see happen.” Doctor # 3 noted “I do it face-to-face or over the telephone,” but also emphasized “the ‘gold standard’ is to follow-up on the patient to ensure your recommendations are being enacted” which was a combination of corroboration methods.

A key component of effective collaboration and coordination was communication, identified as a subtheme, where various initiatives were taken to ensure message consistency as noted by Doctor # 1 who said “to be accurate I talk with the nurses…describe to them the specific circumstances of what I’m looking for.” In addition, group interplay enabled individuals to achieve mutual understanding as noted by Doctor # 10 who argued that the “best forum for any questions…away from the mainstream is sitting together…group participation…we speak the same language.” This suggested that providing perspective was a key component of collaboration and coordination as was noted by many of the doctors who emphasized it “helps us get on the same page.” There was interplay among individuals to interpret, clarify, and explain inquiries using various communication techniques to ensure knowledge acquisition and knowledge application.

To ensure accurate message interpretation, the speaker took an audience-centered approach as explained by Doctor # 11: “one has to be mindful all the time of who they are speaking to, their language, and the level of knowledge capabilities.” In addition to
communication, a level of trust was implied among colleagues that were embedded in the organizational culture as noted for example by Doctor # 5 who stated “I trust they will call if they don’t understand.” As Doctor # 6 indicated “if there is a lack of understanding…I would not hesitate in saying, I do not understand.” Trust was a product of organizational culture and served to establish a transparent social environment that encouraged individuals to collaborate with one another to coordinate patient care. The organizational culture was also identified as a subtheme from the data analysis of this interview question. It defined the normative behaviors, set the tone for how people should engage with one another, and influenced how individuals perceived one another. For example, Doctor # 13 noted “there is a routine in place…each of us is expected to update the record so we can share information” which suggested that the hospital had structures to ensure doctors updated the electronic record; Doctor # 14 said “we have measures in place to close the loop on everything…we have referral tracking.” Table 4.12 illustrates the types of corroborative measures (direct and indirect) that doctors took to ensure that knowledge acquisition and knowledge application were interpreted and applied as intended.
Table 4.12 Corroborative Measures initiated by Doctors

As noted above, doctors engaged in both direct and indirect means of corroborating data with other healthcare professionals. Some doctors preferred to have direct contact with healthcare professionals while others took a more indirect approach by asking their patients to confirm whether their instructions had been enacted. In addition, some doctors were proactive while others were reactive to corroborate data. Table 4.13 below illustrates the doctors who took proactive initiatives to confirm message content and those who took a more reactive approach.
### Table 4.13 Proactive versus Reactive Initiatives Corroboration

As noted from the responses, some doctors took proactive measures such as Doctor # 11 who explained “rather than just give an answer, I tell them ‘why’ I am doing it” while some were reactive as noted by Doctor # 9 who would “presume if there’s a question they will call me directly.” Figure 4.8 illustrates the breakdown by percentage of those doctors who either initiated direct or indirect corroboration and for those who employed multiple corroborative measures.
Figure 4.8 Direct and Indirect Corroboration Techniques

As noted by the data, 50% of the doctors engage in direct corroboration while 36% engage in indirect corroboration, and 57% use a combination of corroborative techniques to ensure message understanding.

The initial findings suggested that corroboration was described as being a key component of knowledge acquisition and knowledge application. The question provided insight into how doctors engaged in knowledge sharing behaviors to ensure the accuracy of message interpretation and application when they shared information with other healthcare professionals. Doctors achieved this purpose by engaging in collaboration and coordination to clarify meaning with one another through effective communication that was facilitated by a transparent social environment. This encouraged transparency through various communication processes and structures that served as a normative routine and were embedded within the organizational culture. Figure 4.9 portrays a conceptual illustration of Knowledge Acquisition and Knowledge
Question # 3: Describe a typical situation where language needed clarification to ensure shared meaning among healthcare professionals.

This question was designed to understand the knowledge sharing behaviors of doctors in situations when the use of language could potentially lead to misunderstandings when shared with other healthcare professionals, and to identify the measures taken to ensure the clarity of message content. Communication was the broad emergent theme that was identified from the data analysis of this question. The question elicited various responses related to potential causes of misinterpretation and misunderstanding. Participants described that many words have multiple meaning, ambiguous meaning or subjective meaning which could impact accurate interpretation while jargon, abbreviation, and context could have semantic variation, and accents or dialect may be difficult to comprehend which can alter understanding. The doctors described
various situations where language needed clarification to ensure shared meaning when engaging with other healthcare professionals.

The initial findings suggested that doctors were aware of the potential problems that meaning variation could create. For example, Doctor # 13 said “jargon can get a little confusing” and Doctor # 11 argued “some specialty domains are rife with abbreviations that their communications are sometimes not understandable” and Doctor # 3 emphasized “just clarifying is a big issue in medicine.” This question provided insight into the main research question that sought to understand doctors’ knowledge sharing behaviors based on their rich descriptions of a typical situation where language needed further clarification to ensure shared meaning.

Unfamiliar language, jargon, and abbreviations were frequently referenced as situations that needed further clarification to avoid misinterpretation. Doctors described preemptive measures they took to clarify or avoid the use of certain language that could be misinterpreted. For example, Doctor # 10 said “sometimes we have to repeat with different descriptions,” Doctor # 12 said “try to be through in my notes and explain what I’m looking for and the purpose of the medical plan.” Doctor # 2 noted “saying it in plain English” and Doctor # 8 emphasized “try very hard not to use Endocrine specific jargon.” To avoid potential misinterpretation it was best to be proactive as Doctor # 1 said “important in clarification to specify what it is that you’re looking for in literal graphic terms … if not, that person’s meaning may not coincide with yours and you might be working at cross-purposes.” From the initial findings it was apparent that doctors understood the importance of taking initiatives to ensure language clarification and in some instances to avoid the use of certain language that had potential for misinterpretation as noted by Doctor # 11: “the use of abbreviations has been an ongoing problem in medicine” and [one must] “remember that the listener may not know those abbreviations.”
Question #4: Describe what measures you take to establish common understanding with other healthcare professionals when you discuss lab reports and test results?

This question was designed to understand how doctors established common meaning with other healthcare professionals when they discussed clinical data (blood tests, laboratory results, clinical exam) specific to patient care. Specifically, it explored the knowledge sharing behaviors of doctors and the actions they took to engage in social interactions to establish mutual understanding when sharing technical data as noted by Doctor #3 who emphasized there was “lots of confirmation between myself and other healthcare professional … this is the primary measure that I use to ensure that we are on the same page.” Collaboration and coordination was identified as the broad emergent theme from the data analysis of this question. Initial findings indicated that doctors engaged in social interaction to interpret, inform, and confirm clinical findings and exams through interplay with other healthcare professionals.

Redundancy and confirmation were identified as being very important components of effective collaboration among healthcare professionals as noted by Doctor #3 who said, “it is most important that we’re talking about the same lab report…make sure that we’re talking about same sodium level, same blood test, for the same patient” and Doctor #13 who emphasized it was “really critical that we meet and look at the same study.” Additionally, several doctors noted that data enabled them to define the context and provided insight about the extent of the problem as noted by Doctor #5 who said it was important that we “understand the scope of what we are talking about” while also pointing out “we go through the differential with them (team) to establish common understanding to ensure we are looking at the abnormal…so we understand the scope of what we’re talking about.” In comparison Doctor #10 noted that as a team they worked together to achieve consensus and noted we “all agreed as a group what the important
things are, descriptive terms,” and Doctor # 1 emphasized the “patient is more than sum of their lab values.” There was an underlying assumption of competence among colleagues. For example, Doctor # 4 said we’ve all gone to medical school and we all share a body of knowledge” while Doctor # 6 noted that “medical jargon is very common and standard….everybody goes through it at medical school”

In addition, doctors emphasized the importance of maintaining contact with one another as noted by Doctor # 9, who said we “must keep other provider in the loop,” and Doctor # 8, who noted that “if really unusual I would call or send a flag to the primary care provider,” while Doctor # 11 noted “I may print out something on the computer and put in the record about a condition that an unusual manifestation of a common condition.”

The initial findings indicated that doctors engaged with one another to collaborate on lab reports and test data with other healthcare professionals to establish common understanding that enabled them to provide optimal patient care. This was best summarized by Doctor # 3 who said “if talking with nurse about sodium level, make sure that we’re talking about same sodium level, same blood test, for the same patient.” Doctors also emphasized the importance of documenting all lab data and test results in the electronic medical record (EMR) to ensure other doctor’s had access to the information as noted by Doctor # 12, who said “enter all tests … interpretation … instructions into electronic medical record that is shared.” These behaviors suggested that doctors engaged in collaboration and coordination with other healthcare professionals to ensure common understanding.

Question # 5: Describe how you use clinical data to assess and prescribe patient care with other healthcare professionals?

This question was designed to explore how doctors use clinical data (technical
knowledge) with other healthcare professionals to assess and prescribe patient care. Specifically, the question was designed to explore the role clinical data played when doctors engaged with one another to assess and prescribe patient care, and to identify how they used clinical data independently or in combination with other types of knowledge to inform on patient-related decisions. Evidence-based medicine was identified as the broad emergent theme that best described the doctors’ responses on how they took initiatives to establish common understanding when referring to clinical data. The doctors described their actions as collaborative, in which they engaged with one another to achieve shared meaning and consensus by sharing perspectives with one another and data that reflected the latest scientific evidence from current research and then applied relevant to the patient context. The actions they described were consistent with the conceptual foundation and meaning associated with evidence-based medicine. Each doctor provided insight on how they interpreted and used clinical data with their colleagues.

Doctors indicated that clinical data were important components of patient assessment, which enabled doctors to confirm or dispute a hypothesis as noted by Doctor # 14 who said it “usually confirms whether what I’m thinking is actually happening” and Doctor # 12 who used data to “tease-out diagnosis.” Several physicians emphasized that clinical data was always relative to the patient context since each individual was unique; for example Doctor # 7 said the “lab data must be put into context of overall assessment and overall formulation of that particular clinical situation.” Doctor # 3 emphasized that all of the data combined provided a holistic understanding of the situation, which enabled him to make an informed decision and noted “I use clinical data in a variety of ways … based on history that patient gives me, findings from my exam, and accompanied laboratory data, I form my clinical expression.” Despite that fact that clinical data was deemed important by all of the physicians, Doctor # 1 warned that lab reports
and x-rays should not be emphasized because in some cases the numbers may not accurately reflect a patient’s condition and noted in hindsight “the patient is not just their x-ray…. the patient got better and we elected to treat the x-ray.” Similarly, Doctor # 7 emphasized that its “rare to look at lab results in narrow or isolated way and then prescribe treatment irrespective of any other factor.”

In contrary, Doctor # 11 discussed that some situations were unique and required further clinical testing to rule out potential conditions and noted that “sometimes, if you don’t have sufficient precision you resort to lab testing, x-rays, and the like; can get quite exhaustive if disease is unusual.” Doctor # 8 also emphasized the importance of clinical data because the data provided an objective measure that could be used to determine how to proceed; she noted that “depending on the test results, I decide what changes need to be made … can’t look at patient and tell if their diabetes is in or out of control; use blood test to determine treatment plan.”

Doctors emphasized the latest scientific evidence as a basis for their assessments as noted by Doctor # 6: “I look at the reading, look at patient … ask do these things match … is this what I’ve read in the books, and this is how will I follow through.” Doctor # 13 emphasized “we become aware of the latest evidence-based technical data that says … you should do this with this data…then I implement this into my practice.”

This question provided insight about how doctors used technical data to assess and prescribe patient care. Doctors described that clinical data supplemented subjective information and served as an objective measure to interpret a patient’s status. Their behaviors were consistent with evidence-based medicine where individuals engaged in sharing the latest scientific research as guidelines to provide insight on how to interpret and use clinical information and were combined with clinical perspectives to form patient care relevant to the
Doctors described that clinical data was most effectively utilized when interpreted relative to the patient’s status and used in combination with clinical expertise to form impression.

Question # 6: Based on your experiences, describe what benefit social conversation has contributed to your working relationships with other healthcare professionals?

This question was designed to explore what benefit social (practical) conversation had on working relationships among healthcare professionals specifically, the perceptions that doctors had about social conversation as a type of knowledge shared with other healthcare professionals to benefit their working relationships. The broad emergent theme that resulted from the data analysis of this question was organizational culture which suggested that the hospital influenced the types of social interactions and behaviors that took place among healthcare professionals.

The initial findings suggested that most of the doctors felt that social conversation was very beneficial to building social rapport with their colleagues and noted that it fostered better working relationships with them, as a result. Various responses were provided to describe the benefits of social conversation and its impact on the working environment. For example, Doctor # 11 emphasized that “building social rapport … enabled individuals to share vulnerabilities” and noted “it enables them to work better together … especially if an individual can share experiences across different parts of the healthcare team” while Doctor # 3 emphatically stated that “establishing a good social interaction is key to good communication."

In addition, some physicians noted that building relationships enabled them to “learn to be a better colleague to that person if you understand their background, stressors, and different obligations” as noted by Doctor # 13. In addition, building social rapport was also perceived as a way to create stronger relationships among colleagues as Doctor # 5 noted social interaction
“encourages a teamwork mentality” and Doctor # 11 volunteered “building social rapport makes people feel like part of a team.” Another proponent of social interaction, Doctor # 3, emphasized that “once there is a comfort level with the other person data flows between the two parties more easily and if you’re more comfortable … it forms a level of trust.”

In addition to establishing comfort zones social conversations enabled doctors to establish trust as noted by Doctor # 5 who argued that “when you put the white coats down and we’re out in a social it’s perceived as a level playing field” and emphasized that “barriers are dropped … and hopefully, when you come into the working environment the barriers stay dropped.” Social conversation was also important because it created a transparent working environment as noted by Doctor # 6 who said “it makes the day go by faster because eventually your work becomes your community.” However, some doctors noted that due to various constraints such as positional status, time, physical location, infrequency of hospital visits, and the elimination of social pharmaceutical luncheons, some of the opportunities that enabled them to engage with other healthcare professionals have been curtailed.

For example, Doctor # 10 indicated “not much time for socializing” and Doctor # 7 said “I’m a medical director and social conversations tend to be very brief and superficial” but noted “the staff psychiatrists tend to have lunch with staff.” In addition, some organizational changes impacted the frequency of social interactions as noted by Doctor # 8 who said “we used to have drug lunches fairly often … see other physicians … now we don’t have drug lunches” and noted “social conversations are much less frequent now than in the past … it is not routine anymore.” Physicians visit the hospital less since the hospitalists were in charge of managing inpatient care which has resulted in seeing colleagues less frequently. Table 4.14 is an illustration of how social conversation was perceived by the doctors.
<table>
<thead>
<tr>
<th>Primary Theme</th>
<th>Perceive Benefit</th>
<th>Do not Perceive Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Culture</td>
<td>Doctor # 5: “eliminates barriers”, “when you put the ‘white coats’ down and we’re out in a social it’s more of a level playing field at least it is perceived as a level playing field”</td>
<td>Doctor # 7: “social conversations tend to be very brief and superficial…tend not to do”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 8: “makes you feel more comfortable calling the person for ‘curbside information’”</td>
<td>Doctor # 8: “social conversations are much less frequent now than in the past…it is not routine anymore”</td>
</tr>
<tr>
<td></td>
<td>Doctor # 11: “building social rapport makes people feel like part of a team”</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.14 Doctor’s Perceived Value of Social Conversation

From the initial findings, it appeared that the organizational climate encouraged doctors to socially engage with one another through weekly and monthly intradepartmental and interdisciplinary meetings and at professional development sessions where they had the opportunity to establish rapport. These formal opportunities enabled doctors to establish relationships and trust face-to-face with other healthcare professionals and maintained using the electronic medical record (EMR). The EMR served as a system implemented by the organization as a structure that enabled doctors and other healthcare professionals to capture and share knowledge as noted by Doctor # 13 who emphasized “there is a routine in place … each of us is expected to update the record so we can share information.” This suggested that the computer system served as an intermediary collaborative tool that enabled doctors to communicate as noted by Doctor # 9 who said “I send curbside note asking what do you think and follow-up on that, I know who they are, don’t know them socially, but met them at meetings; trust them.”

Question # 7: Describe a typical situation where you would provide practical insight to add value to a clinical assessment when you engage with other healthcare professionals?
This interview question was designed to identify when doctors shared practical insight (experiential, abstract, intuitive knowledge) to add value to a clinical assessment when they engaged with other healthcare professionals. Specifically, this question sought to gain perspective on how each doctor perceived the value of personal insight and how it added value to a clinical assessment and when it was most useful.

Collaboration and coordination was identified as the broad theme and best described how doctors engaged with one another to share practical insight. The initial findings suggested that sharing personal insight with other healthcare professionals was perceived as adding value to a clinical assessment and provided experiential knowledge and tacit expertise to inform clinical assessments although Doctor # 5 noted that a "lot of professionals kind of closed to receiving other people's experiences with things." When doctors described their experiences of shared practical insight with other healthcare professionals and how it was useful, they responded that it provided insight to inform various types of situations and complex decisions.

For example, many of the doctors emphasized that past experience, outcomes, and approaches served as a guideline for clinical assessment as noted by Doctor # 2 who said “one might share past experiences with previous patient outcomes and approaches,” while Doctor # 6 noted “if your mind doesn’t know it, you won’t be able to diagnose it.” Also, past experience served as a reference tool for physicians and enabled them to decipher among vast amounts of data and provided context to a clinical assessment as noted by Doctor # 3: “with all the data coming in, we have to synthesize it and apply our practical knowledge.”

Practical experience also enabled physicians to assess the seriousness of a condition and the appropriate course of testing as noted by Doctor # 4 who said “make an assessment of how serious….what testing needs to be done because I’ve been through it so many times.” It was also
obvious that having been in a similar situations provided insight as noted by Doctor # 11 who said “seen a lot of things multiple times…all those things are clues; they don’t teach you that in medical school.” Doctors often reflected upon past outcomes to determine how to proceed with a current course of action as noted by Doctor # 8 who said “my rule of thumb… comes from experience” and noted “if changing the dose of medicine I generally do it by 20% at a time.”

Table 4.15 below illustrates how physicians’ perceived sharing practical knowledge with other healthcare professionals’ added value to a clinical assessment.

<table>
<thead>
<tr>
<th>Primary Theme</th>
<th>Acceptant</th>
<th>Resistant</th>
</tr>
</thead>
</table>
| Evidence-Based Medicine | Doctor # 1: “healthcare professionals want to know what it is you are talking about…explain diagnosis…bring your experiences to their understanding”  
Doctor # 6: “predicting takes time to know…that is where I help my colleagues.  
Doctor # 7: “over the years I’ve done many different things …something you bring to the discussion when taking care of patients in the hospital.”  
Doctor # 8: “my rule of thumb comes from experience…so that the primary care or other physician I was talking to could apply that to other person”  
Doctor # 11: “seen a lot of things multiple times…I know what they look like …all these things are clues…they don’t teach you that in medical school”  
Doctor # 14: “Doctor felt he had to tell someone what was happening.” | Doctor #5: “lot of professionals kind of closed to receiving other people’s experiences…made up their mind on what somebody has and how they’re going to treat it or how it should be treated” |

Table 4.15 Doctors’ Perceived Practical Insight Added Value

The majority of doctors had a favorable perception towards sharing practical insight and socially engaging in collaboration and coordination with other healthcare professionals to provide personal perspectives, experiences, and clinical expertise to inform a clinical assessment. Specifically, doctors shared past outcomes, different evaluative techniques and diagnostics, methods, approaches, and treatments as well as, how to identify abnormal situations and
behaviors.

Question # 8 Describe a time when you reflected upon “lessons-learned” to consult on a medical matter and tell me what types of information you provided that added value to your discussion?

This interview question was designed to identify the types of knowledge that doctors shared with other healthcare professionals when they reflected upon lessons-learned to consult on a medical-related matter. Reflective learning was identified as the primary theme from the data analysis of this interview question and was concurrent with properties for learning using lessons-learned and story-telling to reflect upon past experience while evidence-based medicine was a secondary theme and described the types of knowledge doctors reflected upon to inform on clinical decisions.

Doctors referenced the guidelines established by the medical profession that was based on the latest empirical findings from scientific research to prevent, diagnose, and treat medical conditions. This information reflected “how the rest of the medical profession has had the experience” as noted by Doctor # 1 and served as lessons-learned that could be used to inform their practice. As a result, evidence-based medicine was identified as a secondary theme from the data analysis of this question. According to all of the doctors lessons-learned served to inform on current decisions as Doctor # 4 noted, stating "non-steroidal medication ... has side effects”

Some doctors noted that lessons-learned resulted from practical insight where lived experiences provided perspective as noted by Doctor # 6 who said "I talk to the specialist and ask, have you seen this before, what would you do in this situation?" In addition, other doctors noted that experiential learning provided insight to inform the types of actions they took to assess
and prescribe patient care as Doctor # 3 noted: “use past experiences all the time to help us kind of form treatment plans for current situations.” Some doctors argued that past experience enabled them to make sense of unexpected events as noted by Doctor # 5 who stated "drawing on my experience to explain ‘curve balls’ ... that's where my experience comes in … use that experience to explain to other physicians who are expecting the usual course of events that these ‘curve balls’ can happen."

Experiential knowledge also served as a reference tool for educational purpose where doctors shared lesson-learned with other healthcare professionals as noted by Doctor # 3 who stated "I also use past faults or mistakes to help teach my students about clinical scenarios and possible pitfalls and how to best avoid them.” Past experience also enabled doctors to hone in on a problem when patients provided many symptoms to focus on, as noted by Doctor # 11 who argued it was about “how to take all that knowledge and apply to this one patient.” The initial findings suggested that doctors reflected upon scientific published data that served as an explicit form of information providing doctors with an objective perspective on how to proceed with patient care. Complementary to the use of scientific data, doctors described using experiential or self-critical knowledge to inform on medical-related matters. The information was either tacit or explicit where doctors presented multiple perspectives to inform on complex decisions and through intersubjective understanding they coordinated action. The data analysis from this question initially suggests that the types of data reflected upon and the types of actions used to share knowledge were consistent with the concept of evidence-based medicine which was identified as the broad emergent theme.

Question 9: Describe a typical situation when doctors rationalize their actions to other healthcare professionals.
This interview question was designed to understand when doctors justified or rationalized their actions to other healthcare professionals. Specifically, the question meant to explore the types of situations that prompted this behavior and the types of actions doctors took to explain their behaviors. Organizational culture was identified as the broad theme from the data analysis of this question while collaboration and coordination and reflective learning served as secondary themes. Organizational culture was concurrent with properties that emphasized collective behavior among individuals in an organization who shared norms, values, vision, and beliefs. Doctors noted there were certain industry requirements where doctors felt compelled to explain and reason their behaviors as noted by Doctor # 9 who emphasized that she explained to the primary care doctor that the “standard of care says if your thyroid nodule is over one centimeter one should have a biopsy.”

Doctors shared their experiences with colleagues in a forum environment. As a tradition of medicine, there were monthly meetings known as Morbidity and Mortality Conferences where doctors shared past mistakes and reflected upon certain actions they took to justify or provide reason for their behaviors. As Doctor # 11 noted “this is a well-established tradition in medicine…we tell the team what we expected to happen didn’t happen … go over with doctors why you did certain things.” Comparatively, Doctor # 10 noted that “during surgery immediate decisions based on your experience, data … then sit together as a group … explain why you did that … try to rationalize and explain it.”

While the culture set the foundation for transparency and disclosure, collaboration and coordination was identified as a secondary theme from the data analysis of this interview question that described the doctors’ actions to justify their behaviors. The doctors described how they engaged in interplay with their colleagues to justify actions, provide perspectives,
explanation and clarification of approaches, and achieve consensus. Doctor #1 emphasized that “communication is about sharing not only of information but sharing of understanding.” In addition, reflective learning was also identified as a secondary theme from the data analysis of this interview question. Doctors proceeded to explain their actions and the reasons for why certain actions were taken and in retrospect whether their decisions resulted in the types of outcomes they anticipated or whether in hindsight other course of actions may have been more successful.

Much disclosure took place in a forum among colleagues where doctors reflected upon past outcomes as noted by several doctors. For example, Doctor #5 emphasized “when we do have an opportunity to go through what we were thinking and why we did it … it’s usually in a negative context” and noted “wish we took more general cases … go through them and have open discussion about why people did what they did without necessarily a bad ending.” The interview question provided insight into the approaches doctors took to justify their actions to other healthcare professionals and the types of situations where it was most frequent. As described by many of the doctors, the organizational culture played an important role in defining the behavioral expectations of its employees that emphasized disclosure and was best summarized by Doctor #11 who noted “environments that are transparent and supportive are good, if not, there’s no improvement; everyone is afraid….we have a pretty ‘open’ environment.”

Question #10: Describe a typical situation when a doctor would assess and prescribe patient care without any external input?

This interview question was designed to better understand when doctors had not perceived a need to take action to collaborate with others to seek external viewpoints. Doctors
described the types of situations that did not warrant seeking other viewpoints. Doctor # 6 noted “seen things many times before…confident this is what it is…all the data is pointing in one direction” which summarized the essence of the responses that resulted from the asking of this question. Organizational culture was identified as the primary theme from the data analysis.

Additionally, some physician specialists felt it was their responsibility to resolve a patient-related matter if they had been contacted by a primary care provider (PCP) to consult on a case and so they did not seek other perspectives as noted by Doctor # 8 who stated “I always inform the primary care doctor on what I’m doing, but generally do not involve them in the decision … I’m a specialist … the PCP has sent them to me to find out what to do” and Doctor # 1 argued “I don’t expect the nurse to know as much as I know about my selected field … it is my job to teach the nurse.”

On several occasions the doctors noted that if they saw a patient whose symptoms were straightforward and did not appear to have complications they would not seek other viewpoints. For example, Doctor # 6 noted “seen things many times before … confident this is what it is … all the data is pointing in one direction” and Doctor # 7 similarly added “cut and dry issues … clear to see … easy to diagnose … and treatments are fairly straightforward.” Comparatively, some doctors simply stated they did not make it a practice to seek other viewpoints unless an extreme case because they felt they would be contacting other physicians continually if otherwise, as noted by Doctor # 12 who stated “I don’t usually feel the need to discuss” while similarly Doctor # 14 stated “I see the patient and I treat him … usually do not consult.”

In addition, there was an underlying assumption that sending patients to specialists was perceived by the organization to be costly as noted by Doctor 9: “there is a push-back not to use the specialist; it’s costly … get this test done … costs start to escalate.” The initial findings
suggested that roles, routines, and underlying assumptions served to define the types of actions
doctors took when they assessed and prescribed patient care, and specifically whether they
engaged the viewpoints of other healthcare professionals. Culture also played a role by setting
regulations on what types of knowledge physicians could share with other healthcare
professionals or the types of information they had access to as noted by Doctor # 2 who stated
“sometimes I’ll be prescribing care without the full picture because of the patient’s preference.”

Most importantly, doctors noted that during critical situations there was little time to
consult other viewpoints. Doctor # 3 emphatically stated “in the critical acute care setting … life
or death decisions have to be made in a matter of seconds or minutes…don’t have the time to
consult with other individuals for their input.” Their remarks suggested that critical situations
required individuals to make independent decisions to ensure patient safety. In some situations
internal policies or regulations presented restrictions to certain types of information sharing,
since, as Doctor # 2 noted, “sometimes prescribing care [occurred] without the full picture
because of the patient’s preference.”

Figure 4.10 illustrates the occasions when doctors did not seek external viewpoints from
other healthcare professionals.
Figure 4.10 Occasions Doctors Did Not Seek External Viewpoints

The data indicates that when handling routine situations seven of the 14 doctors (50%) argued that they did not seek external viewpoints from other healthcare professionals as noted by Doctor # 12: “when things are typical straight-forward presentations … don’t usually feel the need to discuss.” Six were specialists in their respective field. As noted, two of the 14 doctors (14%) emphasized they rarely sought external viewpoints from other healthcare professionals because they felt it was their job and responsibility to identify the problem. Comparatively, two of the 14 doctors (14%) noted that experience and familiarity enabled them to make decisions on their own. Each of these doctors was a specialist and had over 25 years of experience in their respective fields.

In addition, three of the 14 doctors (21%) emphasized that when they faced a critical situation there was no time to engage other viewpoints. Lastly, two of the 14 doctors (14%) noted that certain restrictions prevented them from seeking external input such as policies that discouraged seeking specialty consults and regulations that prohibited the sharing of certain
private information. This interview question specifically explored the reverse-side of knowledge sharing by providing insight about the cognitive processes of doctors who described their actions on when and why they did not engage in collaboration to coordinate care. It provided a more in depth and nuanced understanding of the overall knowledge sharing behaviors of doctors.

Question #11: Describe what measures doctors take to organize a critical consultation with other healthcare professionals.

This interview question was designed to identify the types of actions that doctors took to collaborate with other healthcare professionals when they organized a critical consult. Specifically, the question sought to find the communication initiatives they used to initiate contact, the evaluative techniques employed to define the scope, and the types of information they shared to provide further insight on a critical matter. The initial findings suggested that the majority of doctors perceived direct contact with another physician as the most appropriate way to organize a critical situation. Doctor #11 noted “it’s my contention…if critical consult there ought to be phone calls directly from the doctor who’s ordering….to doctor who’s on the other end” which reflected the overall sentiment from the majority of doctors who responded to this question.

Communication was identified as the broad theme from the data analysis of this interview question while collaboration and coordination were identified as a secondary theme. The majority of doctors noted that direct communication with the other physician was the most effective means of establishing contact in a patient-related crisis as noted by Doctor #3 who stated "communicate directly with the other physician immediately...whether the communication takes place face-to-face or over the phone ... to manage a very critically acute case ... it usually happens physician to physician." More commonly, doctors identified the telephone as their first
choice as noted by Doctor # 11 who strongly emphasized “It’s my contention…that if it is a
number three consult (critical) there ought to be phone calls directly from the doctor who’s
ordering …to doctor who’s on the other end.” In addition to the use of the telephone, other
physicians noted they utilized computer-mediated communication through the electronic medical
record (EMR) to initiate contact with other healthcare professionals, provided they were on the
same system. Doctor # 11 also posited “most consultations are done through the computer,” but
emphasized he was a proponent of using the telephone in a critical situation and noted “there
ought to be phone calls directly from the doctor who’s ordering …to the doctor who’s on the
other end.”

Yet, other physicians noted informal communication was an effective communication
channel, but depended on the level of urgency to determine whether it was a viable approach for
a particular situation. In this instance, knowledge sharing was serendipitous in nature and took
place in an informal setting; Doctor # 7 noted that one might “run into a local cardiologist … and
say, without identifying any information or without requesting a formal consult, this is what’s
going on, what do you think?… I get curb-sided all the time by other colleagues.” Besides the
communication techniques used to initiate consults, it was also important to gain better insight
on the types of actions they took to engage with one another to coordinate action. Collaboration
and coordination was identified as a secondary theme from the data analysis of this interview
question.

By engaging with other healthcare professionals, doctors were able to establish priorities
and define the context or scope of a particular problem. Doctor # 5 spoke about “getting the test
results to help stratify the severity of those problems” while Doctor # 1 similarly noted it was
key to “explain to the nurse to explain to the physician what the priority is and why I’m
concerned.” In addition, doctors cooperated to define the scope of the problem, as Doctor # 5 noted, “bringing in specialists, tertiary care…subspecialists to get more data to determine the best way to handle the situation.” While in critical situations some doctors retrieved documentation; Doctor # 2 said to “try to be as thorough as possible…including getting collateral information from …medical record and other healthcare professionals.”

This interview question provided insight into doctors’ knowledge sharing behaviors and, specifically, the actions they took to engage with other healthcare professionals in critical situations. In addition, it identified the types of knowledge that doctors shared with other healthcare professionals to consult on a critical matter. Doctors shared technical information (lab and test results), practical (diverse perspectives) and historical data.

Figure 4.11 illustrates the types of actions that doctors used to organize critical consults with other healthcare professionals.

![Actions Doctors' Took to Organize Critical Consults with other Healthcare Professionals](image)

Figure 4.11 Types of Actions Doctors’ used to Organize Critical Consultations

As noted, all of the doctors identified the telephone as the most effective means to communicate with other healthcare professionals to organize a critical consult. Additionally,
50% of those doctors also noted that the types of actions taken were contingent upon the situation and dictated whether one used the computer or fax to communicate, and whether they gathered data or sought other perspectives. Doctors referenced using the computer system 14% of the time to formally request consultations, while one doctor (7%) noted using the fax. Alternatively, 14% of the doctors engaged the viewpoints of external specialists when faced with a critical situation while 21% of the doctors self-initiated the retrieval of relevant patient information to inform on a critical matter as noted by Doctor # 2: “getting collateral information from …medical record and other healthcare professionals.” This interview question identified the communication techniques used to organize a critical consultation and provided further insight and how doctors collaborated with one another during a critical situation to define the scope to effectively coordinate action with one another.

Question # 12: Describe the benefit of establishing personal communication channels with other healthcare professionals and how it fosters your working relationships?

This interview question was designed to understand the benefits of establishing personal communication channels with other healthcare professionals and how it fostered their work relationships. Specifically, this question explored the cognitive reasoning processes that took place at the individual level that precipitated the actions one took to build social rapport with their colleagues at the collective level, and to gain insight into how doctors perceived the value of personal communication channels to foster their working relationships with other healthcare professionals. Organizational culture was identified as the broad theme from the data analysis of this question. The initial findings indicated that doctors perceived a benefit to establishing communication channels with other healthcare professionals to facilitate their working relationships. Doctors identified various benefits associated to personal communication channels
such as an ability to create social capital, facilitate knowledge management, and an improved standard of care through “best practices.” In addition, they described how building social rapport created trust and mutual respect among colleagues that enabled them to cooperate with one another to effectively coordinate patient care. This suggested that personal communication channels created a transparent organizational culture among individuals that encouraged them to engage in teamwork and collaboration with one another.

Doctors noted that effective patient care resulted from working together as a team where individuals engaged with one another to achieve desired results. Establishing personal communication channels was perceived as a means of building relationships that enabled doctors to work more effectively in the work environment. Doctor # 6 noted that “integral to patient care delivery is the collaboration and collegial relationships between different specialists…so we can get desired results.” As part of the team environment, doctors perceived that communication channels enabled them to acquire knowledge from colleagues that could be used to make effective patient care decisions. The ability to share and acquire knowledge from one another was seen as a very important part of knowledge management within the hospital as noted by Doctor # 7 who emphasized “having direct lines of communication with colleagues in different areas…very important to taking care of patients” and added “way a doctor can become immediately smart…have the ability to message other physicians about questions and issues,” while Doctor # 2 perceived communication channels as “more likely to impart information.”

In addition, establishing rapport within and across boundaries enabled doctors to consult with colleagues when needs arose. Doctor # 9 also noted rapport “enables much better care…know enough about the specialists…I could say this is what I think is going on…what I’ve done, any other thoughts?” The doctors also noted the social environment as being conducive for
building social rapport with colleagues as Doctor # 11 noted: “because of the personal communication channel with specialist….we are able to facilitate the plan…patient feels like they are being taken care of … by adding personal touch, I think you are in a much stronger place.”

It was also noted that personal communication channels facilitated the communication process where individuals responded to one another on a timely basis, as noted by Doctor # 14 who stated “communication happens right away, people you know will send you a flag right back…you know who to go to and you know who does what…simple things like that make it easy.” Many of the doctors noted that personal communication channels enabled them to feel comfortable working with one another as noted by Doctor # 6 who said effectiveness “has more to do with how comfortable two providers are; very important to establish relationship with all of the consultants and the nurses …so we can get desired result.” Doctors also noted that personal communication channels enabled them to bond with their colleagues because there was a certain level of trust and mutual respect that resulted from having established a social relationship which in turn made them feel comfortable asking them questions or directing patients their patients to them. Doctor # 8 stated “she’s the doctor by far, the person I refer patients to because I know she will be responsive,” while Doctor # 12 also noted “people become more trusting …more likely to send you more patients.”

Doctors described various benefits to establishing personal communication channels with colleagues, and noted that it added value to their overall working relationships. The most frequent response was that it enabled doctors to be more responsive to colleagues as was identified by eight of the doctors (57%). For example, Doctor # 12 noted “timely and good communication,” while Doctor # 11 stated “by adding personal touch I think you are in a much
stronger place.” In addition, personal communication channels enabled physicians to maintain contact. Doctor # 10 saw such communication as a “pretty good way to keep in touch,” creating “trust and mutual respect.” Doctor # 3 saw it as a way to “develop mutual respect between healthcare professionals knowing that you’re working together on the same team.” Doctor # 4 thought it “builds trust” and fostered team environment. Doctor # 5 emphasized the ability to “feel part of the same team.” Other responses included enabling better patient care; Doctor # 6 said that “integral to patient care delivery is the collaborative and collegial relationships between different specialists.”

The initial findings suggested that doctors perceived personal communication channels as being very important to their working relationships with other healthcare professionals and that it enabled them to create social capital, facilitate knowledge sharing, and provide an optimal standard of care that served as best practices for their patients. This was best summarized by Doctor # 3, who noted personal communication “provides a spirit of teamwork and collegiality,” and Doctor # 11, who emphasized “because of the personal communication channel with specialist…able to facilitate the plan…patient feels like they are being taken care of.” The twelve interview questions served to provide deeper understanding about the overall knowledge sharing behaviors of doctors specifically, the types of knowledge and types of actions they shared with other healthcare professionals in a community hospital.

Part III. Data Analysis Aggregated Across all three Phases.

This subsection is a presentation that summarized the data analysis aggregated across all three phases of the study (documentation review, observations and the semi-instructed interviews) and highlighted the broad emergent themes that evolved across the entirety of the data analysis process using thematic analysis (see Appendix J). This enabled triangulation
through constant comparison and provided further insight into the broad emergent themes that evolved across all three phases of the data analysis.

1. What were medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?
   a.) What types of knowledge do medical doctors share (Habermas, 1984), and
   b.) What types of actions do medical doctors use to share knowledge (Habermas, 1984)?

There appeared to be consistency when the data were aggregated across all three phases (documentation, observations, and semi-structured interviews) of the study. For example, the verbal content espoused in the literature was consistent with the behaviors enacted during the observations as the doctors engaged with other healthcare professionals in their natural setting. It was also consistent with the in vivo answers articulated by the doctors during the semi-structured interviews where they provided rich descriptions based on their recollections in both social and work-related contexts. The iterative approach was then used to inform each subsequent phase of the study and enabled a better understanding about the knowledge sharing behaviors of doctors and specifically, the types of knowledge and types of actions they shared. The thematic analysis process was used to refine the broad emergent themes by assessing and combining similar concepts across all three phases of the study to ensure each theme was unique. The process enabled a deeper analysis of the attributes and patterns that were identified where data was further combined to ensure each theme was unique and unambiguous. A clear example of theme combination was the integration of two primary themes “collaboration and coordination” and “evidence-based medicine” where attribute similarities and overlapping patterns emerged to create one broad emergent theme. This was obvious since an evidence-based
approach was used when doctors collaborated and coordinated patient care thus both of these themes were integrated as one broad emergent theme. The integration of the two resulted into the first broad emergent theme since it was most prevalent across all three phases of the study. The theme that evolved to best described collaboration and coordination using and evidence-based medicine approach was “best practices,” resulting from integrating perspectives, latest evidence, and context through interdisciplinary collaboration and cooperation”.

This process enabled the development of each of the broad emergent themes that best described the findings of the data analyzed from each phase. For example communication was the second most frequently identified primary theme aggregated across all three phases of the data analysis and thus was identified as the second broad emergent theme: “continuous verbal and electronic contact through direct, indirect, and informal communication channels emphasizing audience awareness and message continuity” which best described the types of communication channels, strategies, and initiatives taken to ensure efficient and effective exchange of data among two or more individuals.

The same process was used in evaluating organizational culture and reflective learning that were also identified as primary themes during each of the phases. When viewed in that light across the three phases, organizational culture was identified as the third broad emergent theme and characterized as “a cultural environment characterized by transparency and shared values bounded by normative traditions.”

In the same vein, reflective learning was identified as a fourth broad emergent theme and described as "continuous inquiry and reflection enhanced insight” which best defined the initiatives doctors took to continue learning throughout the course of their life.

The overall primary initial findings and broad themes identified from this process
suggested there was consistency across all three phases of the study. As noted, the evidence espoused in the literature (documentation), enacted in the observations (observed in natural setting) and articulated in the in vivo quotes (semi-structured interviews) from the doctors who described their lived experiences and recollections of the phenomenon were consistent across the whole data analysis process. This ultimately led to the four broad emergent themes of the study. The following discussion presents a more in depth understanding about the evolution of each theme and its relevance as to how it served to characterize the study.

Emergent theme one depicted interdisciplinary collaboration emphasizing evidence-based medicine to coordinate action. This was the dominant broad emergent theme identified as a primary theme in thirty-three instances and had prominent positions across all three phases (documentation, observation, and semi-structured interviews) of the study. The collaborative behavior which emphasized an evidence-based practical approach to coordinate patient care was particularly pronounced in the physician semi-structured interviews. Data analysis clearly indicated that the primary themes evidence-based medicine and collaboration and coordination overlapped to an extent that they were combined. A prime example of this overlap was when Doctor # 4 volunteered that “physicians reflect upon various empirical studies to inform on the delivery of patient care.” This sort of hand-in-hand relationship that collaboration and coordination had with evidence-based medicine was reflected across all three phases of the study. In the interviews, doctors described their knowledge sharing and collaborative endeavors as reaching out to engage the viewpoints of others to coordinate patient care while emphasizing they referred to the latest scientific evidence as noted by Doctor # 13, who said “become aware of the latest evidence-based technical data that says…you should do this with this data…then I implement into my practice.” This behavior was also consistently espoused in the
documentation. For example, recognition was given to the hospital by MDNews.com (2011), an independent external organization that recognized the cardiac unit as having a “team approach to care where physician collaboration is emphasized” (MDNews, 2011). Initial findings also indicated that evidence-based medicine underpinned the types of knowledge shared by doctors with other healthcare professionals. The types of knowledge classifications shared were technical, practical, reflective, and contextual. All of this emphasized the importance of evidence used in the prevention, diagnostics, and treatment for the delivery of patient care.

This was consistent among all the doctors who spoke of explaining, clarifying, and interpreting when they engaged with colleagues to share perspectives and general insight into medical-related matters in an effort to deliver quality patient care as noted by Doctor #5 who emphasized that his colleagues called him when they “didn’t understand the concepts of what I was saying” while Doctor #6 volunteered fellow doctors find common ground over “why we are doing it for the patient … that’s where the thought process comes in … helps us get on the same page.” Thus, as Doctor #2 noted “saying it explicitly in plain English” was the key to effective communication.

In addition, doctors described practical insight and reflective knowledge as being valuable when they engaged in clinical assessments where lessons-learned served to provide insight on “how to proceed” in the future. This was most evident by Doctor #3 who said “practical insight puts the data into context” and argued “we use past experiences all the time to help us kind of form treatment plans for current situations.” Similarly, observations were an excellent source of collaboration vignettes. For example in observation ten, a cardiologist expressed concern for a particular patient. The nurse replied “well, did the patient tell you that they have been experiencing ‘s’ symptoms for a few days, as well.” The doctor then developed a
treatment plan. From this front line of collaboration it was apparent how collaboration manifests itself and how doctors, in the words of Doctor # 14, “keep each other in the loop” as an initiative to identify what’s best for the patient.

The data suggested that the emphasis on collaboration and coordination encouraged not only downward but upward and horizontal communication among individuals; as noted in the documentation: “we are very proud of the hard work and collaboration that all of the staff at every level of the hospital has put forth to implement this very important step toward enhancing the patient care in our hospital” (Hospital Magazine, fall, 2012). The data also suggested that social relationships contributed to collaboration and facilitated professional interactions. A good example was the statement by Doctor # 11 that emphasized that “because of the personal communication channel with specialist…[the doctor was] able to facilitate the plan”. The majority of doctors indicated that social rapport and personal communication channels were perceived as methods to establish working relationships with other healthcare professionals that facilitated collaboration and coordination to happen. This did not suggest that collaboration and coordination were always universal, as noted by Doctor # 5 who volunteered that doctors engaged in a clinical sense, but disregarded input that conflicted with their own bias.

Emergent theme two emphasized continuous verbal and electronic communication driven by audience awareness and message continuity. This broad emergent theme was the second most prominent and was used to describe the primary theme of communication both in a verbal and electronic sense, as well as in a direct and indirect form. The theme best described the initiatives that doctors took to establish common language when they engaged with other healthcare professionals to exchange data or to share perspectives to coordinate action. Though the types of communication channels used to convey message content varied depending upon the
particular situation, doctors emphasized direct communication, either face-to-face or by telephone, as the preferred medium. Despite the ubiquity of electronic records and messaging, doctors preferred personal contact through direct communication which was noted as the preferred channel 79% of the time. As noted by Doctor # 3 “with physicians, namely one way is direct communication face-to-face or over the telephone,” in other words using verbal communication. Beyond the mode of communication was the content of that communication. Doctors spoke of efforts to clarify language, especially medical jargon, to ensure accurate interpretation. For example Doctor # 2 suggests “saying it in plain English” was a way to be understood while others went further and elicited feedback to make sure their intentions were understood. Similarly, measures were taken to ensure against figurative speaking, jargon, and abbreviations by taking an audience-centered approach as noted by Doctor # 11 who said “one has to be careful; one has to be mindful all the time of who they’re speaking to, their language and the level of knowledge capabilities”.

Communication also featured prominently in the observational phase. Many ostensibly social encounters observed emphasized a work agenda that was driving the behaviors among doctors and other healthcare professionals. For example, in observations twenty and twenty-one individuals met serendipitously and engaged in social interaction such as “hello how goes it today” followed by a typical response from the recipient who said “are you going to be coming up for rounds soon.” Emerging from the observations and interviews was the importance of informal communication. One example of this was the practice of curbside consults where doctors used a casual or serendipitous meeting to engage in an informal consultation. This phenomenon was not infrequent as Doctor # 7 attested to when he volunteered “I get curb-sided all the time by other colleagues.” While curbside consults were perceived as very valuable and
enabled doctors to get quick information about a medical-related question, it was noted that recent changes to the healthcare landscape provided fewer opportunities for face-to-face encounters. Many of the doctors noted that the electronic medical record (EMR) served as a mainline that connected them with their colleagues enabling them to maintain informal communication and curbside-learning via the system as noted by Doctor #9 who said “flagged two providers in that group….trust group….send curbside note asking, what do you think, I don’t know them socially but met them at meetings, trust them.

Computer mediated communication was identified as a prominent communication tool in the documentation analysis, from observations and from the doctor interviews. The data clearly articulated that the computer messaging in the form of “flags” and emails served as a focal point of communication, organizational processes, and data flow. The importance of these systems was highlighted by their mandated use, as noted by Doctor #13 who emphasized that the “primary care physician was required to ‘click’ and update all patient information.” Computer-mediated communication emerged as a subtheme of communication, which was the broad emergent theme. The absolute importance of the electronic medical record (EMR) system to the knowledge infrastructure was articulated and enacted by doctors in both the observations and the interviews. Even though this subtheme did not appear as a primary theme from the data analysis of the observations and interview processes, the doctors expressed and illustrated its importance in day-to-day data entry and extraction. Throughout the interview process doctors emphasized the value of the electronic medical record. For example, observation four illustrated the hospitalist who engaged with the nurse “looks like a bit of an infection going on” as he pointed to the computer screen while Doctor #8 described how he sent an electronic “flag” to the PCP (primary care physician) with a note that “I got this and it is unusual, wanted to make sure you’re
aware … because this is out of my wheelhouse.” Computer-mediated communication has a broad importance in the healthcare industry literature. As an example of the importance that computer systems command in healthcare, the American Hospital Association (2014) cited the hospital as one of the “most wired” in the past four years.

Emergent theme three emphasized a cultural environment characterized by transparency and shared values bounded by normative traditions. Organizational culture was the underlying theme within this broad emergent theme. It best described the hospital’s attempt at having a set of collectively shared norms, values, and beliefs held across the organization and that defined the expected behaviors of its employees. It was identified as the primary theme on thirteen occasions and appeared as a primary theme across all three phases of the data analysis. Organizational culture was espoused prominently on the corporate website (2014) as they emphasized “shared goals and objectives.” Beyond the documentation the cultural aspects were prominent among the staff as was the case in observation one by a doctor who stated “it is important that we practice what we preach.” This same tone was articulated by the doctors who participated in the interviews. Organizational culture did not exist on its own; it needed to be constantly nurtured and encouraged at every level. Formal institutionalized policies and guidelines became part of the organization through routines that were embedded within the organizational structure. The norms and culture were inculcated into the staff via formal knowledge sharing structured events and professional development sessions such as the Grand Round. Formal departmental and interdisciplinary meetings were regularly scheduled for doctors to engage in information sharing as noted by Doctor # 10 who said “at weekly Tumor Board meetings … we meet as a group.” In addition, staff meetings took place periodically for doctors to engage during off hours in a social-context. Part of this learning process came
through reflection and the open discussion of mistakes in open forums on “how to do” or “how to avoid” in the future. This was emphasized by Doctor # 11 who said “morbidity and mortality rounds are a well-established tradition in medicine.” Despite this openness there were formal structures in place that served as protocols to channel individual input. As an example, corporate rules instructed that individuals had to “identify concerns and questions … directly to managers or administration” (Corporate Website, 2014).

Central to the organizational culture within the hospital was the pivotal place occupied by the electronic medical record (EMR) system. The organization mandated the use of this system, requiring doctors to update patient status routinely. It served as a formal communication structure and knowledge repository with an infrastructure designed to capture and communicate data across various parts of the organization. This suggested that the computer-mediated messaging system had an important place in the organization in its day-to-day operations. The EMR system was an institutionalized routine embedded in the day-to-day operation of the organization. Its use was enforced by the Quality Committee as a formal collaboration model to be utilized by all healthcare professionals. This was emphasized by Doctor # 13 who said “Quality Committee installed software in the EMR system for tracking….PCP required to ‘click’ and update all patient information….communicate amongst each other through the electronic system.” Organizational culture also valued social interaction among hospital staff. The majority of doctor’s acknowledged the value and benefits associated of engaging in social conversation with colleagues. Doctor #11 emphasized that “building social rapport makes people feel like part of a team” while Doctor # 5 noted that social interaction was “helpful because barriers are dropped.” In general, social conversation was identified as a type of knowledge that enabled doctors to establish trust and strengthened working relationships as
volunteered by Doctor # 3 who emphasized that it was the “key to good communication.”

Emergent theme four emphasized continuous inquiry and reflection enhanced insight. This theme was identified across all phases of the data analysis and was identified on six occasions as a primary theme. The theme centered on how doctors reflected upon reflective learning and lessons-learned to make clinical decisions. This broad emergent theme also featured prominently when doctors described occasions when they justified their actions to colleagues. Reflective learning was a form of retrospective continuous learning that relies on prior experiences to guide future actions. A good example of this was a direct quote from observation eleven in which a cardiologist used storytelling as a means to reflect upon past experiences and lessons-learned when he noted “let me share an interesting story of a situation that happened.”

This emphasis on reflection was complemented by the institutional support of transparency and the culture of safety as noted during the Grand Round professional development session in observation thirty-one. In that instance the speaker noted the “action plan is to develop a culture of safety that will encourage physicians to report errors which will lead to error reduction.” Doctors were encouraged to let others learn from their past mistakes in open forums where unexpected or undesirable patient outcomes were discussed. An example of this was Doctor # 5 who argued that “curve balls or unexpected outcomes can and will happen.” Message content in the monthly newsletter (July, 2013) was consistent and emphasized that “we need … to learn from near misses … create an environment … will be constructive.” At its most basic reflective learning when shared with other professionals was storytelling with a purpose to enlighten. Analysis of the interviews indicated that doctors perceived reflective learning as valuable when it provided practical and experiential insight. As Doctor # 3 noted “use past faults
or mistakes to help teach my students about clinical scenarios and possible pitfalls and how to best avoid them” while Doctor # 6 responded to the value of lessons-learned by noting “that’s how it is in medicine; every day we learn new things.”

The data aggregated across all three phases of the study provided in-depth insight about doctors’ knowledge sharing behaviors and specifically, the types of knowledge and types of actions they shared at this community hospital. The four broad emergent themes represented the primary initial findings across the whole data analysis process which will be further interpreted in chapter five using the literature reviewed in chapter two and the theoretical lens to provide a deeper understanding.

**Contextual Insights uncovered during analysis process.** This subsection identifies a couple of interesting insights that emerged from the data analysis across all three phases of the study, but did not meet the criteria for being a significant theme or initial finding. These two aspects included: The leadership team and the contextual environment of the community hospital. Notably, there was evidence that the leadership of this community hospital played a significant role in fostering a collaborative environment where individuals felt comfortable to share information that could be used to improve the quality of patient care. For instance, on various occasions during Phase II the CEO was observed to lead by example when he exhibited behaviors that denoted collaboration when he engaged with the hospital employees.

For example, the CEO attended luncheons in the cafeteria to visit with all staff, and was observed on numerous occasions approaching various employees to initiate conversation. One conversation depicted the CEO who approached the head chef to commend him for always preparing foods that promoted healthy nutrition that was consistent with the goals of the organization. He emphasized to the chef the importance of practicing what they preached and
smiled as he patted him on the shoulder while he proceeded to order the special-of-the-day. In addition to the meals, the CEO engaged in social conversations with employees in the cafeteria about the local professional teams and who would win “the big game”.

Similarly, during a professional development session that emphasized the importance of establishing a “culture of safety”, the CEO was observed in attendance and contributed to the discussion during questions and answers session to engage with his medical staff on why it was important to share stories, past experiences, and to reflect upon ways to improve the quality of care. This behavior was consistent with written documentation in the Hospital Monthly Newsletter (November, 2013) that illustrated how members from the board of trustees engaged with senior managers, front line supervisors and staff to discuss quality improvement measures as part of their initiative to foster a “culture of safety” across all levels of the organization; board members engaged directly with staff to gain insight into their commitment on how they achieved patient safety using the new drug dispensing system where they were provided with hands-on demonstration of how the system functioned. Board members were also observed visiting various departments of the hospital to engage with staff on how they could cooperatively work together to improve processes. For example, one of the board members was observed stopping by the nurses’ station to “touch base” with the nursing staff and to share ideas regarding equipment, processes, and upcoming scheduled events.

Another example of how the CEO engaged his employees was best captured through an informal conversation with a senior transporter who noted that the CEO personally commended him on a “job well done” on many occasions. The transporter noted that the CEO was genuinely interested in his valuable insight and emphasized that asking him for his opinion “boosted his motivation” to do even better. Leading by example, also meant practicing what one preached as
the CEO was observed in the hospital lobby to be first in line to receive the flu vaccination alongside his staff, medical team, and other medical personnel to illustrate the importance of being vaccinated to improve patient safety.

Additionally, while leadership meetings such as board meetings were closed-door to the researcher, in other open formats the leaders were observed sharing information about the hospital’s status on the potential upcoming merger as well as other contextual issues as they related to hospital operations. For instance, the CEO called a general assembly on several occasions over the past six months to update the employees on the potential merger and to explain how the transaction would impact both the organization and the employees. Notably, he took time to respond to all questions related to the reorganization of personnel and the restructuring of various organizational processes as well as to address any rumors that were presented. The CEO appeared to be very transparent throughout his discussion with the employees. For example, he was very explicit and provided specific details and graphic descriptions to create a clear vision of what this proposed transformational change would entail. On another occasion, the CEO met with the employees during a general assembly to discuss how the organization’s bond ratings were impacted by the economic downturn and how that affected the organization’s borrowing power as a result. The CEO fielded questions on how bond rating can impact borrowing money and what less money meant for capital spending across the hospital. In another similar forum, the CEO was observed discussing the potential purchase of technological equipment to better conduct diagnostic procedures and was seeking input from those who would be directly impacted by the transaction to gain their perspective on the matter.

Overall, there was this sense that the leaders of the organization appeared to support an “open” culture that emphasized collaboration among the medical doctors and other healthcare
professionals at this community hospital. As a result, there appeared to be a strong level of camaraderie that existed across all levels of the organization that created a sense of trust where individuals felt comfortable to share information and to cooperate with one another without fear of retribution as noted by Doctor #11 who said “environments that are transparent and supportive are good; if not, there’s no improvement; everyone is afraid; we have a pretty open environment.”

Another important factor to consider was the contextual factors that impacted the community hospital and the nature of the collaboration that took place with various stakeholders. Specifically, the healthcare environment was impacted by federal healthcare regulations that imposed mandates and laws that set boundaries such as the HIPAA regulations. For example, a psychiatrist noted that he was limited on the types of knowledge he could share with other doctors due to HIPAA regulations. Also, the hospital implemented the electronic medical record system into their operations which enabled individuals to share information but most importantly ensured that the organization was in compliance with HITECH (health information technology for economic and clinical health act). In addition to federal regulations, industry standards and guidelines served as best practices that shaped the way things were done. For example, doctor #13 noted that at multidisciplinary meetings they emphasized the importance of employing the latest scientific evidence for disease intervention and prevention that guided their behaviors and the types of knowledge they shared while senior management emphasized evidence-based practice during professional development sessions. Lastly, mimetic pressures from industry leaders set benchmarks “on how to” which forced the hospital to comply to sustain competitive advantage among the competition. For example, this community hospital updated their systems
with state-of-the-art technology that enabled them to meet the needs of the local community which enabled them to sustain a competitive advantage with larger tertiary research hospitals.

Additionally, the healthcare industry has been traditionally characterized as a “culture of blame” where medical malpractice has inhibited the types of knowledge and types of actions doctors used to share knowledge yet leadership at this community hospital emphasized a “culture of safety” where individuals were encouraged to engage in open disclosure to improve the overall quality of patient care. Notably, while healthcare was highly regulated and legal concerns related to medical malpractice existed both informal knowledge sharing and collaboration still prevailed at this community hospital. Evidence from the data analysis indicated that good communication relative to patient care and a supportive cultural environment that evoked transparency, the spirit of inquiry, and reflection existed. Although the organizational leadership and the contextual environment were not the scope of the research questions they provided some interesting insights to this study that warrant further discussion in chapter five. These external factors had implications on the overall collaborative practices that took place at this community hospital which will be discussed in greater depth in chapter five.

**Research Question Analysis.** This subsection is a presentation of the research question analysis that was used to indicate whether the data collection methods (documentation, observations, and semi-structured interviews) provided evidence that directly responded to the main research questions of the study.

1. What are medical knowledge sharing behaviors in a community hospital located in the Northeastern United States?
   a.) What types of knowledge do medical doctors share (Habermas, 1984), and
   b.) What types of actions do medical doctors use to share knowledge
The evidence collected from each phase (documentation, observations, and semi-structured interviews) of the study was linked to the four broad emergent themes identified in the study (see broad emergent themes below).

- **Emergent Theme One: Interdisciplinary collaboration emphasized evidence-based medicine to coordinate action.**
  
  (described the doctors initiatives to collaborate and coordinate patient care using evidence-based medicine),

- **Emergent Theme Two: Continuous verbal and electronic communication driven by audience awareness and message continuity.**
  
  (referred to the types of communication that took place among doctors and other healthcare professionals),

- **Emergent Theme Three: A cultural environment characterized by transparency and shared values bounded by normative traditions** (characterized the organizational culture), and

- **Emergent Theme Four: Continuous inquiry and reflection enhanced insight.** (depicted the doctors ongoing efforts to enhance their learning).

Refer to the research question analysis table (see Appendix K) which is a presentation of the evidence and how it directly responds to each of the main research questions and broad emergent themes of the study.

**Evidence collected from Phase I (documentation review).** For example in Phase I, six of the eight documents (values, quarterly hospital magazine, monthly hospital newsletter, knowledge base, corporate compliance, and external sources) collected and analyzed from Phase
I provided evidence to better understand the doctors’ knowledge sharing behaviors (see Appendix M) while the evidence was also linked to all four broad emergent themes (as noted above). Consistently, these same six documents also provided insight into the types of knowledge and types of actions shared and similarly provided evidence that was linked to all four broad emergent themes. Only two documents (community outreach and the mission statement) did not directly respond to the main research questions, but both espoused the hospital’s initiative to engage in collaborative behavior using an evidence-based medicine approach with the community.

Evidence collected from Phase II (observations). Similarly, each of the thirty-one observations (nurses’ station, intensive care unit, lobby events, Grand Round, Corridors near doctors’ office areas, and the cafeteria) that were collected and analyzed from Phase II provided evidence to better understand doctors’ knowledge sharing behaviors. Evidence was linked to the main research question that explored doctors’ knowledge sharing behaviors and was linked to all four broad emergent themes. For example, theme one was emphasized in observations five, six, seven, seventeen, and eighteen at the nurses’ station which described efforts to collaborate and coordinate care. Similarly, theme one was linked to observation twenty in the cafeteria and observation twenty-nine in the ICU. Theme two emphasized how communication was used to initiate contact with other healthcare professionals as was captured from observation twenty in the cafeteria and observation nineteen in the office corridor near the doctors’ office areas where doctors engaged to schedule consultations. Theme three emphasized the organizational culture and indicated that it impacted knowledge sharing behaviors as noted in observation thirty-one at Grand Round event where the speaker reflected on how the healthcare industry traditionally emphasized “culture of blame” while in observation twenty-seven in the ICU the specialist
informed the nurse on how he planned to proceed based on the “right thing to do”, and observation one (lobby event) where two doctors engaged about how healthy the food served at the event was as noted where one of the doctor’s noted “we must practice what we preach.”

Lastly, theme four reflected initiatives to share lessons-learned through reflective learning and was identified from observations six, seven, and eleven at the nurses’ station, and observation thirty-one at a Grand Round professional development event where efforts were directed to teach doctors based on lessons-learned from past experiences.

Similarly, evidence from various observations provided insight to respond to the main research question that sought to identify the types of knowledge doctors shared. The evidence was also linked to all four broad emergent themes. For example, observation four at the nurses’ station provided insight where the types of knowledge shared was technical and reflective and was linked to theme one which emphasized collaborative behavior using evidence-based medicine while observation twenty-six provided insight that both objective and subjective knowledge was shared between the specialist and the nurse in the intensive care unit and was also linked to theme one that indicated collaborative behavior using an evidence-based medicine approach as was consistently found in observation twenty-eight (Grand Round) where the latest evidence-based data was presented, and observation twenty (cafeteria) where both technical and practical insight were shared. Meanwhile, observation eleven provided evidence into the types of knowledge shared and was linked to theme four which indicated that reflective learning was used to provided insight based on past experiences while observation fifteen (lobby) was linked to theme two which indicated communication established contact between doctors, and observation twenty-seven (ICU) was linked to theme three where the organizational culture appeared to influence the types of knowledge shared as noted by the specialist who emphasized
ethics as he shared practical and technical knowledge on “how to proceed.” Lastly, evidence was rooted in all four broad emergent themes and used to respond to the main research question that sought to identify the types of actions doctors took to engage with other healthcare professionals. For example, evidence from observation four at the nurses’ station illustrated the actions that a hospitalist and nurse took to discuss a potential condition and treatment of a patient and was linked to theme one that emphasized collaborative behavior using evidence-based medicine while similarly observation twenty-nine (ICU) illustrated a hospitalist and nurse who engaged on a patient’s status and was linked to theme one as was observation twenty that featured a doctor and nurse who collaborated on a mutual patient and was also linked to theme one. Observations nineteen (corridor) and twenty (cafeteria) illustrated actions taken to plan future consults and meetings and emphasized theme two where communication served to facilitate the process. Lastly, observation thirty-one provided insight on how doctors were encouraged to take action when they attended Grand Round professional development session and was linked to theme three that emphasized normative traditions as guiding clinical practice and also linked to theme four where the speaker reflected in retrospect on the past traditions of the healthcare industry where to provide historical context.

_Evidence collected from Phase III (semi-structured interviews)._ Similarly, each of the fourteen semi-structured interviews completed with medical doctors in Phase III of the study provided insight into the knowledge sharing behaviors of medical doctors and specifically, the types of knowledge and types of actions they shared. The semi-structured interviews were considered the primary source of data used to inform the study because the data came directly from the _in vivo_ of the participants who provided their rich descriptions about their knowledge sharing behaviors based on their recollections of how they shared knowledge with other
healthcare professionals. The interview protocol was designed around 12 questions that were divided into three parts. The first part (questions one through four) sought to explore doctors' knowledge sharing behaviors while the second part (questions five through eight) explored the types of knowledge they shared and part three (questions nine through twelve) focused on identifying the types of actions doctors used to share knowledge. Evidence was linked to all three parts of the interview protocol and specifically from each of the 12 questions that was used to respond to the main research questions of the study. In addition, all four broad emergent themes were linked to the interview questions.

Part one (questions one through four) sought to understand the knowledge sharing behaviors of medical doctors. Question one asked the doctors to describe how they engaged the viewpoints of other healthcare professionals. This question directly responded to the main research question by providing insight about the measures they took to initiate consults with other healthcare professionals. Their responses were best described and linked to theme one: “continuous verbal and electronic contact through direct, indirect, and informal communication channels that emphasized audience awareness and message continuity.” Some doctors emphasized direct communication as noted by Doctor # 3 who said “with physicians, namely one way is direct communication” while others indicated that they used indirect communication channels to engage with other healthcare professionals as noted when she said “indirectly through the patient’s electronic chart,” while Doctor # 7 noted that a “fair amount of discussion and information sharing that takes place in an informal way such as walking into the nursing units.”

Question three was also linked to theme one and provided insight into the knowledge sharing behaviors of doctors to identify on what occasions they needed to clarify language to
ensure common understanding initiated through actions that emphasized communication. Technical jargon and abbreviations were most frequently identified as language that needed clarification while ambiguous meaning, unfamiliar language, multiple meaning, and misinterpretation were also potential culprits. Doctor #11 noted “have to remember that the listener may not know those abbreviations” while Doctor #10 noted that proactive initiatives ensured clarity “sometimes have to repeat with different description” while Doctor #1 noted it was “important in clarification to specify what it is that you’re looking for in literal graphic terms.”

Meanwhile, questions two and four emphasized that knowledge sharing behaviors emphasized collaboration and coordination and evidence-based medicine which was best described by theme one, the theme of interdisciplinary collaboration emphasizing evidence-based medicine to coordinate action. Question two inquired about the measures doctors took to ensure meaning was interpreted and applied as intended. This interview question directly responded to the main research question which sought to understand the knowledge sharing behaviors of doctors and was linked to theme one which emphasized collaborative measures and was identified as the most prevalent broad emergent theme in the study. This interview question served an important purpose to inform the study because past studies had indicated a gap still existed between knowledge acquisition and knowledge application which indicated the need for more research on how to effectively transfer knowledge in its intended state. Thus, the responses from this interview question directly responded to this problem and provided specific insight on the types of measures that doctors described they took at this community hospital took to establish common understanding to maintain meaning in its initial format when transferred and to identify what initiatives they took to ensure that its application was in its intended form. For
instance, the doctors responses all reflected either direct or indirect methods of corroboration. Doctor # 5 indicated he was proactive by being explicit which indicated direct corroboration, but he also alluded to a level of trust existing among colleagues which underpinned their behaviors to seek assistance when in need which indicated indirect corroboration based on normative traditions that drove their behaviors. For example, Doctor # 5 said “I spell out my thoughts and what I wish to see happen….follow-up with patients….ascertain or monitor to see that what has happened is what I want to see happen… trust they will call if they don’t understand,” while Doctor # 6 noted “If there is any question that she (nurse) misunderstood we will start the whole process again including the thought behind what I am doing and what it means,” which indicated a more direct method of corroboration. Doctor # 7 noted that “in an interdisciplinary team there’s a lot of back/forth interplay that can happen.” He indicated that specific questions were not asked to avoid direct confrontation with other healthcare professionals but emphasized that general questions served to provide feedback that ensured meaning was accurately interpreted.

Similarly, question four was also linked to collaborative measures and evidence-based medicine which was best described by theme one and provided evidence that directly responded to the main research question that provided insight into doctors’ knowledge sharing behaviors. The question inquired about how doctors established common understanding when they discussed lab reports and test results with other healthcare professionals. The doctors indicated that they took direct or indirect initiatives to confirm common understanding with other healthcare professionals as noted by Doctor # 3 who said “lots of confirmation between myself and other healthcare professional…this is the primary measure that I use to ensure that we are on the same page,” while Doctor # 12 emphasized the benefits of electronic collaboration and said “enter all tests ordered and all interpretations of the results and my instructions into the
electronic record that is shared and can be accessed by other providers.” This suggested that doctors depended on the electronic medical record (EMR) as an electronic communication medium that enabled them to update and access information to ensure common understanding. Although collaboration and coordination were emphasized as the primary theme in this instance, there was strong indication that computer-mediated communication facilitated collaboration among healthcare professionals.

The second part (questions five through eight) sought to identify the types of knowledge doctors shared with other healthcare professionals. All four of the broad emergent themes were identified and linked back to one of the interview questions. For example question five sought to understand how doctors used clinical data to inform patient care delivery with other healthcare professionals. All of the doctors indicated that technical data were important because they provided context and an objective measure based on standards to interpret readings to assess a patient’s status, but emphasized that clinical data were not the only form of information used to evaluate patient status. Responses identified practical, experiential, and historical information combined with clinical data added context to the interpretation. This interview question provided insight used to respond to the main research question about the types of knowledge shared. For example, Doctor # 3 explained we “use clinical data in a variety of ways,” “based on history that patient gives me, findings from my exam, and accompanied laboratory data, I form my clinical expression,” while others noted clinical data enabled them to confirm or reject the hypothesis. For example, Doctor # 11 argued “given hypothesis, does the exam support or dispute hypothesis.” The broad emergent theme linked to this question was theme one which emphasized an evidence-based medicine approach as noted by Doctor # 13 who said “data is published…becomes available …this is how I become aware of the latest evidence-based
technical data that says...you should do this with this data... then I implement into my practice.”

Question six was linked to theme three and indicated that the organizational culture created a social environment that encouraged individuals to engage with one another. The doctors noted that the environment fostered a transparent social climate where individuals felt comfortable engaging with one another which enabled them to establish rapport and build trust. For example, Doctor #11 emphasized that “building social rapport makes people feel like part of a team,” while Doctor 4 noted that “if you’ve had a working relationship built up over the years there’s more acceptance because they’ve seen you be accurate again and again and again.” This interview question responded to the main research question by providing insight into how doctors perceived the value of social conversation as a type of knowledge that fostered working relationships. This was best described by Doctor #2 who said “If you have a comfort level...people feel more comfortable asking about technical things,” and Doctor #5 who said “when you put the white coats down and we’re out in a social it’s more of a level playing field or at least perceived as a level playing field...helpful because barriers are dropped and hopefully when you come into a working environment the barriers stay dropped.”

Question seven sought to understand when doctors provided practical insight as a type of knowledge that added value to a clinical assessment. In this case, the interview question provided insight to respond to the main research question which sought to identify the types of knowledge doctors shared specifically, when practical insight was used to inform on medical decisions. The majority of doctors noted that practical insight was perceived as valuable experiential knowledge which enabled them to establish context as noted by Doctor #3 who said “practically speaking putting that data into context...can’t look at one laboratory value and make complete judgment ... we have to synthesize it and apply our practical knowledge.” In addition,
this question was linked to theme one and emphasized collaboration behavior using evidence-based medicine where doctors described how they engaged in collaboration to share past experiences, intuitive knowledge as well as, past outcomes and approaches to enlighten their colleagues on how to handle current medical-related matters as noted by Doctor # 2 who emphasized “one might share past experience with previous patient outcomes, and approaches.” Although this question did not specifically identify theme three, the culture appeared to underpin the types of knowledge doctors shared as indicated by Doctor # 3 who said “this is how we apply practical knowledge every day with all the data coming in we have to synthesize it and apply our practical knowledge.”

Similarly, question eight also responded to the main research question by providing insight on how lessons-learned were used as self-reflective knowledge to inform decision making. Doctor # 3 best summarized the value of lessons-learned when he said “use past faults or mistakes to help teach my students about clinical scenarios and possible pitfalls and how to best avoid them.” His response was also linked to theme four which emphasized reflective learning. Similarly, Doctor # 1 said “reflect on published experience out of the science of profession of medicine has determined as its experience with that procedure.” His response was linked back to theme one which best described efforts to collaborate based on the latest scientific evidence from the medical profession as guidelines to treat medical conditions. The third part (questions nine through twelve) sought to identify the types of actions doctors took to share knowledge with other healthcare professionals. Two of the broad emergent themes identified from the study were linked to this group of interview questions: Theme three was the theme of a cultural environment characterized by transparency and shared values bounded by normative traditions (characterized the organizational culture) and Theme four was “continuous inquiry
and reflection enhanced insight (depicted the doctors’ ongoing efforts to enhance their learning).”

The other two broad emergent themes, the interdisciplinary collaboration emphasizing evidence-based medicine to coordinate action described the doctors’ initiatives to collaborate and coordinate patient care using evidence-based medicine (Emergent Theme One) and continuous inquiry and reflection enhanced insight depicted the doctors’ ongoing efforts to enhance their learning (Emergent Theme Four) served as secondary themes in questions nine and eleven so that all four themes were present. Organizational culture was linked as the broad emergent theme on three occasions (question nine, ten, and twelve) that indicated that doctors’ actions were driven by the normative traditions underlying the culture.

Question nine was designed to gain insight into when doctors rationalized their actions to other healthcare professionals. The responses from this interview question directly responded to the main research question about the types of actions doctors took to justify their behaviors. Some doctors took initiative to explain the rationale behind the decisions they took as noted by Doctor # 3 who said “very often explain to the other physicians involved in the case and nurses what my impression is, my recommendations, and why I came to those conclusions,” while other doctors chose to discuss the outcome of their actions in a forum environment. Doctor # 10 noted “sit together as group… why did you do that … try to rationalize and explain it … want to explain it.” Meanwhile, some doctors took proactive measures to justify their decisions prior to taking action as noted by Doctor # 13 who said “when there is three or four ways of managing this exact case… that’s when I justify to the multidisciplinary board …the way I would like to proceed with this patient’s surgery.” Despite some doctor’s having taken initiative prior to taking action, most decisions were shared in retrospect as noted by Doctor # 5 who said “when
we do have an opportunity to go through what we were thinking and why we did it; it’s usually in a forum like morbidity mortality rounds; it’s usually a negative context.” In addition, this interview question was linked to theme three which best described the hospital’s organizational culture and was indicated by Doctor # 11, who said “when you make an error you want to share that fact with other physicians…I tell the team what we expected to happen didn’t happen… let’s figure out how to do it correctly next time….I say to them, I made a mistake this is why so we can all move forward together.”

Question ten was specifically designed to explore the occasions upon which doctors did not seek external viewpoints from other healthcare professionals to provide insight about their knowledge sharing behaviors. This interview question responded to the main research question by identifying those situations when doctors chose not to seek consultations. The popular responses for not seeking external input were identified as situations where diagnosis and treatment was “straightforward” without complication as noted by Doctor # 12 who said “typical straight-forward presentations…don’t usually feel the need to discuss”; in critical environments where life or death situations did not afford time to seek other viewpoints as noted by Doctor # 3 who said “life or death decision ... don’t have time to consult with other individuals for their input”; or in situations that prevented doctors from sharing information based on industry regulations as noted by Doctor # 2 who said “sometimes I’ll be prescribing care without the full picture because of the patient’s preference.” In addition, previous experience often served as a determinant of how to proceed as Doctor # 5 said “most of the time, just go by my own experience ... make about two hundred decisions a day…second nature.” Some doctors felt it was their responsibility to resolve the problem as noted by Doctor # 8 who said “I’m a specialist … PCP has sent them (patient) to me to find out what to do.” The responses from this interview
were linked to theme three which indicated that the organizational culture influenced the actions that doctors took and also underpinned their actions to define when doctors did not seek other viewpoints, as well.

Question eleven was designed to describe the measures doctors took to organize critical consults. This interview question responded directly to the main research question by providing insight into the actions doctors took when faced with urgent crisis. Notably, 100% of the doctors said the process began by initiating a telephone call to the other doctors or nurses involved in the case. An example of this was when Doctor # 11 who said “it’s my contention…if number three consult (critical) there ought to be phone calls.” In addition, doctors took other measures as well including the gathering of relevant data as noted by Doctor # 2 who said “try to be as thorough as possible; including getting collateral information from …medical record and other health professionals,” while some doctors took measures to consult with tertiary care as noted by Doctor # 5 who said “bringing in specialists, tertiary care, to bring in more sub-specialists to get more data to determine the best way to handle the situation.” Some doctors emphasized that it was situational, as Doctor # 7 noted it “depends on level of urgency.” This interview question was linked to theme two, which indicated communication served to facilitate critical consultations whether the type of communication channel was face-to-face, over the telephone or through the computer as noted by Doctor # 3 who said “communicate directly with the other physician immediately…whether communication takes place face-to-face …over the phone, immediate direct communication…to manage a very critically acute case.”

Lastly, question twelve was designed to explore how personal communication channels fostered working relationships. This interview question responded to the main research question and provided insight into the types of actions doctors took to share knowledge with other
healthcare professionals by identifying how social rapport was used to facilitate work-related matters. Specifically, the responses indicated that doctors felt existing social relationships were very important because they created trust and mutual respect among colleagues and enabled them to contact one another when needs arose which ultimately improved the quality of patient care. An example of this was when Doctor # 7 noted “having direct lines of communication with colleagues in different areas of practice was very important in taking care of patients.” Doctor # 3 noted that “benefit between the doctors is kind of a mutual understanding…develop mutual respect between healthcare professionals knowing that you’re working together on the same team for the benefit of the patient,” while Doctor # 4 emphasized there “has to be trust for this communication to go back and forth.” Doctor # 10 said “meeting with these people weekly, core group, has made it just so easy” and added “usually multidisciplinary…benefit patient ….who get the best standard of care.” Alternatively, many of the doctors noted they were able to maintain personal communication channels over the computer which helped to facilitate their social interactions as noted by Doctor # 8 who said a “lot of stuff can be accomplished through the electronic medical record … send her a flag and she gets back to me immediately … she’s by far the persons I refer more patients to because I know she will be responsive.”

Doctor # 2 summarized the benefit of personal communication channels when he said “if you have a relationship before with another health professional…[one is] much more likely to impart information.” Thus, this suggested that doctors took various initiatives to engage in actions that enabled them to build social rapport which they perceived as ultimately improving their working relationships with other healthcare professionals to provide a higher quality of patient care. This interview question was linked to theme three which indicated that the organizational culture was responsible for creating a social environment that fostered social
relationships among colleagues where the climate was conducive to building relationships which enabled them to share knowledge with one another. This was most evident when Doctor # 11 noted “because of the personal communication channel with specialist…able to facilitate the plan…patient feels like they are being taken care of…by adding personal touch I think you are in a much stronger place.”

Each of the interview questions provided evidence that was linked to the four broad emergent themes of the study. This indicated that the knowledge sharing behaviors of doctors and, specifically, the types of knowledge and types of actions they shared were reflective of these themes. The initial findings also suggested that the organizational culture appeared to underpin the types of knowledge and types of actions shared as noted from the evidence identified from each of the three phases. Each phase of the study provided evidence that indicated the organizational culture set the tone on how doctors were to engage with other healthcare professionals. In addition, the initial findings indicated that collaboration and coordination emphasized evidence-based medicine while communication (verbal or electronic) served to facilitate knowledge sharing across interdisciplinary borders while reflective learning was perceived as a way to capture lessons-learned to improve the overall quality of patient care. This sentiment was most notably emphasized by Doctor # 3 who said we “use past experiences all the time to help us kind of form treatment plans for current situations.”

Each of the interview questions used to conduct the semi-structured interviews in Phase III provided strong evidence that responded to the main research questions of the study and were further explored in chapter five using the literature reviewed for this study and theoretical lens of Habermas’ (1984) theory of communicative action for further interpretation of the initial findings. Chapter Five also provides broader insight about the topic of doctors’ knowledge
sharing behaviors in terms of theory implications, future research, and implications for practice.

**Part IV. Summary of the Chapter**

This section is a summary of the general findings and broad emergent themes that were identified as the initial interpretations of the study. The purpose of the study was to explore doctors’ knowledge sharing behaviors and, specifically, the types of knowledge and types of action they share. The study was conducted over three phases and employed three data collection strategies (documentation, observations, and semi-structured interviews) that were iterative in nature so that each data set collected and analyzed from each phase was used to inform each of the subsequent phase(s). Data analysis was aggregated across all three phases (documentation, observations, and semi-structured interviews) to identify similar patterns and trends and then interpreted to provide initial findings. Four broad emergent themes were identified from the data analysis aggregated across all phases of the study.

Emergent Theme One depicted interdisciplinary collaboration that emphasized evidence-based medicine to coordinate action. This broad emergent theme was identified as the most predominant from the whole data analysis process and appeared on twenty-four occasions while identified as a secondary theme on three additional occasions from the semi-structured interviews with the doctors in Phase III. It was identified as a key theme in all three phases (documentation review, observations, and semi-structured interviews) of the study, and described doctors’ initiatives to engage with other healthcare professionals who engaged in collaborative behavior that emphasized an evidence-based medicine approach to coordinate patient care. Evidence-based medicine decision making involved access to the latest scientific evidence from the profession of medicine that provided guidelines based on the most recent findings from empirical studies (controlled and uncontrolled) combined with clinical expertise, and relevant to
Emergent Theme Two emphasized continuous verbal and electronic communication driven by audience awareness and message continuity. This broad emergent theme was the second most frequently identified from the data analysis across all three phases and best described doctors’ initiatives to establish contact with other healthcare professionals that enabled them to collaborate and coordinate patient care.

This theme best described how communication (both verbal and electronic) and computer-mediated communication enabled doctors to establish contact with other healthcare professionals to organize critical consultations and to facilitate everyday routine collaboration to coordinate patient care. The data analysis from Phase III, doctors described using various direct (face-to-face, telephone, and email), indirect (electronic medical record) and informal (curbside consultations; serendipitous in nature) means of communication to initiate contact with other healthcare professionals. An example was when Doctor # 11 shared his thoughts on how to organize a critical situation and emphasized “it’s my contention…if number three consult (critical) there ought to be phone calls directly from the doctor who’s ordering …to doctor who’s on the other end,” while Doctor # 13 noted that “on everyday basis a phone call is most effective and use of electronic medical record where we share information.” Similarly, these findings were previously observed during Phase II when doctors initiated contact with other healthcare professionals (corridor, cafeteria, and the lobby) to schedule work-related meetings to collaborate on patient care as noted in observation two when a doctor initiated face-to-face communication with another doctor at a lobby event and said “need to speak with you about various procedural matters.” Computer-mediated communication served as a subtheme of communication and was identified on many occasions throughout all three phases. This was
articulated the most by the doctors in Phase III, when they emphasized the use of the computer to initiate contact with other healthcare professionals as noted by Doctor # 8 who referred to looking “indirectly through the patient’s electronic chart to seeing what the other physician has written in the electronic record,” while previously this was similar in Phase II when doctors were observed collaborating using the electronic medical record (EMR) system to discuss patient condition as noted in observation four when the hospitalist and nurse both looked at the computer screen to diagnose a patient’s condition and treatment plan as they engaged with one another to collaborate. In addition, to various general observations were made where doctors were observed going to the computer to access an update on a patient’s condition prior to speaking with other healthcare professionals, as noted in observation twenty-seven. These initial findings were consistent with the documentation analysis from Phase I that emphasized computer-mediated communication as an intermediary collaborative tool that connected healthcare professionals across various platforms to collaborate and coordinate patient care.

Emergent Theme Three emphasized a cultural environment characterized by transparency and shared values bounded by normative traditions. This broad emergent theme best described the hospital’s organizational culture. It was identified as the broad theme on thirteen occasions while as a secondary theme on two occasions and resulted from the data analysis in all three phases of the study. Specifically, it appeared on four occasions from the data analysis of the documentation which best described the type of social environment and work setting across the organization, as mostly notably described by Doctor # 11 who said “we have a pretty open environment.” This theme reflected the organizational culture of the hospital and, specifically, the normative traditions, shared values, and beliefs collectively held throughout the organization and served as underlying assumptions to guide the behavioral expectations of the employees.
This was best described on the corporate website (2014) which explicitly espoused “deep commitment throughout the system; embedded within the system; shared goals and objectives; look at each other’s workflow to ensure they are all in sync” and was consistent with observations when doctor’s enacted behaviors as noted in observation twenty-seven when the specialist said “this is the right thing to do.”

Emergent Theme Four emphasized continuous inquiry and reflection enhanced insight. This broad emergent theme was identified on six occasions from the data analysis across all three phases of the study and best described the types of knowledge doctors reflected upon from past experiences and “lessons-learned” to inform on clinical decisions. In some instances, this theme served as a secondary theme where doctors collaborated while referring to lessons-learned or when they reflected upon past experiences and outcomes to enlighten other healthcare professionals. For example, this was most evident from the responses generated from interview question nine in Phase III of the study where the question was used to explore the situations when doctors justified their actions to other healthcare professionals. The doctors indicated that they felt the organizational culture created a transparent social environment which set the tone for “open” disclosure among colleagues that encouraged knowledge sharing through reflective learning, serving as a means to share past experiences with others that enhanced both individual and organizational learning.

These four broad emergent themes served to highlight the initial findings of the study. From the initial findings, there appeared to be some parallel between each of these themes where the organizational culture served to establish an “open” environment that encouraged collaboration and coordination among healthcare professionals using evidence-based medicine as the approach to patient care that was facilitated through various communication mediums, which
emphasized reflective learning that led to individual and organizational learning through various institutionalized processes.

These initial findings were further explored in chapter five based on the literature reviewed in chapter two, the main research questions, and Habermas' (1984) lens to enhance the interpretation of the findings. In particular, the parallels between the key themes were explored using previous theory on knowledge sharing and collaboration with specific focus on the healthcare industry. Habermas' (1984) framework, research questions, and the literature reviewed in chapter two provided insight to interpret the general findings and conclusions of this study including theoretical and practical implications, and future research on the phenomenon of knowledge sharing.
Chapter 5: Conclusions and Implications

This chapter is an in-depth presentation of the overall interpretations of the findings, conclusions, and recommendations of the study based on the literature and guiding theoretical framework and lens identified in chapters one and two. The beginning of the chapter presents a review of the study, purpose, and methods as well as a review of the participant profiles. The four broad emergent themes were summarized and interpreted to identify key findings using the literature and scholarly lens of Habermas (1984) which added perspective to the emergent themes that evolved from the study. This was then followed with the general conclusions as they related to the implications for theory and practice for future research. The chapter concludes with reflections about the overall study process and the researcher’s personal experience.

Introduction

The purpose of this study was to explore the types of knowledge and types of actions doctors use to share knowledge (Habermas, 1984). A descriptive single-site case study was employed based on a qualitative methods design and three types of data collection (documentation, observations, and semi-structured interviews) as the strategy for this doctoral thesis. This approach explored the phenomenon in its natural setting and was most appropriate since the phenomenon was complex and not easily distinguished from its context. Data emerged directly from the participants who provided rich descriptions based on their personal accounts and recollections to inform the study into their knowledge sharing behaviors. This research tradition established the parameters and scope to explore the purpose and research questions of the study and served as the plan for conducting this study. It must be noted that the key findings of this chapter came directly from the broad emergent themes that evolved from the data.
The research was completed using three distinct phases of data collection (documentation review, observations, and semi-structured interviews). Data analysis consisted of initial and second round coding (Saldaña, 2009) to interpret and assess the initial findings from each phase and was iterative in nature where each phase was used to inform each subsequent phase(s) of the study, and then followed by thematic analysis to refine the data by combining similar conceptual themes based on like patterns which served to provide a more in depth understanding into the initial findings aggregated across all three phases. This emphasized a process where broad themes emerged from each phase of the study (Miles & Huberman, 1994).

Habermas’ (1984) theory of communicative action served as the theoretical framework and conceptual lens to interpret the critical findings of this study which provided a deeper understanding about the communication processes and knowledge flow that took place among doctors and other healthcare professionals in this community hospital. Habermas’ (1984) theory integrated objective, subjective, and social perspectives (lifeworld) through intersubjective mutuality where shared meaning and interpretation were achieved using language and argumentation to coordinate action. Habermas’ (1984) theory emphasized social pragmatics and was rooted in the ideal speech situation which implied that a set of rules (genuine interest, equal opportunity to present claims and counterclaims, and common language) governed the actions among individuals who engaged in social deliberation to achieve rational consensus. Habermas’ (1984) theory was aligned with a social constructivist approach that emphasized a non-positivist perspective towards understanding the nature of knowledge by defining what constituted the “truth” to define context.

Habermas (1984) emphasized that in modern societies social norms were not presumed valid until they have been subjected to critical reflection where existing laws were subject to
social deliberation through a process that emphasizes democracy. Individuals engaged in pragmatic analysis to validate claims through discursive justification where they sought to achieve consensus that enabled them to define context. Habermas (1984) critical social theory emphasized hermeneutics that recognized human interpretation was subjective in nature where multiple perspectives were evaluated to effectively coordinate action. Habermas (1984) united normative and empirical theory and argued that rational reconstruction enabled individuals to add perspective beyond the limitations of scientific research. He acknowledged that scientific research served as a theoretical foundation that provided guidelines and boundaries to inform context but argued hermeneutics provided explanation beyond the limitations of scientific research where praxis added value that enhanced contextual meaning. He noted that the dynamic interplay among the collective enabled the collective to co-construct their environment through rational reconstruction and intersubjective mutuality where shared meaning and interpretation using language and argumentation enabled them to coordinate social action.

Fourteen medical doctors participated in the interview process; eight males and six females. Doctors ranged from two and a half years to forty years of clinical experience. Six of the fourteen doctors were departmental chairs and represented cardiology, gastroenterology, psychiatry, infectious disease, and the division of hospitalists. The other eight participants were specialists who represented endocrinology, gastroenterology, cardiology, oncology, infectious disease, and internal medicine. Ten of the fourteen doctors were directly employed by the hospital while the remaining four doctors were employed as outside contractors by the hospital but resided at this location. This was a single-case descriptive case study where research was only conducted at one of the two acute-care facilities owned by this hospital organization.
Part I. Summary of Broad Emergent Themes and Key Findings

This section further explores the four broad emergent themes that were identified in chapter four through the lens of Habermas’ (1984) theory of communicative action and the relevant literature reviewed in chapter two to provide a more in-depth interpretation of the emergent themes and key findings. As a result, six key findings were identified from the interpretation of the four broad emergent themes. The broad emergent themes and key findings were simultaneously discussed since they were interrelated.

Interpretation of themes. Habermas (1984) theory of communicative action emphasized a non-positivist approach to interpret human interaction. Habermas’ (1984) social theory suggested that social pragmatics enabled individuals to use language and argumentation to coordinate action through their dynamic interplay where collectively they rationally reconstructed their environment. His theory integrated the objective, subjective, and social worlds through intersubjective mutuality to coordinate action. Habermas (1984) theory was the most appropriate lens to interpret the key findings of this study that sought to explore doctors’ knowledge sharing behaviors and, specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals since his theory emphasized communication and served as a framework to understand the nature of doctors’ social interactions, communication processes, and the knowledge flow that took place among them.

The key findings of this study strongly support Habermas’ (1984) theoretical framework. Across each phase of the study (documentation, observations, and semi-structured interviews) there was strong evidence that doctors engaged in social pragmatics with other healthcare professionals to collaborate and coordinate action through intersubjective rationality where communication played a key role to ensure accurate interpretation and meaning. Evidence-based
medicine was at the center of their social deliberations where empirical, practical, and reflective knowledge were integrated through shared meaning and interpretation to collectively coordinate action. These initiatives were explicitly espoused in the hospital literature, observed in their enacted behaviors, and articulated through their voices during the interviews. These initiatives can be linked to Habermas’ (1984) theory that emphasized social pragmatics as a way to achieve intersubjective mutuality where individuals co-created their environment based on shared meaning and interpretation. Doctors described their actions as sharing perspectives, clarifying language, and justifying actions with other healthcare professionals to coordinate action, and emphasized evidence-based medicine as the approach used to coordinate patient care at this community hospital.

**Emergent Theme One: emphasized interdisciplinary collaboration emphasized evidence-based medicine to coordinate action.** For instance in Phase II (observations), various measures were employed to ensure common understanding among doctors when they engaged with other healthcare professionals where they took initiatives to explain and justify the reasoning behind their decisions. This was most evident when doctors were observed sharing perspectives to engage in clinical evaluations or prescribing treatments where they engaged with other healthcare professionals to explain, clarify, and interpret meaning on how to proceed which they expressed as important to ensure they were on the same page. The observations in Phase II were consistent with the responses in Phase III where doctors took initiative to explain, clarify, and interpret their perspectives when they shared information with other healthcare professionals. For example, it was common for a doctor to take proactive initiatives to ensure sensemaking through shared meaning and interpretation. These measures included being explicit and literal to ensure common understanding when they engaged with other healthcare professionals. In
addition, they noted that it was routine to justify actions when they engaged with other healthcare professionals because it provided insight to explain various outcomes and guidelines that dictated their decisions on why certain actions were taken which enabled them to effectively coordinate the care of mutual patients.

Doctors also described the value of sharing practical insight with colleagues because it enabled them to explain questionable outcomes based on previous experiences which added context to a clinical assessment. They noted by synthesizing all of the data and applying practical knowledge it enabled them to establish context. Notably, although all of the doctors who were interviewed perceived a value associated to the sharing of practical knowledge it was acknowledged by one physician that resistance was often encountered from the recipient who was self-biased and appeared defensive and closed to “other” suggestions. Although this response was considered to be an outlier in this study, it was consistent with research that argued knowledge sharing may be ineffective if a recipient does not perceive any associated benefit to the knowledge sharing or its application.

The questionable attitude expressed by the outlier in this study may be consistent with Liyanage et al. (2009) who argued that knowledge can only be meaningful to a recipient if the sender determines what it means to, or how it can benefit, the receiver. To effectively transfer knowledge its context in relation to the receiver must be understood otherwise it will be meaningless. They argued that the recipient must have a willingness to acquire the knowledge, have the capacity to absorb it, and perceive that it was credible information (pp. 125-126). According to Van de Wiel et al.’s (2011) findings, when participants were asked about seeking the advice of a colleague they said that they sought additional information when they had insufficient knowledge to assist a patient or when they were uncertain on how to proceed with a
unique procedure. According to the study, although participants found seeking advice from other colleagues was very useful, they acknowledged that differences in opinion (egotistical, positional, experience, lack of capacity, etc.) often resulted in conflict (p. 89). Although this behavior was acknowledged in this study and not considered optimal for collaboration, it only represented a minority opinion (7%) which was expressed by only one interviewee in this study.

Significantly, doctors engaged in collaborative behaviors that were consistent with engaging in social pragmatics across all three phases of this study as was explicitly espoused in the documentation, enacted in the observations, and described in the interviews. These initiatives were consistent with Habermas (1984) who argued that effective social cooperation was achieved through intersubjective mutuality where individuals collectively engaged in social deliberation to define context. These findings were also consistent with Von Krogh (1998) who argued that sense making using reflection and interpretation enabled individuals to establish common meaning that defined reality. Patton (2001) similarly argued that a pragmatic utilitarian (p. 334) approach enabled individuals to co-construct meaning where the interpretation was meaningful to them and relevant to the situation where multiple perspectives were engaged across various contexts to coordinate action.

**Key finding one identified that doctors engaged in interdisciplinary collaboration that emphasized evidence-based medicine resulting in effective coordination of patient care at this community hospital.** Across all phases of the study, doctors’ knowledge sharing behaviors can be described as being collaborative and using evidence-based medicine to coordinate patient care where their efforts combined the latest scientific evidence, clinical and practical expertise, and patient context to provide a holistic perspective. Collaboration and coordinate emphasizing evidence-based medicine was the most prevalent broad emergent theme identified in this study.
In Phase III doctors noted that it was important to take a holistic approach to patient where clinical data was put into context relevant to the patient’s status. The types of knowledge and types of actions they enacted were consistent with Habermas’ (1984) theory of communicative action, which emphasized social pragmatics and rational reconstruction through intersubjective understanding where shared meaning and interpretation were used to define context. The actions employed by in this study were also consistent with Landman et al. (2013) who emphasized that complex decisions in a critical care setting were most effective when individuals actively engaged in communication to share the latest scientific evidence information which enabled them to effectively coordinate patient care.

In Phase II of this study, collaborative behavior was observed 50% of the time when doctors interacted with other healthcare professionals to coordinate patient care in the intensive care unit and 79% of the time at the nurses’ station. These behaviors were also described in Phase III when doctors noted that they shared perspectives with colleagues and cooperatively worked together to coordinate action through shared meaning and interpretation to establish common understanding among one another. Landman et al. (2013) argued that higher performing hospitals had strategies that emphasized horizontal and timely communication where healthcare professionals were encouraged to collaborate with one another to share information that could ultimately improve the quality of patient care as noted in their study where emergency room physicians and emergency medical services actively engaged in knowledge sharing that reduced the overall mortality rates suffered from myocardial infarctions. Their study explored the nature of the collaborations among different healthcare providers and found that strong communication across functional borders by empowering individuals to share insight in complex decisions, inviting them to attend interdisciplinary meetings, and sharing performance data to
create awareness on how to improve certain processes (pp. 190-191). Similarly, Leever et al. (2010) argued that “communication, mutual respect, professionalism, climate of collaboration, and quality of care must exist between physicians and nurses to ensure optimal collaboration” (p. 620). Each of these factors could result in conflict among the two professions that could negatively impact the quality of patient care. Both Landman et al. (2013) and Leever et al. (2010) had findings that were consistent with the findings of this study, where doctors emphasized they had a high level of mutual respect, trust, professionalism, and competence in their colleagues, and that they took various communication initiatives to establish contact, clarify meaning, and to ensure common understanding with other healthcare professionals.

The findings of this study indicated that 79% of the doctors emphasized they engaged in direct communication (face-to-face or via telephone) to initiate contact with other healthcare professionals when they needed to consult other viewpoints at this community hospital. The initiatives in this study were aligned with Zwarenstein et al. (2010) who argued that it was imperative for doctors to initiate face-to-face communication with other healthcare professionals to effectively engage different viewpoints, experiences, and context. They argued that effective inter-professional collaboration resulted from cooperation through teamwork among individuals where they avoided emphasizing positional status since it had tendency to create barriers across boundaries which could ultimately lead to inefficient patient care. According to Gotlib-Conn et al. (2014), “interprofessional collaboration is a complex and dynamic process that involves the establishment of trust, familiarity, and goal-sharing between health care professionals in addition to a support work environment and culture” (p.2). To achieve this purpose it was extremely important to understand “the evolving relationship between nurses and physicians in terms of the quality of their communication, the nature of their interactions, and their perceptions of their
relationship to continually work toward cohesive interprofessional care” (p. 2). As a result, the majority of doctors at this community hospital took initiatives using direct communication techniques that were consistent with those of Gotlib-Conn et al. (2014) to ensure they were on the same page.

Some concern was raised by one interview outlier in this study that self-bias impacted how well input was received from other healthcare providers. Although this response was limited to only one participant in this study, one might consider other previous research (Hewett et al., 2009; Ipe, 2003; Mansingh et al., 2009; Szulanski, 2000; Weller et al., 2011) that identified various similar factors that could potentially impede effective knowledge sharing. For example, Ipe (2003) argued that positional power created conflict which presented barriers to effective knowledge sharing while reciprocity factors could prevent effective knowledge sharing if the source or the recipient was concerned on whether the return of information would be equitable to that rendered. Szulanski (1996, 2000) argued that knowledge transfer had a potential to be “sticky” if there was a lack of absorption when received by the recipient which also created potential barriers, while Hewett et al. (2009) noted that a lack of capacity across inter-professional borders posed potential conflict among individuals who took a non-accommodative position to resist input from those outside of their specialty area (p. 1733). Mansingh et al. (2009) argued that if the recipient did not perceive a value associated to the knowledge being transferred they would not be receptive to receiving it. Lastly, Weller et al. (2011) noted that positional status and role often created barriers where social interactions were limited across professional boundaries and thus made it difficult to coordinate effective action plans. They described formal inter-professional meetings to share mental models that would enable them to work more cooperatively with one another. The factors described in the literature reviewed must
be considered potential barriers that may have attributed to experiences described by the outlier in this study but further research would have to be conducted to explore the motivation behind the behavior described during this study.

From Habermas’ (1984) perspective, the ideal speech situation presumed that individuals cooperated through social pragmatics to achieve intersubjective consensus to effectively coordinate action. The ideal speech presumed that each individual’s motives were genuine and that each person had equal opportunity to present and justify their claims. It also assumed claims were legitimate, not as a result of self-interest, and that language used was common among individuals to ensure comprehension. Habermas’ (1984) ideal speech situation had some shortcomings since it did not consider personal motivations as a potential threat and conflict to sharing knowledge. Organizational politics exist and must thus be acknowledged as potential influencing factors that may impact the types of knowledge and types of actions used to share knowledge.

While collaborative behavior using evidence-based medicine was observed in their behaviors and articulated in their descriptions, doctors in this study emphasized the importance that communication played to facilitate these processes. In Phase III of the study, doctors described various direct, indirect, and informal channels of communication used to initiate contact with other healthcare professionals. For example, some doctors emphasized direct verbal communication either face-to-face or over the telephone or written communication through email over their internal secure system while others noted using indirect communication initiated through the computer to access other physicians’ notes in the electronic medical record (EMR). Some doctors noted informal communication based on serendipitous encounters enabled them to initiate contact with other physicians, which afforded opportunities to engage in social dialogue.
As a result, both communication and computer-mediated communication were emphasized throughout the study.

*Emergent Theme Two: continuous verbal and electronic communication driven by audience awareness and message continuity.* Very importantly, doctors emphasized during Phase III that language and specifically, the wording they used to describe findings, perspectives, treatments, etc., played a key role as to whether the meaning was accurately interpreted. Doctors noted that they took measures to ensure that language was accurate by being concise, explicit, direct, and emphasized the use of brackets, explaining in literal graphic terms, and saying it in plain English while others emphasized that they avoided jargon and abbreviations completely since the chance for misinterpretation existed especially across inter-professional boundaries where expertise varied.

Ipe (2003) argued that knowledge was contextual and required language clarification among individuals to ensure accurate meaning. For example, in Phase III of the study doctors’ described various abbreviations that varied across sub-specialty areas while other doctors’ noted that jargon often led to misinterpretation. As a result, they emphasized the need to be explicit and literal when speaking, to avoid using words that could be misinterpreted, and to preface any words that had potential for misinterpretation to ensure accuracy of meaning.

Tsoukas (2009) warned that cognitive maps varied depending on the individual’s background which meant it was important to use familiar words and language to avoid misinterpretation of meaning while Carlile (2002) argued that dialogue served as a mechanism that facilitated knowledge across functional boundaries while cognitive maps served as visual tools that provided effective meaning translation among diverse member to ensure against a potential lack of capacity where an individual may have difficulty effectively absorbing the
content as intended. Carlile (2002) emphasized that dialogue and the use of language was important because meaning could vary across borders where a difference in semantics or syntax could result in potential misinterpretation. This was described in the study by the doctors who argued that medical jargon was ambiguous across boundaries where they took measures to clarify meaning.

Carlile’s (2002) arguments were relevant because previous researchers such as O’Dell and Grayson (1998) warned that if a recipient was unfamiliar with the value or intended use of knowledge it could result in inappropriate application. Similarly, Geiger and Schreyögg’s (2012) study findings also indicated that knowledge transfer across borders had to be relevant and familiar to recipients for it to be perceived as valuable and emphasized that if individuals took time to explain the reasons behind their actions would justify and legitimize their claims.

Ipe (2003), Tsoukas (2009), Carlile (2002), and Geiger and Schreyögg (2012) were consistent with this study. For example, in Phase II when doctors engaged with other healthcare professionals in a work-related environment such as the nurses’ station they provided insight on how and why they took certain actions. This was also noted described in the interviews in Phase III where doctors argued that they took measures to explain how and why things happened to ensure common understanding when they engaged with other healthcare professionals to coordinate mutual patient care. The initiatives were consistent with Habermas (1984) who argued that through social discourse individuals had the opportunity to present and validate their claims which enabled them to legitimize their actions to one another.

Additionally, in Phase III doctors provided rich descriptions of the specific measures they took to ensure knowledge was interpreted and applied as intended when they engaged with other healthcare professionals. All of the doctors clearly understood and articulated that it was very
important to clarify meaning to explain what they were referring to by providing explanation on why something was being done and what to expect as a result.

The initiatives that doctors described in Phase III were consistent with Tsoukas (2002) who argued that individuals must externalize their implicit knowledge through language and dialogue which enabled them to co-create meaning and interpretation to define context. Tsoukas’ (2002) arguments were consistent with those of Swanwick (2005) who previously emphasized that effective knowledge sharing was not simply a matter of transferring knowledge from one individual to another but required sharing meaning and interpretation that led to new distinctions. Tsoukas (2009) argued that productive dialogue enabled individuals to effectively coordinate action through self-distanciation where individuals engaged the viewpoints of others to broaden their scope on how to manage complex problems, and noted that individuals combined, expanded, and reframed their perspectives to attain mutual understanding which enabled them to effectively coordinate action (p. 942). He also argued that turn-taking enabled individuals to have opportunity to share and defend their perspectives (p. 943).

In Phase II doctors were observed pausing and stopping to allow the exchange of ideas. The application of Tsoukas’ (2009) theoretical arguments can be considered critically important to the healthcare industry since it is important for different healthcare providers to engage in productive dialogue with one another to ensure the highest quality of patient care. Thus, it was important that healthcare professionals engaged in dialogue that was productive in nature that sought to achieve the highest quality of patient care as opposed to engaging in dialectical conversations that had a tendency to be superficial. The study by MacIntosh et al. (2012) explored cross functional communication among medical professionals to determine whether there was tendency to engage in dialogical or dialectical processes to construct meaning. Their
findings indicated that interaction among clinicians and managers often “lacks common language and is dialectical in nature,” meaning that members within each group tend to reinforce existing knowledge and present it as a fully formed entity with no room for modification; this prevents each group from effectively sharing knowledge across functional boundaries (p. 332). They argued that productive dialogue enabled individuals to explain implicit meaning to others through social pragmatics. This allowed for the establishment of common meaning and interpretation in order to coordinate action. They noted that dialectical processes were redundant and superficial and only concerned about maintaining harmony rather than to effectively coordinate action.

Across all three phases of this study doctors described initiatives to coordinate action with other healthcare professionals that were consistent with productive dialogue (MacIntosh et al., 2012; Tsoukas, 2009). For example, they cooperated with interdisciplinary professionals across borders to resolve conflicts and collaborated on mutual patient care by sharing, explaining, clarifying, and justifying their decisions, they provided practical insight about conditions and potential side effects to create awareness, and they shared experiences to on outcomes and approaches that enlightened their colleagues. Inter-professional communication was perceived as beneficial because it not only served to educate physicians but was identified as adding value to the overall patient care experience. As a result, these initiatives resulted in the following revelation which was identified as a key finding of this study.

*Key finding two emphasized that doctors took initiatives to clarify and corroborate data when sharing information with other healthcare professionals, which ensured that knowledge acquisition and knowledge application were interpreted and applied as intended.* Doctors emphasized that it was imperative that they took measures to ensure accurate interpretation of
meaning when they engaged with other healthcare professionals to effectively coordinate patient care. They argued that in healthcare accuracy was critical and emphasized that certain measures were taken to ensure common understanding when they engaged with other healthcare professionals.

Mansingh et al. (2009), Zigan et al. (2010), Geiger and Schreyögg (2012), and Aliki et al. (2014) emphasized the need for further research on how to achieve effective knowledge acquisition and knowledge application during knowledge transfer to prevent knowledge from being lost in translation when it was transitioned from a source to recipient. The initiative described in this study provided valuable insight on how the doctors in this study took initiative to ensure effective knowledge translation, which directly responded to the need for more research (Aliki et al., 2014; Geiger & Schreyögg, 2012; Mansingh et al., 2009; Zigan et al., 2010). Doctors described various strategic initiatives they took to ensure that knowledge translation was accurately interpreted and applied when they shared information with other healthcare professionals. All doctors indicated, during some part of the interview, that they took initiatives to ensure that the information they conveyed to other healthcare professionals was accurately interpreted. Below are some key examples of how doctors took initiative to ensure common understanding:

- “focus on the abnormal and what it may mean….go through the differential with them (team) to establish common understanding to ensure we are looking at the abnormal… so we understand the scope of what we're talking about” (Doctor 5).
- “make sure that we're talking about same sodium level, same blood test, for the same patient…lots of confirmation between myself and other healthcare professional … this is the primary measure that I use to ensure that we are on the
same page” (Doctor 3).

- “specialist and radiologist … must be on the same page… we look at the mammogram or MRI and say, I’ve seen the patient this is what I think, I want to know from your radiological standpoint how concerned are you about his lesion … radiologist reads something that I misinterpret as not concerning and it may be or the radiologist reads something I feel there’s urgency to, but there may not be” (Doctor 10).

- “if there is any question that she (nurse) misunderstood we will start the whole process again including the thought behind what I am doing and what it means” (Doctor 6).

- "to be accurate I talk with nurses… if the nurse doesn't realize what I am looking for ... I will describe to the nurse the specific circumstances of what I'm looking for … people mean different thing by diarrhea ... so, I will often explain to the nurse EXACTLY what I mean or that certain tests can only be done with certain kinds of specimens” (Doctor 1).

Collaboration was identified as key to effective knowledge acquisition and knowledge application because it enabled doctors to engage back and forth with other healthcare professionals to ensure common understanding. Doctors described that they took initiative to clarify meaning when used jargon, abbreviations or unfamiliar language to avoid misinterpretation and noted that confirmation, redundancy, and rephrasing of language ensured further interpretation.

According to Garud (1997), “know-how” (learn by doing), “know-why” (learn by studying) and “know-what” (learn by using) were interrelated components of knowledge that had
to be managed together as a system to effectively use and apply knowledge as intended (pp. 83-84). Similarly, Mansingh et al. (2009) and Tortoriello et al. (2012) argued that effective knowledge sharing could only happen if the source and the recipient shared common understanding especially across professional borders. Doctors in this study described various types of initiatives such as language clarification, repetition, and paraphrasing, to establish mutual understanding when they engaged with other healthcare professionals. The initiatives taken in this study to ensure accurate knowledge acquisition and application in Phases I and II of the study can be linked with Habermas’ (1984) theory, which argued that context mattered and was considered relevant to effectively coordinate action. Habermas argued that through speech acts individuals engaged in social pragmatics using language and argumentation to achieve intersubjective understanding to define context. Doctors also took initiatives online using the electronic system to achieve understanding.

Doctors argued that the EMR system served as a repository that provided structure for knowledge retention which enabled doctors to share information electronically with one another. They noted that the system provided fields for “patient notes” and “physicians’ notes” which enabled them to explicitly describe patient status and to provide practical content to further clarify meaning when needed. Doctors argued that the system enabled them to provide their thoughts to colleagues in order to share practical insight on medical-related matters or to start a technical dialogue about a patient’s status. Doctors emphasized that the system served as a “routine in place” with “referral tracking,” and required that a doctor had to update patient status on a regular basis. These initiatives were consistent with Dwivedi et al. (2003) who argued that a hospital must have formal knowledge structures to capture critical knowledge and intellectual assets which were considered vital in the healthcare industry to ensure optimal patient care.
In addition, corroboration was identified as an important action doctors took to ensure that content was maintained in its initial meaning and knowledge was applied appropriately. They described various measures such as specifying, explaining, clarifying, illustrating, and following-up with the other healthcare professionals to establish common understanding and to ensure that follow-up was enacted as requested. All of the doctors referred to corroboration (direct or indirect) as a measure taken to ensure that information was appropriately applied as intended when shared with other healthcare professionals.

Overall, 50% of the doctors emphasized that they engaged in direct corroboration such as explaining to the nurse, reading it back to the nurse, explaining the thought process, determining if relevant pieces were not understood, telling the nurse why something was being done, asking if they understood, following-up with the other physician, and sending flags through EMR. Of the doctors interviewed, 36% noted they used indirect corroboration for example such as referring to the written record in the EMR, following-up with the patients, and presuming follow-up calls if there were questions or concerns while 57% indicated a combination of both. Overall, doctors took measures to clarify, interpret, and make sense of data through efforts that emphasized redundancy, confirmation, and the rephrasing of language combined with initiatives to corroborate data with other healthcare professionals.

These behaviors strongly indicated that effective knowledge sharing was critically important to this community hospital where efforts at the organizational, collective, and individual level were taken to ensure that knowledge translation resulted in effective knowledge acquisition and knowledge application to achieve optimal patient care. Direct corroboration techniques served as a proactive measure to ensure that common understanding took place among two individuals and was more likely to be effective than indirect corroboration methods.
where one takes a more reactive approach by presuming the information was appropriately applied as intended. Evanoff et al.’s (2005) findings argued that indirect communication techniques such as “review of the patient’s chart” (p. 9) could lead to misinterpretation resulting in ineffective patient care since self-interpretation was subjective. They argued that face-to-face dialogue enabled individuals to establish common understanding to ensure they were on the same page. Also, indirect corroboration through the patient could result in misunderstanding if the patient were unable to explain and justify the cognitive processes of the referring physician. As a result, the indirect corroboration techniques identified in this study may be convenient and less confrontational but may also result in counterproductive outcomes if misinterpreted.

Landman et al. (2013) emphasized that “higher performing hospitals have respect, strong communication, active engagement and close collaboration … that leads to improved quality of patient care” (p. 188). Their study illustrated that effective communication and collaboration among emergency room clinicians and emergency medical services (EMS) enabled them to improve mortality rates among patients who suffered from myocardial infarction. The study emphasized that respect, strong communication and coordination with EMS and active engagement of EMS in hospital acute myocardial infarction quality improvement efforts. The majority of doctors in this study emphasized they used direct verbal communication either face-to-face or over the telephone to coordinate action with other healthcare professionals in critical situations and noted that it was the fastest and most direct way to communicate with other healthcare professionals to ensure they were on the same page.

In addition to self-initiated communication, doctors argued that the organization had systems and processes in place which enabled them to meet with their colleagues within and across disciplines where they could share information on complex decision making. For
example, they described that quality improvement meetings served as a forum to communicate with multidisciplinary professionals face-to-face across to improve the quality of patient care. They also referred to the Quality Committee which was responsible for overseeing the various formal weekly and monthly interdisciplinary meetings. In addition, the committee was responsible to make sure that doctors routinely updated information through the electronic medical record which served as a knowledge and communication structure that enabled knowledge sharing across the organization. In addition, communication protocol served to define how individuals proceeded when reporting incidentals. Formal channels of communication were specifically identified as the proper protocol to convey issues related to safety prevention and the reporting of concerns. As a result, formal protocol underpinned how to take action to convey problems at this community hospital.

The measures initiated in this study were consistent with Islam et al. (2012) who argued that the structure and climate of the organization played a major role on whether individuals engaged in knowledge sharing, and noted that it was important that formal communication processes encouraged upward, downward and horizontal communication to effectively facilitate knowledge sharing among individuals across the organization (pp. 44-46). They emphasized that the climate served to facilitate policies and protocol which defined how to and the way we do things which served as underlying assumptions that underpinned behaviors. Similarly, Gotlib-Conn et al. (2014) findings emphasized that to be successful “interprofessional communication requires the establishment of trust, familiarity, and goal-sharing between health care professionals” (p. 2).

In Phase III of this study, the doctors described working closely with the nurses to ensure they were on the same page for optimal patient care. For example, they described such actions as
communicating back and forth, explaining and justifying orders were prescribed, presenting patient symptoms, and providing clarification to ensure accuracy of interpretation of meaning. These initiatives were consistent with the actions observed in Phase II of the study where doctors explained concerns and potential problems to ensure that they were on the same page with the nurses and other physicians. These initiatives were important because it ensured that doctors and nurses cooperated with one another to effectively coordinate patient care. This was consistent with Habermas’ (1984) theory that argued empirical claims were subjected to critical evaluation through intersubjectively to provide a holistic perspective that accurately reflected the lifeworld and argued that democracy was exercised to coordinate action to protect society from colonization (Scambler, 2001, p. 200). Similarly, Gotlib-Conn et al. (2014) and Zwarenstein et al. (2013) findings argued that it was important for doctors and nurses to maintain effective communication by allowing one another to provide and explain their perspectives. Otherwise socio-emotional factors such as positional power or unfamiliarity across boundaries could negatively impact the coordination of patient care.

Although turn-taking was highly emphasized as part of the communication process throughout this study, there were some rare situations where social exchange appeared one-sided. For example, in Phase II of this study, the doctor appeared to control the conversation when speaking with the nurse to assess and prescribe patient care while the nurse fulfilled and supported requests in a couple of instances. The dialogue was very transactional in nature where only clinical information was exchanged without any attempt to engage the nurses’ viewpoints. Such a social exchange may not have reflected previous existing dialogue that was not privy which may have resulted in the observation as being one-sided when in actuality there may have been extenuating circumstances that led to these actions. These types of communication
exchanges were not commonly observed or described throughout either phase of the study.

Besides the importance of effective communication among doctors and other healthcare professionals in a work-related context, doctors also emphasized that social conversation was perceived as a viable means to establishing social relationships and played a key role to foster their working-relationships with colleagues. For example their responses can be summarized as maintaining emotional stability, feeling more comfortable, having confidence, encouraging teamwork mentality, learning different approach and perspective on things, and improving the relationship.

Similarly doctors noted that personal communication channels afforded them more business opportunity, quicker responses, familiarity of technical expertise, eliminated barriers, and encouraged collegiality. Both social conversation and personal communication channels were perceived by the majority of doctors as valuable and were consistent with Lee, Foo, Chaudhry, and Al-Hawandeh (2004) who argued that individuals with pre-existing ties were more apt to engage in informal knowledge sharing because they had trust with one another where they voluntarily engaged in collaboration with others. Similarly, Lehtonen (2009) argued that when individuals developed trust with one another it created a bond that led to communication by accident because of the tendency for people to share information as a result of the trust that existed between them (p. 71).

However, some doctors perceived social conversation as being superficial where pleasantries appeared normative, while others argued that socializing was time consuming, or physically not possible. Only two of the 14 doctors (14%) interviewed did not regularly engage in social conversation and attributed their behaviors to a lack of time, isolation, limited opportunities, or an inability to perceive a value associated to social conversation. According to
Zigan et al. (2010), if an organization created opportunities for its healthcare professionals to engage with one another through formal or informal events, it enabled individuals to build social ties and develop familiarity across boundaries that enabled them to share knowledge.

Overall, the majority of doctors emphasized they perceived social conversation and personal communication channels as beneficial to their working-relationships with other healthcare professionals and thus was identified as a key finding to this study.

*Key finding three emphasized that social conversation enabled doctors to create personal communication channels that fostered working-relationships with other healthcare professionals and resulted in higher quality patient care.* Doctors described various benefits to social conversation with other healthcare professionals for example they noted that it created a sense of comfort, trust, collegiality, and emotional stability which enabled them to develop personal communication channels that added value to their overall working-relationships, and was perceived to improve the overall quality of patient care 29% of the time. The most frequent response was that personal communication channels enabled doctors to be more responsive to colleagues as was identified by eight of the doctors (57%). This was consistent with Zwarenstein et al. (2013) who argued the importance of non-medical deliberation among physicians and other healthcare professionals to build social rapport across inter-professional borders that led to a higher quality of patient care. It was emphasized by the doctors that recent hospital structure and policy changes had resulted in fewer opportunities to engage in social interaction although the electronic medical record was identified as a way to maintain contact with colleagues (p.7).

As a result, there was strong indication that personal communication channels were a very important part of knowledge sharing at this community hospital because it enabled doctors to establish social relationships with other healthcare professionals which created social capital.
that enabled individuals to cooperatively work together to share multiple perspectives to
coordinate patient care. The key findings from this study emphasize the value of social bonding
and were consistent with Whittaker and Van Beveren (2005) who argued that effective
knowledge sharing in healthcare required building social capital with others to engage multiple
perspectives across inter-professional boundaries. They emphasized that the context was a
constantly changing process where knowledge was constructed between individuals using shared
meaning and interpretation to make sense of new situations (p. 302). They also emphasized the
importance of the relational dimension that existed among as a result of bonding and noted
“social capital exists in a relationship between two actors if they develop personal bonds,
attachment, and trust” (p. 302).

Alternatively, some doctors strongly emphasized the importance of electronic
communication rather than face-to-face contact where they noted that the system served as a
medium where they engaged the viewpoints of other healthcare professionals, corroborated and
followed-up on patient care, accessed and updated patient notes, and initiated social contact with
other healthcare professionals. They emphasized that it was fast and convenient where it
facilitated responses to patient-related questions and enabled them to organize consultations very
efficiently without having to visit one another which was more time consuming. In addition, the
system served as a structure that required doctors and other healthcare professionals to capture
certain knowledge including personal patient notes that enabled them to share certain tacit and
practical information with other healthcare professionals.

was a hard variable that created structure and ensured knowledge sharing among individuals
whereas a soft variable such as the social climate and individual commitment varied because
they were subject to human nature (p. 119). Thus, the use of computer-mediated communication potentially minimized communication barriers associated with soft variables (time and personal motivational factors) by establishing protocols through communication structures that required individuals to communicate knowledge with one another. Similarly, Bosua and Scheepers (2007) communication model integrated formal and informal social interaction networks through technological interfaces to transfer and create knowledge in an environment context that was conducive for such transfers.

The findings in this study were aligned with Van den Hooff and De Ridder’s (2004) and Bosua and Scheepers (2007), since the electronic medical record (EMR) served as an intermediary collaborative tool that connected individuals across various platforms of the organization. The electronic medical record (EMR) was perceived favorably by all of the doctors who said that it enabled them to maintain contact with their colleagues. In addition, the system created structure that required doctors to communicate with one another on patient status which created routine retention across all functions and promoted teamwork and cooperation to coordinate action. As a result, electronic communication was perceived as a valuable tool that provided doctors with various functions such as easy access to patient records, ability to collaborate with other healthcare professionals, maintain social relationships with colleagues, and enabled them to schedule various procedures and consultations.

*Key finding four emphasized that the Electronic Medical Record (EMR) system was perceived as a central artery that facilitated communication across the organization.*

Throughout all three phases of the study, doctors emphasized the importance of the electronic medical record (EMR) and referred to the system as an intermediary collaborative tool that facilitated communication across interdisciplinary borders of the organization which enabled
them to collaborate and coordinate patient care with other healthcare professionals. Computer-mediated communication was highly utilized by doctors and served as a fast convenient way to engage the viewpoints of other physicians. The system was recognized as a repository that stored up-to-date information which enabled them to effectively coordinate patient care. Doctors described the system as part of the culture and argued that formal structures ensured that physicians accessed and updated the record on a regular basis. The doctors described the benefits of using the electronic medical record in Phase III where the system was identified as a medium that enabled them to maintain relationships with other healthcare professionals especially since face-to-face interaction was less frequent given recent changes in hospital structure.

These initiatives were consistent with Bosua and Scheepers (2007), and Lu and Lajoie (2008). Bosua and Scheepers (2007) findings emphasized that individuals socially interacted directly and through technological interfaces to transfer and create knowledge as noted in this study where doctors said that the system allowed them to add notes for a colleague to provide practical insight. In comparison, Lu and Lajoie (2008) argued that technology enabled individuals to refer to codified data that could be used to validate their arguments and served as common mental models to establish shared meaning and interpretation to coordinate action (p. 426).

Comparatively, Feenberg (1996) provided insight to interpret Habermas’ position on the use of technology and noted that Habermas (1984) perceived technology as useful when appropriately utilized where it served as a valuable tool to connect individuals across various locations that enabled them to share information and coordinate action. Alternatively, Feenberg (1996) warned that Habermas (1984) also perceived technology as being potentially detrimental
to the lifeworld if individuals used it for the wrong purpose. According to Feenberg (1996), Habermas (1984) argued that when technology was misappropriated it negatively impacted human interaction since social engagement was driven by self-serving instrumental purposes that were not representative of the lifeworld but instead served as the root of social pathologies striving to colonize the lifeworld (pp. 47-48). When action was intended to achieve mutual understanding it was perceived as genuine because it reflected multiple perspectives (objective, subjective, and social) that represented the lifeworld. When action was based on cognitive-instrumental rationality, intentions were deliberate but only represented those who served to gain from those actions (p. 638). Overall, Habermas (1984) emphasized that face-to-face interaction provided the most effective means to present and validate claims through discursive justification where individuals co-constructed meaning in an open forum where the environment was conducive to argumentation whereas the use of technology deemphasized the human element since electronic communication had limitations where the individual was not present to defend their claims and information was lost in translation.

In this study, the computer (EMR) system was perceived across the organization as a viable tool that enabled individuals to communicate with one another in a timely fashion which was extremely important in healthcare since time was critical to the nature of the profession. The EMR served as an electronic communication medium that was used to initiate consultations, corroborate patient status, access patient information in critical situations to inform complex decisions, and to maintain social relationships and personal communication channels with other healthcare professionals. As a result, there was strong indication that technology served as an intermediary collaborative tool that provided connectivity and speed to facilitate information sharing across the organization that enabled doctors to coordinate action.
Overall, communication played a key role in the organization to facilitate collaboration and coordination processes among individuals to coordinate patient care but the culture defined the behavioral expectations and served as the nucleus that defined communications which facilitated collaboration, and set the tone for the types of knowledge shared where evidence-based medicine, practical insight and lessons-learned served to enhance organizational learning.

The organizational culture created the foundation for which communication took place throughout the organization which in turn impacted the types of knowledge and types of actions shared with other healthcare professionals to collaborate and coordinate patient care. As a result, the organizational culture was identified as a broad emergent theme in this study.

**Emergent Theme Three emphasized a cultural environment characterized by transparency and shared values bounded by normative traditions.** This broad emergent theme was identified on thirteen occasions and as a secondary theme on two occasions in Phase III and resulted from the data analysis across all three phases of the study. Although the focus of this study revolved around the communication processes and knowledge flow among doctors and other healthcare professionals, the culture defined the context which underpinned the behaviors of the organization. Schein (1985) argued that the culture provided the foundation that underpinned the behavioral expectations of its employees through structures and systems that articulated the way things were done in the organization.

In this study, normative traditions created collegiality among doctors who cooperated with one another to effectively coordinate action. Formal structures defined the communication protocol on how to speak up in the organization while corporate compliance defined the standards and regulations that guided behavioral expectations of employees while electronic systems were designed to capture specific types of information through strategies that
emphasized knowledge retention. In addition, the organization fostered a social environment that encouraged knowledge sharing and disclosure among individuals characterized by an ‘open’ transparent culture. This was consistent with Argote et al. (2003), Ipe (2003) and Gagné (2009) who argued that the organization must create a social environment that encouraged knowledge sharing and structures that facilitated communication processes. As a result the organization culture set the foundation that facilitated knowledge sharing.

Key finding five emphasized that the organizational culture strongly influenced the behaviors of doctors which impacted the types of knowledge and types of actions they used to share knowledge with other healthcare professionals. The hospital culture set a transparent tone by fostering a social environment that encouraged individuals to engage in knowledge sharing. For example, the documentation emphasized that organizational values were shared across the organization and that the culture created an environment where individuals were encouraged to engage in “open” transparent communication. Similarly, the observations illustrated doctors who prescribed and advised on how to while in the interviews doctors described that they felt comfortable sharing past mistakes and bad outcomes because the organization encouraged it and welcomed their insight as part of organizational learning. According to Endres et al. (2007), individuals must perceive organizational leadership as trustworthy where they had self-efficacy and felt comfortable to disclose personal experiences with others including vulnerabilities knowing that their peers would reciprocate.

During professional development sessions leadership emphasized the importance of being recognized as a “culture of safety” not as a “culture of blame” where traditionally hospital organizations feared that sharing incidentals had legal ramifications. In this study, hospital leadership proactively took initiatives to promote a “culture of safety” to its employees as was
identified across all three phases of the study and was contrary to existing research that emphasized that a traditional “culture of blame” still existed as noted by Waring and Bishop (2010) who argued that a fear of potential medical liability resulted in a lack of incidental reporting among doctors and hospital leaders who created barriers to effective knowledge sharing while similar to that Gorini et al. (2012), argued that “a range of different institutions worldwide has identified the ‘culture of blame’ and the fear of being punished as the principle reasons for the lack of medical error reporting and, consequently, of their reiteration and of the poor quality of patient care” (p. 671).

A potential drawback to an open environment in hospitals where errors are openly discussed among individuals and groups is the potential for increased legal liability and more malpractice suits against doctors and the healthcare organization as a whole. This is especially a concern among the senior management of healthcae organizations and is a real and existential danger. This view is part of proper corporate governance and is consistent with due diligence duties at the corporate board and senior management level. This view, though a valid concern, must be counterbalanced by noting that the ultimate purpose of openly discussing errors is prevention and emphasizes a “culture of safety” with an eye towards limiting errors and therefore limiting liability overall. Beyond this, at least one study has concluded that the open discussion of errors does not increase liability (Stewart et al., 2006).

Habermas (1984) argued that it was important to engage all stakeholder viewpoints to ensure democracy where critical reflection led to social reform otherwise society would succumb to bureaucracy and colonization (Scambler, 2001, p. 121-122). He argued that because human interpretation was subjective multiple perspectives had to be validated through intersubjective mutuality to define reality (Scambler, 2001, p. 129).
Evidence from this study emphasized that the organizational structure and communication processes fostered a social environment that encouraged knowledge sharing among individuals. This was especially noted by the doctors who argued that through various formal events (Morbidity and Mortality, Tumor Board, etc.) they were encouraged to share outcomes and approaches that could enlighten their colleagues. These initiatives were consistent with various researchers (Argote et al., 2003; Davenport & Pruzak, 1998; Gagné, 2009; Mansingh et al., 2009; Taylor & Wright, 2004; Weller et al. 2011; Zigan et al. 2010) who explored the impact of communication structures and organizational climate both within and outside of the healthcare industry and the structures, opportunities, and ability to articulate the importance of knowledge sharing throughout the organization was critical to effective knowledge sharing. For example, Mansingh et al. (2009) emphasized that social barriers such as relevance and knowledge capacity could prevent the source or recipient from perceiving a value associated to knowledge sharing which could negatively impact effective knowledge transfer where knowledge acquisition and knowledge application were ineffective and argued the importance of creating common understanding between a sender and receiver to clarify meaning that would enable them to effectively transfer knowledge. Despite their research findings, a gap continued to exist across various industries and more specifically, in the healthcare industry as noted by Aliki et al. (2014), Mansingh et al. (2009), Zigan et al. (2010), Gorini et al. (2012), and Zigan et al. (2010). Mansingh et al. (2009) emphasized there was a lack of awareness on how to facilitate effective knowledge management in the hospital sector where knowledge structures are technologically-driven to capture codified documentation but do not provide insight on knowledge application or distribution nor capture the tacit expertise and intuitive cognitive processes that are unique to each doctor and considered critical to the hospital organization for
competitive advantage (p. 120).

Dwivedi et al. (2003) emphasized that knowledge management systems must provide structures that provided retention of critical knowledge that was vital in the healthcare industry since doctors were considered to be intellectual assets that served to enhance organizational learning and enabled the organization to sustain competitive advantage. They argued that organizations must facilitate knowledge sharing among doctors through structures and opportunities that enabled them to share knowledge, and argued that personal expertise was critical to the advancement of medicine. Since it was noted that the hospital had formal structures in place it, those initiatives impacted and influenced doctors’ knowledge sharing behaviors as noted across all three phases of the study.

In addition to creating a supportive environment, the culture defined the boundaries that guided the behaviors of its employees through rules, policies, and procedures that ultimately impacted knowledge sharing processes (DiMaggio & Powell, 1983). According to Yang et al.’s (2007) findings, coercive pressures mandated by the government regulations to protect patient rights imposed restrictions on information sharing while healthcare industry guidelines imposed normative pressures such scientific guidelines that defined when to do procedures, and mimetic pressures set benchmarks within the industry that defined best practices (p. 265). These guidelines served to institutionalize the behavioral expectations set by an organization and were articulated throughout the organization which impacted how knowledge was shared among individuals in the organization.

These findings were consistent with those described by the doctors in Phase III of this study when they noted that certain regulations prevented them from sharing certain information that negatively impacted collaboration with other healthcare professionals. For example,
information was restricted to only mental health professionals to protect patient confidentially. Although these types of regulations were part of the normative traditions of the hospital, they imposed restrictions which inhibited the types of knowledge and types of actions doctors shared with other healthcare professionals which could negatively impact patient care as was described in this study. Industry initiatives such as evidence-based medicine provided the latest scientific evidence and were perceived as valuable guidelines that enhanced medical practice as noted in this study by several doctors when they noted that they regularly referred to these standards.

The culture created boundaries and protocol that defined the types of knowledge and types of actions shared among doctors and other healthcare professionals where these underlying assumptions underpinned the behavioral expectations of the organization. Overall, the organizational culture played a key role at this community hospital which influenced and characterized the knowledge sharing behaviors of doctors and specifically, the types of knowledge and types of actions they shared with other healthcare professionals. The culture fostered a transparent social environment that encouraged individuals to engage in “open” transparent communication across various functions of the organization where the climate was conducive to knowledge sharing and enabled them to effectively coordinate patient care. The culture underpinned the behavioral expectations of its employees and served to articulate the underlying assumptions that drove the behaviors whether verbally or through various artifacts. Overall the culture set a tone where doctors were encouraged to reflect upon past successes and failures and to share medical experiences with other healthcare professionals. These initiatives were perceived as part of professional learning that served to enhance both individual and organizational learning as noted by the doctors’ interviews. As a result, reflective learning was encouraged throughout the organization and identified across all three phases of the study and
served as the fourth broad emergent theme

*The Fourth Emergent Theme emphasized continuous inquiry and reflection enhanced insight.* This broad emergent theme was identified on six occasions from the data analysis across all three phases of the study and best described the types of knowledge doctors reflected upon from past experiences and lessons-learned to inform on clinical decisions which served as an informal way of learning on-the-job. In some instances, this theme served as a secondary theme where doctors collaborated by referring to lessons-learned or when they reflected upon past experiences and outcomes to enlighten other healthcare professionals to inform unexpected events. As noted, the doctors indicated that the organizational culture created a transparent social environment which set the tone for open disclosure among colleagues and encouraged knowledge sharing that emphasized reflective learning through past experiences with others that enhanced both individual and organizational learning.

Overall, practical and reflective knowledge was identified in Phase III of the study and was perceived as a way to add value to a clinical assessment. Doctors argued that previous experience with patient outcomes and approaches to patient care helped to explain and was used to inform complex medical decisions. The doctors described that they engaged in reflective learning where past experiences and hindsight enabled individual and organizational learning. In addition, they emphasized that they were encouraged to disclose various experiences that resulted in deaths, mistakes, errors or past failures or success stories that could be used to enlighten their colleagues. Most doctors described feeling very comfortable sharing negative outcomes and noted that it was very beneficial to hear how others handled certain similar matters. These initiatives can be linked to Habermas (1984) who was a strong proponent of social change and the emancipation of healthcare (Scambler, 2001). He argued that self-critical
reflection enabled social reform where transformation created freedom from normative traditions set by bureaucratic systems that emphasized outdated processes that were not representative of the lifeworld.

These initiatives were also consistent with Schon (1983) and Sveiby (2001) who argued that experience was stored by an individual as implicit and semi-conscious from lessons-learned and then accessed when triggered by certain stimuli when one reflected upon past success or failures to inform present decision making. They noted that individuals engaged at the collective level to share valuable insight from past experiences to provide insight to others that enabled them to cooperatively coordinate action. Sveiby (2001) argued that individuals had a capacity to act which enabled them to retrieve implicitly stored information upon as needs arose (p. 345). His arguments were rooted in Habermas (1984) social pragmatics where knowledge was co-constructed to define context.

Doctors noted that storytelling served as a valuable teaching tool and was highly encouraged as part of individual and organizational learning. This was obvious in Phase II when storytelling was used as an educational initiative to enlighten residents on how past experience could be used to make sense of a present medical-related matter. The cardiologist’s initiative to clarify the meaning and application of the story was very important to ensure that the students clearly understood how the story could be applied to inform on a medical-related matter. According to Geiger (2010) and Geiger and Schreyögg (2012), an individual must take initiative to effectively translate the purpose and relevance of a story for it to be meaningful to the recipient otherwise it will be useless. Similarly, Bordum (2002) argued that shared meaning was critical for reflective learning to be effective since lived experiences were unique and abstract which were difficult to articulate and noted that boundary objects played an important role to
establish understanding. Bordum’s (2002) arguments were consistent with Polanyi’s (1966) previous arguments that tacit expertise was difficult to fully transfer since it was highly abstract in nature. According to the doctors in this study they recognized that each doctors’ practical insight and skill could impact the interpretation of data outside the scope of their specialty, and took measures to cooperatively sit together to look at radiological films to ensure that what they were implying and interpreting was understood and consistent with the interpretation of the other physician. Similarly, Szulanski (2000) argued that stickiness can occur with knowledge transfer across boundaries if for example, a recipient lacked a capacity to absorb the content, the source failed to recognize an opportunity to transfer knowledge or a receiver did not perceive a value associated with the knowledge transfer (pp. 13-15). As a potential solution to ineffective knowledge transfer, Geiger (2010) noted that sense-making enabled the transition between narration and argumentation where individuals attempted “to bridge the problems of incoherence, context-dependency, and validity” (p. 310).

Storytelling appeared to be a tool frequently used by doctors at this hospital as was noted in this study and was described for example, in the monthly newsletter as an initiative that heightened awareness and safety throughout the hospital. According to Arnd-Caddigan and Pozzuto (2008), reflection and heuristics added value that enhance empirical data where human interpretation provided a broader scope this was especially emphasized by the cardiologist who used heuristics to explain “curve balls.” Similarly, Van de Wiel et al.’s (2011) findings argued that experiential learning enabled a physician to explain anomalies that frequently occurred in healthcare based on intuitive expertise rather than on explicit documentation. They found that participants sought the advice of a senior colleague when they had insufficient knowledge to assist a patient or when they were uncertain on how to proceed with a unique procedure (p. 89).
In Phase III of the study, doctors described how they reflected on practical insight and past experience inform on interpretation of clinical data when they collaborated with other healthcare professionals. They emphasized that clinical data (test and lab results) provided numerical scales that served as guidelines to identify potential medical conditions to confirm or refute hypothesis but strongly noted that technical information was always relative to the context. Content emphasized during professional development sessions emphasized that statistical findings were used in combination with clinical expertise and patient context to provide insight on how to proceed with care. As a result, doctors described lessons-learned as very valuable educational tool and perceived that it served as a very important part of their ongoing professional development.

*Key finding six emphasized that the organization perceived reflective learning as vital to individual and organizational learning and strongly encouraged doctors to share past experiences and lessons-learned with other healthcare professionals.* Ongoing development through reflective learning described in this study was consistent with Mezirow (2000) who argued that learning was transitional throughout the course of life where daily activities redefined the way things were perceived and how one responded to an impetus. Mezirow (2000) noted past experience shaped how future decisions were made and like Habermas (1984) he argued that social pragmatics enabled individuals to share perspectives through intersubjective consensus to define context. As part of professional development, many doctors referred to informal learning as a viable learning approach.

In Phase III several doctors referred to “curbside consultations” as a very valuable form of informal learning. Curbside collaboration was identified as an informal way to share medical knowledge with other healthcare professionals and to receive information on how to proceed.
Usually this type of learning occurred in an informal context where meetings were unplanned or
erendipitous in nature and usually took place in a non-working environment such as the
cafeteria, lobby or in a corridor where the individuals proceeded to share information. According
to Sun et al.’s findings (2009), individuals implicitly stored past experiences as tacit intuitive
expertise and referenced those experiences to explain anomalies such as a reading on an x-ray
that was questionable where they explicitly shared past experiences with colleagues to interpret
the film.

In Phase III doctors described self-directed initiatives as being those situations where
they requested curbside information from their colleagues on medical-related matters to ask
“what do you think.” These actions were informal in nature, but doctors emphasized that these
interactions were very useful because it enabled them to get quick responses that quickly
expedited patient care. Sargeant et al.’s (2006) findings emphasized that physicians perceived
informal learning through their colleagues as fundamental to their development and argued that it
helped to improve the quality of patient care they delivered, and also noted that communication
skills were vital to effective knowledge translation (p. 658).

Thus, reflective learning through either formal or informal channels was perceived by
doctors as a positive means for learning in this study and was emphasized across all three phases
of the study. Sharing insight through past success stories and disclosure of bad outcomes were
perceived as valuable assets that enabled individual and institutional learning. Again, these
initiatives were facilitated through an environment that fostered open transparent behaviors
among healthcare professionals. According to Von Krogh et al. (1994) reflection was an
invaluable asset to the organization where organizational learning occurred from the direct
experiences of its people who provided historical context that added value to inform complex
decisions. Argyris and Schon (1978) argued that organizational learning was dependent upon its members since the organization was unable to achieve its goals without human input. He argued that it was a “double loop” process where the organization thrived through the synergy of its employees who engaged in knowledge sharing to collaborate and reflect on past experiences through lessons-learned which in turn led to improved decision making (pp. 2-3). Senge (1990) argued that individuals shared tacit expertise and learning experiences that enabled the organization to learn. Similarly, Drucker (1998) argued that “joint performance” resulted when individuals shared valuable information and then converted it to accomplish tasks or to create new innovations while March et al. (2003) argued that exploitation of past success or learning from past mistakes enabled organizational learning.

Summary of key findings.

- Key Finding 1: Doctors engaged in interdisciplinary collaboration that emphasized evidence-based medicine, which resulted in effective coordination of patient care at this community hospital. As part of their collaborative efforts, doctors shared clinical and practical perspectives as well as lessons-learned where they reflected upon past experiences to make sense of outcomes and approaches with one another. Additionally, they took initiatives to explain, interpret, clarify, and justify their positions when they engaged with other healthcare professionals that enabled them to achieve mutual understanding through their dynamic interplay to effectively coordinate action.

Evidence-based medicine was encouraged as best practices in the healthcare industry where the latest scientific evidence, clinical expertise, and patient context were used to deliver optimal patient care. The behaviors espoused, observed, and enacted in this study were consistent with an evidence-based approach to medicine.
• Key Finding 2: Doctors took initiatives to clarify and corroborate data when sharing information with other healthcare professionals that ensured knowledge acquisition and knowledge application were interpreted and applied as intended. According to the doctors who were interviewed in this study, language played a key role where measures were taken to ensure accuracy of meaning. For example, certain language such as medical jargon and abbreviations were only used when doctors shared similar backgrounds and felt the recipient was familiar with the terminology while in other cases jargon was completely avoided to protect against potential misinterpretation. They emphasized that audience awareness and message continuity were key factors that enabled doctors to establish common understanding with other healthcare professionals. They also noted that it was critically important that a recipient perceived a value associated to the knowledge that was being shared and that they understood the benefit of its application otherwise it was meaningless and argued they took measures to clarify, interpret, and paraphrase meaning which enabled a recipient to understand what was being conveyed, why it was important, and how it was to be applied.

• Key Finding 3: Social conversation enabled doctors to create personal communication channels that fostered working-relationships with other healthcare professionals and resulted in higher quality patient care. Doctors described the benefits of creating social bonds with other healthcare professionals and argued that it enabled them to cooperatively work together to accomplish tasks across interdisciplinary fields. They noted that developing social and professional relationships enabled them to become familiar with one another’s roles which was a valuable asset to their practice since they knew “who to go to” and noted that social rapport helped build trust and mutual respect
where they felt “comfortable” to contact their colleagues with technical questions or to refer patients when a need arose.

- **Key Finding 4:** The Electronic Medical Record (EMR) system was perceived as a central artery that facilitated communication across the organization. The system served as a formal structure where data was retained, updated, and shared among doctors and other healthcare professionals across the organization to collaborate and coordinate patient care. Doctors described that they perceived a value associated to using the system and argued they could simply “flag another physician” to get a response quickly which was vitally important in the healthcare industry.

- **Key Finding 5:** The organizational culture strongly influenced the behaviors of doctors, which impacted the types of knowledge and types of actions they used to share knowledge with other healthcare professionals. The hospital environment encouraged transparency throughout the organization where individuals were encouraged to share information that could be used to improve the quality of patient care. The environment fostered a transparent social climate where individuals felt comfortable to engage in disclosure as was noted during the interviews “we have a pretty open environment.” While many hospitals maintained a traditional “culture of blame” attitude where doctors and hospital leaders feared that open disclosure could lead to potential legal liabilities, the healthcare industry has been encouraging hospitals to shift towards a “culture of safety” where efforts to encourage open disclosure could be used to improve the quality of patient care and reduce the overall errors in medicine. The findings from this study emphasized that this hospital took various proactive measures to encourage a “culture of safety” where doctors and other healthcare professionals cooperatively worked together.
to share past failures that could be used to prevent potential problems from occurring in the future.

- Key Finding 6: The organization perceived reflective learning as vital to individual and organizational learning and strongly encouraged doctors to share past experiences and lessons-learned with other healthcare professionals to improve the quality of patient care, and to enhance safety awareness. The hospital recognized that lessons-learned added value that provided insight into how potential problems could be prevented and how the organization could improve processes that resulted in a higher quality of patient care. Reflective learning was used to achieve various educational initiatives through storytelling and narration that served to enlighten medical residents and nursing students on how certain medical-related matters were handled in the past. In addition, reflection served to enable sensemaking and create mental models that enabled individuals to better understand certain unexpected outcomes. As a result, reflective learning was encouraged across the organization.

Part II. Discussion and Conclusions

Discussion. The purpose of this study was to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The main research questions that guided the research were:

What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?

a.) What types of knowledge do medical doctors share (Habermas, 1984), and

b.) What types of actions do medical doctors use to share knowledge (Habermas, 1984)?
Overall, the key findings of the study provided valuable insight into how doctors at this community hospital engaged with other healthcare professionals to share knowledge and specifically, to identify the types of knowledge and types of actions they used to share knowledge across the organization. The key findings provided an important contribution towards understanding doctors’ knowledge sharing behaviors and can be used to respond to the present gap in the research by providing insight into how they effectively engaged in knowledge sharing with other healthcare professionals to effectively coordinate action where most importantly, knowledge acquisition and knowledge application were interpreted and applied as intended.

The key findings of this study directly responded to previous researchers (Aliki, et al., 2014; Mansingh et al., 2009; Spilg, et al., 2012; Van de Wiel et al., 2011; Weller et al., 2011; Zwarenstein et al., 2013) who emphasized a need for more research to address the gap that continued to exist in the healthcare industry where inefficient knowledge transfer led to poor quality patient care. The key findings of this study were aligned with Habermas’ (1984) theory of communicative action that was used as the lens to interpret the key findings of this study where doctors employed various communication strategies and initiatives to explain, interpret, justify, and clarify meaning when they shared information with other healthcare professionals and took additional measures to ensure that knowledge was appropriately utilized through various corroboration techniques. These actions were observed in Phases II and III of the study and were consistent with best practices in the healthcare industry that emphasized an evidence-based medicine approach to medicine.

The key findings of this study were consistent with previous researchers who explored knowledge sharing and identified certain enablers that had to be present to ensure effective
knowledge sharing took place among individuals. For example, Davenport and Prusak (1998) argued that trust and reciprocity among individuals led to effective sharing knowledge because individual’s perceived a value to sharing where they would get something back in return for what they shared. This was consistent with the key findings of this study where doctors noted that they had mutual respect and trust in their colleagues to do the right thing where collegiality enabled them to cooperatively work together for the benefit of the patients.

In addition, Islam et al. (2012) argued that organizational structure, climate, and socialization were important ingredients to effective knowledge sharing in an organization. This was identified in the study when doctors noted that the social climate encouraged them to reflect upon lessons-learned as part of individual and organizational learning. Bennett et al. (2012) argued that formal structures encouraged individuals to collaborate which led to building trust while training enabled socialization. In this study, formal events such as interdisciplinary meetings enabled individuals to build rapport and share information across the organization to create familiarity. Argote et al. (2003) and Endres et al. (2007) argued that the organizational context had to create an environment where people felt comfortable and had self-efficacy to share common experiences while Gagné (2009) emphasized that the social climate had to encourage prosocial behavior among individuals in an organization (p. 572).

The doctors in Phase III emphasized that they were comfortable seeking technical and practical insight from colleagues, and felt they could share vulnerabilities on how to avoid potential mistakes. These initiatives enabled doctors to build camaraderie with one another. They noted that the culture fostered a transparent social climate that encouraged individuals to communicate with one another to share information. They also noted that there was formal structure in place that enabled them to meet with one another such as interdisciplinary meetings
and professional development sessions which enabled them to build social rapport. Kogut and Zander (1992) argued that “social relationships enabled individuals to share know-what and know-how with one another to exploit new innovations” (p. 386) while Cabrera and Cabrera (2005) emphasized the importance of building social capital through formal structures to facilitate knowledge sharing processes.

Similarly, Dwivedi et al. (2003) and Bosua and Scheepers (2007) emphasized that electronic structures created pathways for individuals to socially interact and served as repositories to capture knowledge that could be used by the organization. In this study, the electronic medical record (EMR) enabled doctors to maintain contact with one another through personal notes section where practical insight could be shared to inform on patient care. The system also served as a formal structure that facilitated communication among healthcare professionals including curbside consults where doctors could share knowledge, organize consultations, and maintain personal communication channels. The system enabled doctors to developed social bonds with one another when they shared data that could be used to create social capital across the organization. Ipe (2003) and Cabrera and Cabrera (2005) argued that the organization must create both informal and formal social events to facilitate social relationships in an organization that can lead to trust and the sharing of knowledge. Doctors in this study emphasized that although formal meetings were regular they would have liked to see more social events that enabled them to meet with colleagues face-to-face which was not the case at present.

At the collective level, Sackmann (1992) and De Long and Fahey (2000) argued that subcultures must be aligned with the culture of the organization to create an environment that fosters strong relationships across interdisciplinary boundaries. Across all three phases of this study, it was espoused, observed, and described that leadership created initiatives that emphasized
common goals across the organization such as multidisciplinary teams where individuals shared stories to create awareness and cooperated to work together on establishing cross-functional safety initiatives for preventive care.

In addition, to sharing across borders, the types of knowledge shared was also very important as noted by Schon (1983) who argued that reflective learning enabled lessons-learned that could be shared at the collective to inform future decisions. Argote et al. (2003) and Geiger and Schreyögg (2012) argued that storytelling and reflection enabled individuals to provide rich descriptions to others that would enhance their understanding of complex problems but argued that they had to be used judiciously to ensure that the story could be translated to the present. This study highly emphasized the use of reflective learning as noted across all three phases of the study where doctors took measures not only to reflect upon stories but to explain how they could be used to explain present situations. This study highly emphasized the use of reflective learning as noted across all three phases of the study. Reflective learning was considered not only educational but served as an integral part of organizational learning that could be used for competitive advantage.

At the individual level, Von Krogh (1998) and Liyanage et al. (2009) emphasized that for knowledge to be meaningful the sender must determine what the knowledge means to the receiver to ensure accurate knowledge transfer. This was emphasized throughout the study when doctors noted the various communication techniques they took to ensure clarity and accurate interpretation when knowledge was shared with other healthcare professionals including corroboration to follow-up on whether actions were enacted as intended. According to Tsoukas (2009), it was extremely important that communication processes emphasized productive dialogue among individuals to create new distinctions otherwise redundancy often led to
complacent actions that were often outdated. In this study, doctors were encouraged to share new approaches during interdisciplinary meetings and to provide reasoning on why certain actions were taken to enlighten their colleagues. Most importantly, the actions doctors took to establish common understanding were described similar to those of Habermas (1984) social pragmatics where doctors took turns sharing insight and justifying their claims to one another that enabled them to reach consensus to coordinate action. While there were various factors that were identified as facilitators to effective knowledge sharing, some researchers identified potential barriers to knowledge sharing that were not present in this study.

At the organizational level, Yang et al. (2007) argued that isomorphic pressures such as government mandates and industry regulations drove the behaviors within an organization. In this study, bounded rationality described how doctors worked within specific boundaries where various policies and regulations restricted the types of knowledge and types of actions they shared with one another which limited their capacity to optimally perform their function. However, some industry guidelines were perceived favorably by doctors, such as the latest scientific key findings that were used to guide their practice. From an organizational standpoint Nonaka and Takeuchi’s (1995) theory of organizational knowledge creation was a framework where knowledge was shared throughout the organization in a spiral process as individuals shared tacit expertise and intellectual capital which was then used by an organization for competitive advantage. The process emphasized socialization, externalization, combination, and internalization to share information based on common goals. Their theory assumed that individuals shared the same level of capacity, perceived a value to sharing their information, and did not consider other potential internal or external factors that could impede the process. In this study, doctors described the process of collaboration and coordination that went far beyond a
simple exchange of information based on common goals. They took initiatives to clarify, justify, interpret, explain, and even share their cognitive processes to ensure common understanding. They took measures to explain how the information shared was to be applied, and engaged in corroboration to ensure actions were followed through.

Some researchers identified potential barriers to knowledge sharing that were not present in this study. At the individual level Bock and Kim (2002) argued that motivation was based on rewards where they explored various economic exchange theories. They argued that individual intentions and attitude were shaped by economic benefits to sharing information. Although engaging in effective knowledge sharing and creating structures to capture knowledge assets were perceived as a potential competitive advantage in a highly competitive healthcare industry, these types of rewards or behaviors were not overtly present in this study when doctors engaged with other healthcare professionals. For example, doctors perceived sharing as part of their profession and personal social responsibility. They emphasized the importance of sharing lessons-learned with colleagues to enlighten one another on how their experiences could be used to improve the quality of patient care and to prevent against potential errors where such initiatives were not self-motivated for monetary or political gains.

Comparatively, some researchers (Ford & Staples, 2008; Wah et al., 2007) emphasized in their study findings that knowledge hoarding prevented effective knowledge sharing in an organization. This was not identified in this study. Hewett et al. (2009) argued that positional status negatively influenced knowledge sharing among individuals if individuals felt superior over others. This was not identified in this study either. Doctors emphasized in this study had strong camaraderie within and across boundaries with their colleagues and were willing to share information to cooperatively work together to benefit the patient.
There was an ongoing concern from various researchers Waring and Bishop (2010) and McGivern et al. (2010) that a traditional “culture of blame” still existed in the healthcare industry where doctors and hospital leadership feared to engage in transparent behavior to protect against legal liabilities. Contrary to these studies, doctors strongly emphasized in this study that the hospital created a foundation that encouraged a “culture of safety” where doctors and other healthcare professionals engaged in open transparent behavior where they provided input to improve the quality of patient care and prevent against potential negative outcomes.

Lastly, some studies (Gotlib-Conn et al., 2014; Weller et al., 2011; Zwarenstein et al., 2013) have explored doctor-nurse relationships with respect to communication and collaboration where there was still a divide among the two professions where doctors perceived themselves as prescribers and nurses perceived themselves as support staff. As a result, effective communication lacked due to these preconceived notions where doctors were reluctant to share or receive knowledge from nurses while nurses felt a lack of self-efficacy to share information that was not perceived as useful by physicians. Contrary, to these findings doctors in this study indicated that they took time to explain, clarify, justify, and interpret meaning when they engaged with nurses and encouraged nurses to provide feedback and practical insight when possible to inform on various medical-related matters. Zwarenstein et al. (2013) strongly emphasized that inter-professional collaboration on a regular basis improved communication and effective collaboration which was consistent with the key findings of this study.

The key findings of this study indicated there were many structures and processes that served to enable knowledge sharing across the organization among doctors and other healthcare professionals where they cooperatively worked together to coordinate action. The actions observed and described in this study were closely aligned with Tsoukas (2009) who emphasized
that a social constructivist approach enabled individuals to create new distinctions through productive dialogue where individuals shared perspectives and coordinated action through mutual understanding based on shared meaning and interpretation where they co-created new meaning to coordinate action. The lens of Habermas (1984) served as a very strong lens to interpret the key findings of this study and was closely aligned with the key findings generated from this study, as well.

**Conclusion.** Overall the purpose of this study was to explore the knowledge sharing behaviors of doctor’s in a community hospital located in the Northeast United States. The primary research questions the study sought to explore where what are medical doctor’s knowledge sharing behaviors and specifically what types of knowledge do medical doctors share and what types of actions do medical doctors use to share knowledge.

- The first conclusion was that there was evidence that effective knowledge sharing was displayed at this community hospital. According to Habermas effective knowledge sharing resulted when individuals engaged with one another to coordinate social action through intersubjective mutuality where objective, subjective, and social worlds were integrated to attain consensus through shared meaning and interpretation that enabled them to define context.

- The second conclusion was that all three types of knowledge sharing exist at this community hospital. Doctors employed all three types of knowledge when they engaged with other healthcare professionals. This was observed during Phase II and articulated by the doctors in their interviews during Phase III of this study. Doctors emphasized that they perceived value in all three types of knowledge (technical, practical, and emancipatory) when they engaged with other healthcare professionals to inform on
clinical decisions.

- The third conclusion was that there was evidence that all four types of actions were evident at this community hospital. Notably, while all four types of action (teleological, normative, dramaturgical, and communicative) were evident communicative action was the most dominant type of action present.

All three of these conclusions provided evidence that reverted back to, and answered, the three research questions that guided this study.

**Implications for theory development.** This qualitative descriptive case study was rooted in Habermas’ (1984) theory of communicative action and emphasized a social constructivist perspective to explore the knowledge sharing behaviors of medical doctors and specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals. The theory of communicative action suggests that knowledge was purposefully co-created through social pragmatics where individuals engaged in intersubjective mutuality through shared meaning and interpretation to define context.

Previous empirical research (Hewett et al., 2009; Leever et al., 2010; Lu & Lajoie 2008; Mansingh et al., 2009; McGivern et al., 2010; McGowan, et al., 2012; Spilg et al., 2012; Van de Wiel et al., 2011; Waring & Bishop, 2010; Weller et al., 2011; Yang et al., 2010; Zwarenstein et al., 2013; Zigan et al., 2010) in the healthcare industry have explored knowledge sharing among healthcare professionals using various theoretical perspectives that emphasized resource-based or knowledge-based approaches or learning theories to understand how knowledge was transferred at the individual, collective and organizational level. For example, Nonaka and Takeuchi’s (1995) organizational knowledge creation theory has been used to understand knowledge sharing in an organization using a knowledge-based approach. Their theory argued that information
spiraled across the organization when individuals socially interacted based on common goals to share information through a process of socialization, externalization, combination, and internalization (SECI) where knowledge was created and used for competitive advantage.

Though Nonaka and Takeuchi’s (1995) theory had been widely referenced over the past decades, a gap continued to exist where knowledge acquisition and knowledge application were ineffective. The theory assumed that individuals had the capacity to interpret and apply knowledge across boundaries which was not always the case as noted by Davenport and Prusak, (1998) who argued that ineffective knowledge transfer can result when a recipient lacked the capacity to interpret, failed to perceive a value associated to the knowledge, or did not understand how to apply the knowledge once it was acquired. Thus, various pragmatic differences must be considered as potential barriers that may negatively impact the transferring of knowledge. In addition, additional theory and empirical data has identified various enablers and barriers that can potentially influence effective knowledge sharing. Although the topic of effective knowledge sharing has been studied from various perspectives, only a few studies in the healthcare industry have explored it from a communication perspective. For example, Geiger (2010), MacIntosh et al. (2012), Clark and Greenwald (2013), and Gotlib-Conn et al. (2014) have explored dyadic communication among doctors’ and other healthcare professionals’ using communication theories and models to better understand interpersonal communication and how language and argumentation were used to facilitate knowledge sharing processes. However, not many studies explored the topic from a social pragmatic approach where context was socially constructed among individuals to achieve intersubjective mutuality through shared meaning and interpretation using language and argumentation to co-construct their environment.

Despite the large body of research that has contributed towards the understanding of
knowledge sharing among healthcare professionals, a gap continues to exist in the healthcare industry where knowledge sharing among healthcare professionals has been ineffective due to a lack of consistency between knowledge acquisition and knowledge application (Aliki et al., 2014; Gorini et al., 2012; Mansingh et al., 2009; Zigan, et al., 2010). Habermas’ (1984) theory of communicative action provided further insight into how context played a critical role in the communication process where the dynamic interplay of individuals using social pragmatics based on the ideal speech act which enabled them to collectively define context through intersubjective mutuality where language and argumentation were used to create shared meaning and interpretation to co-construct their environment.

Habermas’ (1984) theory of communication action was used to better understand the communication processes and knowledge flow among individuals and to gain further insight into their knowledge sharing behaviors and specifically, the types of knowledge and types of actions they used to share knowledge with other healthcare professionals from an interpersonal communication standpoint. Most importantly, Habermas’ communication lens is portable in that it allows individuals to engage in social pragmatics that enables them to define context where they can co-construct reality to accommodate any particular environment. Additionally, Habermas’ (1991) interest in healthcare reform provided further insight into how individuals use speech acts to attain democracy through intersubjective mutuality which was aligned with present healthcare industry initiatives. Habermas’s (1984) critical theory provided a framework for effective collaboration techniques that went beyond simple data exchange among individuals where individuals’ engaged in social pragmatics to rationally reconstruct reality through a process of discursive justification where individuals co-constructed meaning that enabled them to effectively coordinate action. Over the past decade, increasing social pressures in the
healthcare industry have increased the need that doctors and other healthcare professionals cooperatively engage with one another to effectively collaborate and coordinate patient care that will improve the quality of patient care and reduce the overall cost of medicine. This meant that doctors must engage multiple viewpoints from various healthcare providers as a holistic approach to understand complex decisions that will enable them to effectively coordinate action.

The key findings from this study were interpreted using Habermas’ (1984) lens to understand the various communication techniques doctors took to initiate social interaction with other healthcare professionals in a hospital setting and specifically, the types of knowledge and types of actions they took to ensure common understanding. The study provided evidence into how doctors used language and argumentation to ensure effective knowledge sharing where knowledge acquisition and knowledge application were accurately interpreted and applied as intended. As a result, this study provided theoretical insight to inform present research on doctors’ knowledge sharing behaviors and the types of knowledge and types of actions they used to share knowledge with other healthcare professionals which reduced the current gap that currently existed in the healthcare industry. These study findings have greatly contributed towards understanding the role of communication as it pertained to effective knowledge sharing across various disciplines and more specifically in the healthcare industry. Thus, this study advanced research on how to achieve effective knowledge sharing from a theoretical standpoint where communication using language and argumentation was used know-how, know-why, and know-what resulted in effective knowledge translation.

Habermas’ (1984) theory was aligned with the present goals of the healthcare industry that defined best practices as evidence-based medicine using a combination of the latest scientific evidence, clinical expertise, and patient context to coordinate patient care. This study
provided a broad perspective on how doctors engaged with other healthcare professionals to share knowledge across various social and work-related environments. Habermas’ (1984) theory can be used as a framework to define effective communication competencies that must be employed across various types of settings in the healthcare industry to define context for which action was coordinated. In a critical environment it may be more challenging to employ social pragmatics since events were unexpected and unfolding and time was not usually afforded to engage in social deliberation with other healthcare professionals. In addition, Tsoukas (2009) dialogical theory can be used in conjunction with Habermas’ (1984) theory of communicative action to further explore social reform in healthcare. Tsoukas’ (2009) theory emphasized productive dialogue where discursive context was established through self-distanciation that resulted from “conceptual combination, conceptual expansion, and conceptual reframing, which when intersubjectively accepted constituted new knowledge” (p. 941). He also emphasized the importance of relational engagement and argued that social ties enabled individuals to build trust where they cooperatively worked together to accomplish task. Tsoukas’ (2009) theory can be used to provide insight to explore the types of information doctors shared when they engaged in dialogue with other healthcare professionals to better understand the speech acts and to gain more specific insight into how intersubjective understanding was socially derived and the impact of how social relationships influenced the process.

Habermas’ (1984) theory was aligned with the present goals of the healthcare industry that defined best practices as evidence-based medicine using a combination of the latest scientific evidence, clinical expertise, and patient context to coordinate patient care. This study provided a broad perspective on how doctors engaged with other healthcare professionals to share knowledge across various social and work-related environments. Habermas’ (1984) theory
can be used as a framework to define effective communication competencies that must be employed across various types of settings in the healthcare industry to define context for which action was coordinated. In a critical environment it may be more challenging to employ social pragmatics since events were unexpected and unfolding and time was not usually afforded to engage in social deliberation with other healthcare professionals. In addition, Tsoukas (2009) dialogical theory can be used in conjunction with Habermas’ (1984) theory of communicative action to further explore social reform in healthcare. Tsoukas’ (2009) theory emphasized productive dialogue that resulted from “conceptual combination, conceptual expansion, and conceptual reframing, which when intersubjectively accepted constituted new knowledge” (p. 941).

**Implications for practice.** The practical implications from the findings of this study were valuable to the healthcare industry because they serve as a strong exemplar of how doctors successfully engaged with other healthcare professionals to collaborate on patient care. Using an evidence-based medicine approach enabled them to cooperatively share information, perspectives, and past experiences through various strategic communication techniques to coordinate action. In addition, this study has several practical implications that impact knowledge sharing at the organizational, collective, and individual level of this hospital organization.

From a broad perspective the findings of this study provide an example for implementing successful communication techniques and strategies to define context that can be used to effectively coordinate patient care with other healthcare providers. This was extremely important during a time when there continues to be great need for doctors to cooperatively work together across borders to share knowledge (tacit and explicit) that will enable them to combat
the ongoing threats of a major health crisis such as Ebola. Underlying the findings of this study is the concept of the whole being more than the sum of its parts. When one person knows something and shares that knowledge without reservation in a climate of mutual respect with others then the beneficial results to the patients and the entire organization is magnified. It is a reasonable assumption then that partnering with other organizations and sharing these techniques provides the incentive of better healthcare for the community and society at large.

From an organizational standpoint, the findings of this study illustrated how a community hospital fulfilled its socially responsibility by creating and maintaining an environment that promoted a ‘culture of safety.’ Individuals were encouraged to engage in ‘open’ transparent behavior that directly resulted organizational learning which was then used to improve the quality of patient care and to fulfill their mission as a good corporate citizen of the community. Specifically, healthcare professionals were encouraged to reflect upon past experiences and lessons-learned to share negative outcomes and successful approaches to enlighten colleagues on how to improve the quality of patient care. Traditionally, the hospital industry has been characterized as a ‘culture of blame’ where hospital organizations’ have created barriers to learning to protect against potential medical liability which has negatively impacted the overall quality of patient care (Waring, 2005; Waring & Bishop, 2010). This study illustrated how a hospital engaged in socially responsible initiatives that benefited the community by creating a culture that emphasized preventive care through incidental reporting. This led to enhanced individual, collective, and organizational learning that could be used to improve the quality of patient care. The culture of safety is at the heart of the effective communication within the organization. The expansion of this initiative across organizations in a genuine manner is integral to getting the benefits of an open and transparent organization. Beyond the benefits of
efficiency it shows an investment in social and community responsibility

Doctors emphasized that the electronic medical record (EMR) was an extremely valuable asset to them and argued that it enabled them to maintain personal communication channels with colleagues that maintained camaraderie and from a practical standpoint enabled them to send flags over the system to engage the viewpoints of other healthcare professionals. Since individuals actively used the EMR system, it would make sense to utilize the EMR as a platform to establish a social network where individuals could engage in informal learning through communities-of-practice (Brown & Duguid, 1991) to inquire about and share medical-related information to inform complex decision making. Ipe (2003) argued that although purposive learning channels (structured environments) played an important role to facilitate knowledge sharing among individuals research indicated that the most amount of knowledge shared is in informal settings (communities of practice, social events, or social networks) which provided opportunities for socially interaction with people through relational learning channels (p. 349). Currently, doctors noted that they referred to Google to get up-to-dated on recent medical topics through various external blogs and professional chat rooms. A community of practice would enable doctors to engage with their colleagues to share practical insight and intuitive expertise to cooperatively work together to provide optimal patient care and it would create social capital among members of the organization that could be leveraged by the organization for competitive advantage.

Another recommendation would be to establish informal opportunities for hospitalists and primary care physicians to meet with one another on a regular basis. Since the two professions are inter-dependent, it would enable individuals to share information, processes, and routines across boundaries and ultimately enhance their working-relationships. This is very
important because hospitalists are in charge of maintaining inpatient care which directly impacts the care of patients who are regularly under the care of primary care doctors when they were hospitalized. Since both of these professions ultimately have the same goal, it is imperative that they have opportunities to meet where they can engage in productive dialogue and share diverse perspectives to ensure they are on the same page. According to Gotlib-Conn et al. (2014), “interprofessional communication requires the establishment of trust, familiarity, and goal-sharing between health care professionals in addition to a support work environment and culture” (p. 2).

Social capital was considered to be a key ingredient of organizational success because it provided cumulative knowledge from individuals within an organization that could be used for competitive advantage as noted by various researchers such as Nahapiet & Ghoshal (1998), Cabrera and Cabrera (2005), Wah et al. (2007), Yang et al. (2010), and Zigan et al. (2010), whose recent study findings in the healthcare industry argued that social capital drove knowledge sharing behaviors among healthcare professionals that enabled them to provide optimal patient care. According to Yang et al. (2010), developing social bonds among individuals created trust and respect where strong social ties improved communication channels among individuals which facilitated knowledge sharing among them. Zigan et al. (2010) argued that it was important for an organization to create formal and informal structures that presented opportunities for individuals to engage in social interactions where they could share knowledge.

Doctors in this study perceived a value associated to social events that enabled them to engage with interdisciplinary healthcare professionals. They argued that the benefit of formal interdisciplinary meetings enabled them to share information across boundaries to establish familiarity on various medical-related topics. They argued that by sharing perspectives and mental schemas it enabled sensemaking on how to complete specific tasks and familiarized them
with specific medical dialogue that enabled them to cooperate more efficiently to coordinate patient care. Similarly, doctors argued a need for more informal opportunities to engage with other healthcare professionals. They noted that due to hospital policies and structural changes over the past few years the changing landscape resulted in fewer opportunities for meeting informally with their colleagues. For example, serendipitous and self-directed opportunities for face-to-face “curbside consults” were reduced as part of the changing landscape at the hospital.

The findings of this study indicated that the electronic medical record (EMR) system was an integral part of communication and served as an intermediary collaborative tool to connect doctors with other healthcare professionals across the organization to effectively collaborate and coordinate patient care. This was critically important because it illustrated that doctors took initiatives to maintain up to date patient status which enabled them to efficiently coordinate patient care. Doctors noted for example, that the system provided up-to-date information access to pertinent patient data, quick response time on medical inquiries, facilitated consultations with interdisciplinary professionals, and the ability to maintain social relationships with colleagues. The practical implications of these findings were that individuals would reinforce their behaviors as routine if they perceived a value associated to capturing and sharing data over the electronic medical record (EMR). According Liyanage, et al., (2009), for knowledge to be meaningful to a recipient the sender must determine what the knowledge means to the receiver to effectively transfer the knowledge in a context that can be utilized by the receiver otherwise it will be meaningless. This was critical in healthcare since patient data had to be current and updated on a regular basis to ensure accuracy for efficient and effective patient care. Also, there were fields in the system created to capture not only explicit codified information but also practical insight shared by physicians. This was an important feature of the system because it enabled doctors to
share not only technical information but also valuable practical insight to inform on complex decisions. According to Zigan, et al. (2010) some technological systems were structured to capture codified data but lack the capacity to capture cognitive processes which in healthcare were vitally important since doctors have intellectual capacity and intuitive knowledge that must be shared with colleagues to create competitive advantage. The personalized nature of the EMR system was important to the doctors at this hospital and made the system invaluable for patient care. Since the EMR system at this community hospital is equipped to capture both explicit and practical expertise, the information can be used to enhance the quality of patient care especially when dealing with complex decisions. In contrast, those systems that relied completely on predetermined codified fields and ignored experience based professional input could miss important nuanced data and practical insight that can ultimately impact the quality of patient care (Zigan, et al., 2010).

From a business standpoint, hospital leadership can use the findings of this study as leverage to sustain and enhance their competitive advantage in the healthcare industry. This is significant because healthcare is a dynamic and highly competitive industry mandated by government regulations that impose health information exchange as an initiative to ensure the highest quality of patient care (National Institute of Health, 2014). Recent economic trends over the past decade have led to partnerships among community and tertiary hospitals to create synergy (Becker’s, June, 2012). An ability to effectively communicate and build social capital across interdisciplinary boundaries within an organization can be highly marketable to establishing inter-organizational relationships with other healthcare organizations since individuals must cooperatively inform and share knowledge to maximize the overall quality of patient care.
From a human resource perspective, the findings of this study are valuable and instructive because they provide insight into the measures taken to achieve common understanding between doctors and other healthcare professionals. This common understanding ensured that knowledge acquisition and knowledge application were interpreted and applied as intended which was considered a critical component of providing effective patient care. Specifically, various communication techniques were employed to ensure common understanding through effective use of language and various initiatives used to clarify and explain meaning. In addition, the types of information shared required being mindful of the receiver’s capacity to absorb the level of information shared where audience-centeredness was emphasized to ensure accurate knowledge translation. This was a critical finding because the ability to successfully share knowledge with other healthcare professionals was critical in healthcare since the goal was to cooperatively to ensure the highest quality of patient care while working collectively to prevent potential errors. These initiatives can be implemented as part of the hospital’s training initiatives for new residents, nurses, allied health professionals or physicians, through professional development (Grand Round sessions). Additionally, these successful techniques can be made routine and used to develop communication processes and structures that are embedded and institutionalized as part of the organizational tradition to ensure ongoing success. From an organizational standpoint, these achievements were critical because it shows that the doctors at this hospital were effectively sharing and utilizing information to optimize patient care. This was extremely important since effective communication was critical when collaborating with various stakeholders and partnerships to maximize efforts across inter-organizational boundaries. The obvious commitment and promotion of cooperation and coordination among healthcare professionals permeated the organization through training. The commitment to training in it’s
formal and informal forms and extended beyond the organization and into the community. This commitment pays dividends when what remain slogans in other organizations becomes second nature in effective organizations.

Also, from a human resource perspective, the findings of this study suggested there was a need for more social events where doctors could have opportunity to engage with colleagues to build social capital. Doctors argued that building social rapport with their colleagues enabled them to work more efficiently through personal communication channels that served to facilitate communication among individuals and provided an opportunity to engage in informal learning. This was considered key since cooperatively working together with other healthcare professionals was critical to effective patient coordination (Mansingh, et al., 2009; Zigan, et al., 2010; Gorini, et al., 2013) and work-based learning enabled doctors to learn outside of the formal classroom (Swanwick, 2005; Sargeant, et al., 2006; Waring & Bishop, 2010). The human resources arm of an organization is well placed to maximize the promotion of social interaction among members of an organization and generate social capital. Its members can then draw from this social capital and expand the informal networks that underpin effective organizations.

From an individual perspective, the findings of this study point to the value of organizational initiatives that emphasize and encourage reflective learning. This organization succeeded in part by creating a culture where doctors and other healthcare professionals were encouraged to share past experiences and lessons-learned (good and bad) to make sense of unexpected outcomes that served to inform their understanding. These initiatives were aligned with the organizational goals that encouraged transparency and disclosure as measures used to facilitate individual and organizational learning and as part of their ongoing development through informal learning. According to Geiger and Schreyögg (2012), lessons-learned served a
functional purpose where individuals shared stories based on their lived experiences to provide insight while Sun (2009) argued that reflective knowledge was important to the medical profession because it enabled doctors to reflect upon implicitly stored experiences to inform their understanding of anomalies that required complex decision making. The value of lessons learned within the few individuals with that experience is invaluable but it is magnified even more when it is given a broader audience.

From a management standpoint the integration of lessons learned into professional development sessions, and even informal social gatherings, is invaluable. All lessons learned have by definition have come at a high price and to ignore that educational experience is wasteful and counterproductive. The findings of this study were very valuable since knowledge sharing has been considered critical to an organization where know-how, know-why, and know-what (Garud, 1997; Nahapiet & Ghoshal, 1998; Ipe, 2003) must be effectively transferred to ensure that knowledge acquisition and knowledge application were interpreted and applied as intended. The information from this study can be used to enlighten managers on how to implement strategies and structures that emphasize effective communication skills, create formal retention structures, and facilitate the building of social capital among members in an organization that can be used to create synergy and competitive advantage.

**Future research.** The findings from this study provide a roadmap for future research where efforts can be extended to explore the knowledge sharing behaviors of medical doctors using Habermas’ (1984) theory of communicative action to explore knowledge sharing from a narrower perspective where focus can be directed to the dyadic communication processes that occur in physician-to-physician interaction since it is critically important that doctors work cooperatively to ensure they are in sync when they engage in mutual patient care or to better
understand physician-nurse communication and collaboration since the two professions are so interdependent. Future research could also look into the dyadic interplay between doctors in a highly stressful emergency or critical care setting. Additionally, for future research it would add value to explore the topic of knowledge sharing by combining Habermas (1984) theory of communicative action with Tsoukas’ (2009) framework for productive dialogue to explore how individuals co-create meaning using two different perspectives that both emphasize a social constructivist approach. Specifically, Tsoukas’ (2009) lens would provide insight into how individuals engage multiple perspectives through productive dialogue and self-distanciation to combine, expand, and reframe viewpoints while Habermas’ (1984) theory would provide a lens to understand how individuals engage in social pragmatics using language and argumentation to shape meaning to define context. When speculating on future research one of the best places to start is with the limitations and delimitations of the present study. Removing or altering them would provide new avenues of research. The following are a list of six possible studies derived from the limitations and delimitations of this study; there are three from each group.

Three limitations were identified in this study as promising avenues for further research; the public nature of the study, the separation of the observation and interview phases of the study and the random nature of subject selection,. The study was limited to public areas of observation, if this restriction was lifted and private areas of were included what information could be gleaned from doctor interactions with fellow medical professionals and possibly patients. The logistics of such a study would be daunting but the data could be invaluable. The study did not tie in the random observations with the interview process. Choosing a purposeful sample of doctors then tying these factors together, observing subjects then subsequently interviewing them using these observations as a baseline, could open up the mechanics of the
interaction. Instead of theoretical scenarios, an actual encounter could be broken down and analyzed by the participant in hindsight. Aside from a general desire to have a representative group gender wise, from the outset of the study there was no intention of looking for volunteers of a certain type for the study. Future studies could actively seek doctors within a certain age or ethnic group. Studying doctors from a generational perspective may produce data that allows hospitals to customize the message or guidance given to doctors. Along those lines, studies that target American and foreign born doctors for communications philosophies may provide insight for integration these groups into a healthcare environment for optimal effect. In this vein Chia (2003), posited an “epistemological gap” exists between theory and practice where the actions of Western-minded individuals are driven by justification in contrast to Eastern-minded traditions where “action over words” and tacit expertise is driven by pragmatism based on the philosophy of “what works over what is true” (Chia, p. 961).

Three delimitations hold promise as avenues for further study; the choice to study only one of the hospital system's two main hospitals, the choice to not classify doctors into positional classifications, and the choice to conduct a qualitative study. A future study would benefit from widening the net to include a broader range of doctors at different locations. The questions of possible rivalry or simple perspective of two different administrative styles may provide richer data. Doctors were not classified for this study into groups based on position with the organization. Data compiled from contractors and employees may give a better feel for how these two perspectives change communications in theory and in practice. The choice of a qualitative study was a natural fit for the goals of this study but a deeper broader aspect could be captured with a mixed quantitative and qualitative study.

The design of a future study focusing on doctors’ knowledge sharing behaviors would
be most effective using a mixed methods strategy. Qualitative research could explore the phenomenon from a behavioral standpoint using a purposeful sample that would include both hospitals in this healthcare system, yielding a larger population and using open-ended questioning to gain a broader perspective. This could be then followed by a quantitative design using survey questionnaires as the strategy to gain a broader sample across the two locations. In this case, survey questions could be more narrowly focused using categorical scales to provide a distribution of responses across a range of participants. This is a fertile area for future research since few studies have explored the topic based on a mixed-methods approach.

Notably, although the focus of this study was on the phenomenon of knowledge sharing among doctors and other healthcare professionals it was obvious that the role of leadership and the overall contextual environment impacted how individuals shared knowledge with one another. Specifically, hospital leadership created a supportive cultural environment that evoked transparency, the spirit of inquiry, and reflection among healthcare professional to provide the highest quality patient care to the local community. As a result, exploring what impact leadership has on knowledge sharing among doctors and other healthcare professionals would provide a deeper understanding on knowledge sharing behaviors. Also, although the contextual environment was beyond the scope of the research questions it was identified as an important aspect that impacted the behaviors observed in this study. Future research would be warranted to explore external environmental factors such as isomorphic pressures, competition, and to understand what impact industry changes have on knowledge sharing among healthcare professionals.

Another possible avenue of future study was identified in several interviews in which doctors emphasized that the decentralization of physicians away from the hospital proper and the
use of in-house hospitalists for routine patient care. With this came doctor's comments regarding “silos” or narrowly focused groups that saw only their special interests and who were unable to see the larger medical landscape. This isolation of healthcare providers is the new reality for hospitals and healthcare in general and could be a fertile ground for applying Habermas' communications theories to this new healthcare milieu.

A future research study may be extended to include a multi-site hospital case study to explore the phenomenon of knowledge sharing by replicating the research process using the same main research questions and Habermas’ (1984) theoretical lens. This would allow for a broader perspective and to increase the overall population sample. Also, this study featured participants who ranged in age where those with over twenty years of clinical experience may have reflected upon past traditions when responding to the interview questions. A future study could explore whether senior level doctors who followed past traditions differed in responses from recent medical school graduates. Similarly, a future study may explore the role of male-female dyads among doctors or among doctors and other healthcare professionals to better understand how gender communication may impact knowledge sharing behaviors since this hospital has a balance in gender among doctors. In a broader sense a study emphasizing socio-cultural differences among doctors may shed light on how doctors from Eastern and Western cultures might collaborate with one another.

The findings from this study can be used to inform future studies by providing insight from a broad perspective into how the healthcare profession operates and how it was impacted by various normative traditions, while at the local level it can be used to inform about how culture and the underlying assumptions set forth by the organization, structure, and contextual environment impact knowledge sharing behaviors. In addition, this study can be used to inform
about the types of knowledge and types of actions that doctors took on a routine basis to engage with other healthcare professionals to coordinate patient care. Initially the research had a limited background to the medical profession but experience from this study can be used to inform on future studies.

**Summary and reflections.** The purpose of the study was to explore the knowledge sharing behaviors of medical doctors in a community hospital in the Northeastern United States. Specifically, the study focused on understanding the types of knowledge and the types of actions medical doctors used to share knowledge with other healthcare professionals in a community hospital located in the Northeastern United States (Habermas, 1984). Attention was directed to the social interactions among healthcare professionals and the communication processes and knowledge flow that took place among them. The primary theoretical framework and lens used to interpret the findings of this study was based on Habermas’ (1984) theory of communication action where speech acts employed language and argumentation to justify claims using social pragmatics where individuals co-created meaning through intersubjective mutuality where objective, subjective, and social worlds were integrated to effectively define context.

This study described how doctors engaged in behaviors that emphasized collaboration using evidence-based medicine that resulted in effective coordination of patient care at this community hospital. Doctors took various communication initiatives (language clarification, corroboration, audience-analysis, and message continuity) to ensure effective knowledge sharing where knowledge acquisition and knowledge application were interpreted and applied as intended. This was vitally important in the healthcare industry since effective knowledge sharing among healthcare professionals ensured the highest quality of patient care. The organizational culture was identified as having great influence over the behaviors of doctors’ and other
healthcare professionals at this community hospital. Specifically, the culture fostered a transparent environment where doctors were encouraged to engage in transparent behaviors where they reflected upon lessons-learned to improve the quality of patient care. In addition, practical knowledge and intuitive insight was perceived as a valuable contribution that could be used to create new innovations. Thus, doctors were encouraged to reflect upon personal experiences that could be utilized for both individual and organizational learning to provide leverage for competitive advantage. Various formal structures existed to ensure that normative traditions were implemented as routine and were further emphasized through various formal events such as interdisciplinary meetings where doctors had an opportunity to engage with other healthcare professionals face-to-face to share information across boundaries while the electronic medical record (EMR) system served as an intermediary collaborative tool to connect individuals across various platforms of the organization. The system was favorably perceived by doctors who argued that it enabled them to retrieve up-to-date information quickly and enabled them to share and access notes that they used to inform their decisions. The system was recognized as a central part of communication across the organization and was actively utilized by doctors’ and other healthcare professionals on a daily basis. In addition, social capital was perceived as extremely valuable to the organization where doctors cooperatively worked together with their colleagues to share information that enabled them to provide the highest quality of patient care. They emphasized that building social rapport was beneficial to their working-relationships because it enabled them to establish personal communication channels where they could consult with other colleagues and maintain camaraderie with one another.

As a scholar practitioner, this study provided insight and added value to enhance my understanding about the types of communication initiatives that doctors took to achieve effective
patient care in a hospital setting. More specifically, from a broader perspective the study provided insight into why it was important that effective knowledge sharing was so critical not only in healthcare but in any industry. *Know-how, know-what, and know-why* are meaningless unless they are clearly articulated, interpreted, and applied as intended by members in an organization otherwise learning is stifled since intellectual capital will only reside who those who possess it. Furthermore, personal reflection reduces ambiguity to enhance meaning to others as long as one fully explains it using mental models and schemas that are commonly established with others to provide further insight. From a practical perspective, the methods employed for this study provided an in depth understanding about the knowledge sharing behaviors of doctors and how and why they took various communication initiatives to establish context when they engaged with other healthcare professionals. By employing three types of data collection strategies, it ensured there was consistency across all three phases of the study.

From a personal standpoint, prior to the start of the study there was some level of concern as to whether there would be support from the hospital for this research study given the HIPAA regulations. As a result, the researcher proceeded by setting minimal requirements on the number of participants for the semi-structured interview, and on identifying potential areas for observation. Surprisingly, there was an overwhelming amount of support from the entire hospital organization (chief of academic affairs, IRB coordinator, various chiefs’ of staff, specialists, internists, hospitalists, nursing staff and managers, technicians, transporters, and secretarial administrators) to provide the researcher with assistance in the form of hospitality, information, support, and opportunities to observe doctors when they engaged with other healthcare professionals. Most importantly this support translated into volunteer participants for the semi-structured interviews following a letter of introduction distributed to the medical team.
from the chief of academic affairs. Initially, the goal was to interview between six and ten doctors and to capture approximately eight to ten observations in public spaces while observations were planned for public spaces (lobby and cafeteria) with a few captions from the nurses’ station and corridors near the doctors’ office areas to gain insight within a work-related context. The researcher recruited and conducted interviews using a purposeful sample, but found that the quota was superseded very rapidly when doctors responded favorably to the letter and agreed to participate in the study. The hospital’s support extended to IRB clearance which enabled the researcher to conduct an unspecified number of observations at the nurses’ station and intensive care unit. This opportunity was seized by the researcher which resulted in a larger sample population that added further consistency to the overall findings. As a result, 14 doctors graciously allowed themselves to be interviewed and all provided follow up feedback on the interviews and the whole process. Thirty-one observations were completed with most of the observations were at the nurses’ station and intensive care unit which were identified as the most opportunistic areas to observe doctors when they engaged with other healthcare providers to coordinate patient care.

Overall, the researcher learned the importance of maintaining a journal to reflect upon various factors that could be used to inform the study. It was extremely important to exercise discretion at all times and to maintain professionalism throughout the study. In addition, building social rapport with key members of the hospital organization was critically important to earn respect and to maintain contact with them for future research studies.
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### Appendix A: Theoretical Research Table

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<tr>
<th>Author</th>
<th>Theory about the nature of knowledge sharing</th>
<th>Key Theoretical Dimension</th>
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<tbody>
<tr>
<td>Polanyi (1966)</td>
<td>Distinguished between two dimensions of knowledge: <strong>tacit</strong> (implicit, intuitive, abstract, highly personal, difficult to articulate, context-specific, and extremely difficult to share with other individuals) and <strong>explicit</strong> (codified, observable, documented, easy to communicate and transfer among individuals). Emphasized that tacit and explicit knowledge has a &quot;personal coefficient&quot; where an individual’s unique experiences impact his or her understanding and interpretation of the explicit knowledge, making it ultimately tacit in nature.</td>
<td>N/A</td>
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<tr>
<td>Habermas (1971)</td>
<td>Defined three types of knowledge generated from human interest: technical, practical, emancipatory; and four types of actions used to facilitate knowledge: teleological (objective), normative (social), dramaturgical (subjective), and communicative (intersubjective). Epistemological perspective on knowledge sharing based on a socially constructivist approach where the collective defines the context in which knowledge claims are validated.</td>
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<td>Schon (1983)</td>
<td>Schon (1985) presented ‘reflection-in-Action’ as a theory that argues practitioners reconsider the role of technical knowledge versus ‘artistry’ to understand how professionals think in action. Knowledge structures are socially created and defined based on consensus to define the norms that guide expected relationships, behaviors, and actions of organizational members; learning occurs through reflection or lessons-learned that enables organization to learn. Based on cognitive process where individuals rationally reflect on past performance as “lessons-learned,” providing insight on how they handle novice situations based on “artistry” and tacit expertise to accomplish task rather than technical knowledge. This process can be very applicable to healthcare professionals who must react to immediate problems where past experience and “reflection in action” play a key role.</td>
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<td>DiMaggio and Powell (1983)</td>
<td>Identified three isomorphic pressures to explain trends in healthcare organizations: “coercive,” where political pressure and government mandates are imposed; “normative,” where occupational industry compliances are directed; and “mimetic,” where other organizations in the industry set the tone to define best practices. Rooted in Katz’s (1975) emphasis on Marxist theories where capitalist elites are perceived to control the social system through their political power and positions in organizations. Sociological perspective to understand the impact of social pressures and institutional isomorphism on knowledge sharing behavior. Organizational contextual factors were explored to understand how emergence and structuration of industry pressures impact knowledge sharing in an organization (healthcare).</td>
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<td>Wernerfelt (1984)</td>
<td>Rooted in Penrose’s (1959) growth of firm resource theory emphasizing competency as strategic leverage for competitive advantage for the firm. Based on a resource-based approach emphasizing individual knowledge assets as having economic value to the firm where strategies are centered on leveraging knowledge assets for competitive advantage.</td>
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<tr>
<td>Bourdieu (1986)</td>
<td>Social capital combines the knowledge resources of the collective to create “collectivity-owned capital” for competitive advantage. Reproduction of the social capital strengthens the value of the collective. Contemporary view of social capital from a transaction-economic-cost perspective that emphasized the collective and the economic impact of social interactions in the community.</td>
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<tr>
<td>Author</td>
<td>Explanation</td>
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<td>Argyris (1993)</td>
<td>Learning is an interdependent process between individuals and the organization that results in &quot;double-loop&quot; learning based on &quot;lessons-learned&quot; to guide future decision making in an organization.</td>
<td>Organizational learning is a socially constructed process; human reasoning is an antecedent for behavior; individual knowledge is shared and institutionalized at the collective through formal organizational processes and structures.</td>
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<tr>
<td>Brown and Duguid (1991)</td>
<td>A collective model for knowledge sharing where individuals use narration and storytelling to define reality through communal interaction and mental models; the social nature of knowledge sharing was explored from the individual to the collective as a practical based approach to learning.</td>
<td>Social constructive approach to knowledge sharing among the collective based on “communities of practice” that enable actors to share “know-how” and “know-what” of knowledge; a heuristic approach to creating a mutual understanding through shared interpretation and collaboration among individuals.</td>
</tr>
<tr>
<td>March (1991)</td>
<td>Organizational learning based on the relation of “exploration” based on novice unique innovations that explore new possibilities through knowledge sharing and “exploitation” based on redundant procedures that emphasize continuity, structure, and traditions when sharing knowledge. Rooted in Becker’s (1976) Rational Choice Theory that is used to understand social and economic behavior among individuals; assumes human beings base their decisions on rational calculations, act with rationality when making choices, and select choices that yields optimal return. Emphasized the importance of historical knowledge as foundational.</td>
<td>Cognitive process where individual maintains knowledge as a resource and weighs rewards and payoffs and the economic benefit or cost to knowledge sharing through rational decision making that yields greatest return.</td>
</tr>
<tr>
<td>Nonaka (1991)</td>
<td>Model used to define organizational knowledge creation theory as a &quot;spiral&quot; process where knowledge is created through the conversion of individual tacit knowledge into explicit knowledge; model is based on SECI (socialization, externalization, combination, and internalization); knowledge is shared tacit-to-tacit (individuals share personal experiences), explicit-to-explicit (individuals share documented evidence), tacit-to-explicit (knowledge is articulated into concepts and communicated to the collective for action), and explicit-to-tacit (codified knowledge is at the individual level and internalized as personal reference).</td>
<td>Rationalized process of organizational knowledge sharing where knowledge originates with an individual at the cognitive level and is converted to the collective through a conceptual, systematized, operational, and systemic process that spirals within an organization. There is an economic-transactional-cost that underpins the process of knowledge conversion; the interaction of technical “know-how,” codified documentation, and intuitive “mental models” enable new learning.</td>
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<tr>
<td>Sackman (1992)</td>
<td>Framework to understand cultural knowledge and how culture and sub-culture is structured in organization. Identified four different kinds of cultural knowledge types: dictionary (describes the “what” or context of a situation), directory (describes “how” events happen, recipe prescribes what one “should” do), and axiomatic (describes “why” something happens to provide reasoning about the events).</td>
<td>Reciprocal relationship that exists between the type of knowledge and the cultural assumptions of an organization. Culture is rooted as cognitive awareness within the “collective” where knowledge is socially constructed to reflect the cultural assumptions of an organization.</td>
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<td>Author(s)</td>
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<tr>
<td>Kogut and Zander (1992)</td>
<td>Emphasized that “know-what” and “know-how” represent the firm’s capabilities and can be exploited for new innovation by embedding the firm’s capabilities into the organizing principles by which people engage to create new knowledge. “Shared Language” serves as a “normative sanction” to articulate common values and goals among the collective; language enables them to interpret and evaluate the meaning of knowledge and the context for which to apply know-how and know-what that will yield the most value. Rephrased Polanyi’s (1966) expression that people ‘know more than they say’ to reflect the organization stating ‘organizations know more than contracts can say’ and “the analysis of what organizations are should be grounded in the understanding of what they know how to do” (p. 383).</td>
<td>Knowledge of the firm is created at the individual level “know-how” and shared at the collective through cooperation and consensus where knowledge is embedded as “cumulative knowledge” that is institutionalized into the organizational structure as routines, processes, and traditions, resulting in organizational learning where economic implications result in the firm’s ability to establish competitive advantage. Emphasis on sharing individual competencies at the collective level to enhance firm’s performance. Organizational principles must establish structure and processes to facilitate knowledge sharing based at the collective level through social relationships.</td>
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<tr>
<td>Tsoukas (2002)</td>
<td>Tsoukas (2002) advances Polanyi’s (1966) understanding of tacit and explicit knowledge where the two concepts are “two sides of the same coin.” Knowledge is combined tacit and explicit knowledge at the individual level, where tacit forms a triangle between the “focal target,” “subsidiary particulars,” and the “knower”, in which knowledge transfer occurs through “praxis,” resulting from social interaction at the collective level where context is defined and used for interpretation.</td>
<td>Socially constructed process using an epistemological approach where knowledge is mutually interpreted through social interaction and dialogical processes facilitate new distinctions.</td>
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<tr>
<td>Von Krogh, Roos, and Slocum (1994)</td>
<td>Knowledge taxonomy: Made distinction between newly created and recreated knowledge through understanding what knowledge is, how it is developed, and what the conditions are needed for creating the new or recreated knowledge.</td>
<td>Social construction: Heuristic approach focusing on how and why firms know. Knowledge is created through self-referential process. Uses autopoiesis as theoretical lens. Describes a firm’s corporate epistemology.</td>
</tr>
<tr>
<td>Nonaka and Takeuchi (1995)</td>
<td>Foundational and theoretical model that revolutionized the process of knowledge conversion; provided framework for managing the dynamics of organizational knowledge transfer processes through the conversion of tacit into explicit knowledge; based on SECI (socialization, externalization, combination, and internalization) where knowledge spirals through the organization from the individual to the collective.</td>
<td>Socially constructed process for organizational knowledge sharing based on the Japanese dynamics of innovation as a theoretical model for knowledge transfer. This research served as seminal to laying the foundation for organizational knowledge sharing processes based on a framework where knowledge is internalized at the individual level and shared at the collective through the conversion of tacit to explicit knowledge. There is an economic-transactional-cost that underpins the process of knowledge conversion; the interaction of technical “know-how”, codified documentation, and intuitive “mental models” enable new learning.</td>
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<tr>
<td>Author (Year)</td>
<td>Definition of 'best practices' as dyadic exchange between source and recipient where organizational routines are replicated. Identified four major stages of knowledge transfer: initiation (events that trigger knowledge sharing), implementation (resources are shared to meet recipient needs based on social ties), ramp-up (recipient adapts to and applies knowledge accordingly), and integration (knowledge transfer becomes routine and institutionalized through shared meanings and behaviors). Referred to barriers to knowledge transfer as &quot;stickiness&quot; that may occur from four potential factors: inability to absorb knowledge transferred, source may be reluctant based on knowledge hoarding, recipient may doubt validity of knowledge, and contextual changes.</td>
<td>Individual and contextual factors are explored as potential barriers to knowledge sharing; a process model or framework for knowledge transfer identifies potential &quot;stickiness&quot; or intra-organizational knowledge transfer barriers. Address the gap on why transferring best practices is challenging, emphasizing that organizations want to learn but do not know how to learn. Structural, social, and cultural components must be strategically implemented to facilitate processes.</td>
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<tr>
<td>Szulanski (1996)</td>
<td>Knowledge taxonomy based on four types of knowledge: explicit (conscious knowledge), objectified (systemic), automatic (implicit to individual), and collective (context-specific knowledge). Rooted in Nonaka and Takeuchi’s (1995) Organizational Knowledge Creation theory emphasizing SECI to convert tacit to explicit knowledge from individual to the collective.</td>
<td>Knowledge based theory of the firm based on social constructivist approach using three heuristics – acquisition, sharing, and socialization – presented where learning occurs either at the individual or the collective level. Emphasized competitive advantage of firm through social interactions that leads to new innovation and organizational learning.</td>
</tr>
<tr>
<td>Spender (1996)</td>
<td>Identified and explored the properties of three components of knowledge: know-how (learn by doing), know-why (learn by studying), and know-what (learn by using).</td>
<td>Cognitive process associated to knowledge acquisition and application.</td>
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<tr>
<td>Garud (1997)</td>
<td>Extended Nonaka and Takeuchi’s (1995) Organizational Knowledge Creation Theory by providing a framework that links SECI with the establishment of “ba” (a platform for advancing collective knowledge through shared mental and or physical space).</td>
<td>Cognitive patterning and mental models to create a shared environment where individuals engage in knowledge sharing behavior based on common physical and mental space (ideas, ideals, office space, and shared experiences) to facilitate knowledge sharing.</td>
</tr>
<tr>
<td>Nonaka and Konno (1998)</td>
<td>Formally linked the concept of social capital to the creation of knowledge sharing and provided knowledge sharing framework to understand social and organizational factors that influence the process. Knowledge was perceived as an object or as an action through social interaction. Referred to the knowledge created and shared within an organization as “the organizational advantage” and “circle of exchange” where interdependency among individuals drives knowledge sharing. Referred to Polanyi (1966) know-how and know-what, which is internal to an individual. Presented paradigmatic modes of cognition through rational analysis and argumentation and narrative modes of cognition to cross borders using imagination. Emphasized “network closure” as social relationships are bound by trust, norms, identity and are internal to those within same context.</td>
<td>Aligned with resource-based theory that emphasizes knowledge as a resource for competitive advantage. Specifically examined the structural, relational, and cognitive dimensions of social capital and how they are interrelated. The cognitive dimension is based on a shared understanding of the common goals and values that the collective will act upon.</td>
</tr>
<tr>
<td>Garud (1997)</td>
<td>Extended Nonaka and Takeuchi’s (1995) Organizational Knowledge Creation Theory by providing a framework that links SECI with the establishment of “ba” (a platform for advancing collective knowledge through shared mental and or physical space).</td>
<td>Cognitive patterning and mental models to create a shared environment where individuals engage in knowledge sharing behavior based on common physical and mental space (ideas, ideals, office space, and shared experiences) to facilitate knowledge sharing.</td>
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<tr>
<td>Teece (1998)</td>
<td>Recognized the value associated with tacit knowledge and argued that organizational structures must encourage horizontal knowledge structure through open information channels to create strategic alliances across borders; recognized costs of process is expensive. Emphasized knowledge as resource based on the transaction-cost economics. An individual’s competency was perceived as having economic value; intangible knowledge assets were recognized as competitive advantage to the organization yet costly to integrate. The firm was a repository for knowledge embedded in routines and processes that can be leveraged for competitive advantage where distinct expertise is exclusive to the organization.</td>
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<tr>
<td>Von Krogh (1998)</td>
<td>Rooted in Nonaka and Takeuchi’s (1995) explanation on how individuals collaborate to create shared meaning through observation and sense-making that leads to “justified true belief,” where meaning and interpretation validate claims based on argumentation; justification becomes public when consensus is reached. Presented four potential barriers to public justification process: legitimate language (use of unfamiliar words to articulate meaning), narration (negative stories may impact validity claim), formal procedures (rules mandate status quo), strategic paradigm (organizational mission presides). Distinguished between “low care” and “high care” organizational context. Low care results in transacting knowledge at the social level merely as formality while capturing knowledge at the individual level where individuals seek knowledge on their own to attain “maximum grip” on situation. High care environment based on trust and empathy leads to “maximum leverage” where individuals seek knowledge to optimize performance through “process of mutual bestowing”; individual knowledge shared at the collective through “indwelling” for empathy. Define the “nature of knowledge” based on two perspectives: constructionist (explicit) where knowledge is codified and easily transferred; and cognitive (tacit) where knowledge is stored at the cognitive level, abstract, highly implicit, and difficult to transfer. Provide a social practical approach to creating knowledge based on shared meaning and interpretation among the collective to combine tacit and explicit.</td>
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<tr>
<td>Davenport and Prusak (1998)</td>
<td>Acquiring and managing knowledge assets requires four sequential activities; accessing, generating, embedding, and transferring. Understanding the knowledge processes used to transfer tacit expertise and techniques is critical to embedding knowledge assets into the organization. Knowledge is perceived as a possession or “intellectual asset”. At the cognitive individual level knowledge is a “market commodity” and transferred to the collective level through “knowledge transactions” that occur between “sellers” and “buyers” in an organization. Individuals share tacit expertise at the collective level based on socio-political influences, reciprocity, altruism, and trust. Knowledge-based approach to understanding the “epistemology of possession,” where knowledge is perceived as an object or tool to complete action in an organization. Cognitive process at the individual level where tacit or intuitive expertise is applied to meet situational needs or demands.</td>
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<tr>
<td>Cook and Brown (1999)</td>
<td>Distinguished between organizational knowledge and knowing or “know-how”. Knowing enables tacit perception as a tool for action not the action itself. Knowledge in the organization is recognized as four types of mutually exclusive knowledge: explicit, tacit, individual, and group. Emphasized “dynamic affordance” where knowledge application is intuitive and tacit in nature and “productive inquiry” where one uses knowledge as a tool to resolve a problem.</td>
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<td>Author</td>
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<tr>
<td>Szulanski (2000)</td>
<td>The knowledge transfer process was explored over various stages to identify what potential barriers may prevent knowledge from being effectively transferred. Four stages include: Initiation, Implementation, Ramp-up, and Integration. During each of these stages there is potential for “stickiness” where inability to absorb, lack of capacity, perceived value, and appropriate application can result in ineffective knowledge transfer.</td>
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<tr>
<td>De Long and Fahey (2000)</td>
<td>Distinguished between three types of knowledge: human knowledge (individual know-how; skills, expertise, intuitive, cognitive, conceptual and abstract), social knowledge (exists at the collective level; shared meaning is created through collective collaboration), and structured Knowledge (knowledge embedded in an organization; processes, routines, traditions). Provided four frameworks that link culture or sub-culture and knowledge: define what useful knowledge is; mediates relations, provide context for social interaction, and create process for knowledge sharing.</td>
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<td>Sveiby (2001)</td>
<td>Knowledge is the &quot;capacity-to-act&quot; (conscious or unconscious) based on personal experience to establish reality. Rooted in Habermas’ (1986) practical approach to knowledge sharing where the lifeworld is socially constructed and defined through mutual consensus and Von Krogh’s (1998) approach to justifying belief through sensemaking.</td>
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<tr>
<td>Carlile (2002)</td>
<td>Integrative framework model for sharing domain-specific knowledge across three complex boundaries and processes: syntactic (transfer of knowledge based on common lexicon that enables sharing and access at the border), semantic (translation of knowledge based on common meanings to create shared meaning and adequate means of sharing and accessing at a boundary), and pragmatic (transformation where common interests are developed to transform knowledge at a boundary). “Knowledge in practice” is integrated and transferred across boundaries and embedded, localized, and invested.</td>
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<td>Bordum (2002)</td>
<td>Presented Habermas’ (1971) Theory of Communicative Action as a social pragmatic approach to share and interpret tacit knowledge through “intersubjective mutuality” to define context or “lifeworld.” Aligned with Polanyi (1966) who argued tacit knowledge is difficult to articulate while argued for Nonaka and Takeuchi’s (1995) Organizational Knowledge Creation Theory as a framework for Knowledge perceived as resource localized and embedded across boundaries to meet particular demand. A pragmatic approach of information processing where existing local knowledge is shared and interpreted among politically motivated actors for common meaning at different boundaries to accomplish task.</td>
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</table>

A process model of knowledge transfer. Model identified the stages of knowledge transfer and the potential barriers that could arise during each of those stages that could prevent effective knowledge transfer.

Cultural and sub-cultural context of an organization is explored to understand how environment or climate of the organization impacts knowledge sharing at the individual level; norms, traditions, routines, and organizational structure impact the extent to which individuals share knowledge.

Pragmatic utilitarian situational approach where knowledge is socially constructed to reflect diverse perspectives across various contexts.

Knowledge-based approach that emphasizes a systemic approach for knowledge transfer among individuals in an organization. Knowledge is shared and created as part of the unique system defined by those who reside within based on a common frame of reference that defines the context for which knowledge is shared and created. Knowledge is personal and subjective at the individual level and then “captured in a system” where it resides at the collective.

Knowledge perceived as resource localized and embedded across boundaries to meet particular demand. A pragmatic approach of information processing where existing local knowledge is shared and interpreted among politically motivated actors for common meaning at different boundaries to accomplish task.

Provides a critical perspective on perceived value of tacit knowledge, noting it as abstract and highly implicit in meaning where interpretation is subjective; argues effective knowledge must reflect the collective using social pragmatics.
<table>
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<tr>
<th>Reference</th>
<th>Description</th>
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<tr>
<td>Ipe (2003)</td>
<td>Four factors were identified as having impact on knowledge sharing among individuals in an organization: <strong>culture</strong>; <strong>motivation</strong>; <strong>opportunities</strong> (formal and informal); and the nature of the <strong>knowledge shared</strong> (tacit or explicit), either “<strong>know-how</strong>” (subjective and tacit), “<strong>know-what</strong>” (task related objective and explicit), or “<strong>dispositional knowledge</strong>” (aptitude and skill). Rooted in Argyris (1990) <em>Organizational learning theory</em> that interdependency exists between the organization and its individuals, and Nonaka and Takeuchi’s (1995) <em>Organizational Knowledge Creation Theory</em> where a “<strong>people-perspective</strong>” rather than technology-driven perspective provides the human factors related to knowledge sharing.</td>
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<tr>
<td>Argote, McEvily, and Reagans (2003)</td>
<td>Integrative framework used to explore nature and context of knowledge. Emphasized three properties of knowledge related to context: <strong>status</strong> (ability to absorb), <strong>relationship</strong> (social ties between units), and <strong>tacit level</strong> (different properties and complexity). Contextual feature (ability, motivation, and opportunity) influence knowledge sharing. Social relationships, observation, and proximity lead to “the right person” when in need; informal networks promote vicarious learning through knowledge sharing. Argue the importance of understanding the interdependency and integration of knowledge between the individual and the organization for organizational learning to occur; economic implication between individual and the organization where competitive advantage results from process.</td>
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<tr>
<td>Dwivedi, Bali, and Naguib (2003)</td>
<td>First practical knowledge management framework that transforms conceptual ideas of knowledge management by integrating technology and organizational perspectives as a structure to enable the retention of critical knowledge. Introduced <em>Organizational Current Knowledge Design (OCKD)</em> as a knowledge management framework for healthcare institutions to enable knowledge sharing and creation. Integration of technology with human based clinical decision making social processes for preventive and operative medical diagnosis and treatments in healthcare institutions.</td>
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<tr>
<td>Carlile (2004)</td>
<td>Explored knowledge sharing across functional boundaries to explore how pragmatic and political differences may impact effective knowledge transfer. Specifically, various factors that may impede knowledge sharing among actors across functional domains were explored to identify what factors may impact effective knowledge translation. Knowledge sharing across boundaries is impacted by different goals, perceptions, and political self-interests that can impact the effectiveness of knowledge shared among actors. To create innovation, actors must create shared meaning with members across boundaries to clarify meaning and to establish common goals on how to best cooperate to effectively share and use common information to accomplish tasks.</td>
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<tr>
<td>Author(s)</td>
<td>Provided initial theory for <strong>Voluntary Informal Knowledge Sharing</strong> (VIKS). VIKS is based on two-way face-to-face communication where social interaction facilitated through dialogue enables knowledge sharing. Argued IT infrastructure can facilitate VIKS through email and e-learning to reach wider audience. Rooted in Brown and Duguid’s (1998) arguments that narration and storytelling through communities-of-practice and Von Krog’s (1998) collective sensemaking lead to informal knowledge sharing. “Indwelling” occurs from storytelling and sensemaking. A combination of benevolence (no intention to harm strong relational ties) and competence-based trust (expertise-based) result in knowledge sharing.</td>
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<tr>
<td>Lee, Foo, Chaudhry, and Al-Hawamdeh (2004)</td>
<td>Rooted in Fishbein and Ajzen’s (1975) <strong>Theory of Reasoned Action</strong> (intention to engage in behavior) and Nahapiet and Ghoshal’s (1998) <strong>Social Capital</strong> Theory where structural (patterns of interaction and opportunities to share), cognitive (shared language and shared narratives) and relational (network relationships, interpersonal trust, and shared norms) human factors influence knowledge sharing behavior. Individual knowledge sharing behavior is explored at the individual level to understand what motivates individuals to share knowledge at the collective that can lead to social capital and exploitation by the firm for competitive advantage.</td>
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<tr>
<td>Cabrera and Cabrera (2005)</td>
<td>Presented a model to explore how the maturity of formal and informal networks enable effective knowledge sharing when combined with a shared context-based artifact network; used two theoretical models, Distributed Cognition (TDC) and Actor Network Theory (ANT), to understand knowledge sharing in complex environments. Rooted in early theories of rationalism (cognitive processes) and empiricism (sensory input that constitutes real knowledge). <strong>TDC</strong> is rooted in cognitive theory that examines cognitive processes over a distributed network of individuals who engage in social interaction using physical manifestations of knowledge (books). <strong>ANT</strong> explains the interaction between human and computerized components of the network.</td>
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<tr>
<td>Endres, Endres, Chowdhury, and Alam (2007)</td>
<td>Rooted in Bandura’s (1997) <strong>Self-Efficacy Theory</strong> where observation and role playing provide vicarious learning based on strong social network that encourages sharing. Assumed experience at the individual level enables confidence that can then be shared at the collective level (Nonaka and Takeuchi, 1995). The context is a vital component when transferring complex knowledge (highly context-specific) where familiar context enables knowledge transfer. Informal context (social networks) and open source communities are recommended where boundaries are not confined to formal traditional structures that inhibit knowledge sharing processes. A behavioral perspective to understand the impact of organizational context on an individual’s self-efficacy; focus is on the individual at the cognitive level.</td>
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<td>Author(s)</td>
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<td>Liyanage, Elhag, Ballal, and Li (2009)</td>
<td>Provided a process model for knowledge sharing based on theories that relate to knowledge, communication, and knowledge translation. Rooted in Deutsch’s (1952) Communication Theory, Jacobson, Bumen, and Goering’s (2003) and Holden and Von Korz fleisch’s (2004) framework for knowledge translation. Identified five stages of the knowledge transfer process: awareness (value), acquisition (transfer of critical knowledge), transformation, association (potential benefit to others’), and collaboration as key components of the organizational structure to facilitate effective knowledge translation.</td>
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<td>Gagne (2009)</td>
<td>Knowledge sharing model based on two motivational theories: Ajzen s (1985) Theory of Planned Behavior (assumes intentions are motivational factors that influence behavior) and Deci and Ryan’s (1985, 2000) Self Determination Theory, a multidimensional framework based on autonomous motivation (engaging in an activity volitionally; aligned with pro-social behavior; perceived as positive influence) and controlled motivation where external pressures to conform may result in negative behavior if perceived as threat or positive behavior if “right-thing-to-do”.</td>
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<td>Wang and Noe (2010)</td>
<td>Established knowledge sharing and knowledge transfer as interchangeable and unique terms: knowledge transfer (movement of knowledge between different units); knowledge sharing (provision of task information and know-how to collaborate on problems, implement policies or procedures at the individual level); Knowledge exchange (knowledge sharing among individuals who provide and seek knowledge from others to accomplish task).</td>
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<tr>
<td>Foethe (2010)</td>
<td>Extended Polanyi’s (1966) definition of tacit knowledge as a “triadic structure” (observer, parts, and entity) that emphasizes emergence and amalgamation. Subsidiary awareness triggers intuitive responses.</td>
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<tr>
<td>Vo (2012)</td>
<td>Identified three schools of thought on knowledge: positivism (knowledge perceived as possession, objective and results from scientific inquiry), non-Positivism (truth is established using social pragmatics), and pluralism (combines positivist and non-positivist view where knowledge is defined at the collective through consensus).</td>
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<tr>
<td>Von Krogh, Nonaka, and Rechsteiner (2012)</td>
<td>Provided a theoretical framework rooted in Nonaka and Konno’s (1998) “ba” where common space among individuals facilitates knowledge sharing. Advanced the idea that situational leadership impacts knowledge sharing at the core, conditional, and structural layers of the organization.</td>
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<td>Author(s)</td>
<td>Contribution</td>
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<td>Geiger and Schreyögg (2012)</td>
<td>Advanced the research on informal knowledge sharing rooted in the work of Habermas (1984), Argote (1999), Spender (1996), Brown and Duguid (2001), Carlile (2004), Von Krogh and Roos (1996) and Tsoukas (2009). Narration and storytelling serve as an “informal medium” for sharing complex knowledge in an organization. Narratives shape “best practices” through personal experiences. Narratives (like speech act) raise validity claims where individuals collaborate at the collective through argumentation to justify validity; discursive assessment enables a “learning process” where people change mindset based on mutual understanding of intention.</td>
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<tr>
<td>Stroetmann and Aisenbrey (2012)</td>
<td>Explored the importance of effective knowledge sharing processes in the healthcare industry. Rooted in Davenport and Prusak’s (1998) theories on working knowledge and managing knowledge flow.</td>
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## Appendix B: Empirical Studies Table

<table>
<thead>
<tr>
<th>Scholar’s Name and Year</th>
<th>Research Question and Theoretical Base</th>
<th>Methodology (Data Collection and Data Analysis)</th>
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<tbody>
<tr>
<td>Hodge, S. (2005)</td>
<td>How does the use of language impact social reform? Explored healthcare policy making using Habermas’ (1984) theory of communicative action as a potential normative theoretical framework to understand how competence and rational discourse impact mental health care policy making. Normative model used to understand the emancipatory power of language and its impact on social change; equal opportunity to present claims through mutual understanding of intention and consensus where language facilitates intersubjective understanding based on linguistic competence to present factual claims.</td>
<td>Qualitative study using observation, documentation, and interviews of service users and officials of mental health agencies to explore perception of forum and its relationship with mental health systems and service user movement. According to the results, the system has significant influence over the organizational discourse where communicative rationale is nonexistent and shapes discursive roles that participants adopt, which can impact what is said and by whom, and where participants are structured into adopting communicative roles that limit the forms of knowledge presented in discourse. Communicative roles are limited to experiential lifeworld knowledge where professionals take precedence by providing objective specialized knowledge that actually impacts strategic implementation of health policies and services. Clear distinction between the two worlds exists where Habermas’ communicative rational based on intersubjective mutuality is somewhat unrealistic of real world.</td>
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<tr>
<td>Sargeant, J., Mann, K., Sinclair, D., Ferrier, S., Muirhead, P., van der Vleuten, C., and Metsemakers, J. (2006).</td>
<td>How do physicians maintain competence using informal learning in the workplace to share knowledge with colleagues? This study was rooted in theories of learning through work experience as presented by Kolb (1984) and informal learning in the workplace as defined by Eraut (2004).</td>
<td>Qualitative study of experienced physicians; 10 men and 2 women ages ranging 41-60 and having 25 years of experience; goal to explore experiences to perception on learning in practice. Results showed informal learning through patients and colleagues appeared fundamental; spontaneous and self-directed learning recognized as viable for maintaining competence. Communication is a vital component of informal learning; described as rich, respectful, egalitarian method for sharing “tricks-of-the-trade” with colleagues based on reciprocity.</td>
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<tr>
<td>Wilt, C. Y., Menkhoff, T., Loh, B., and Evers, H. D. (2007).</td>
<td>What social and organizational factors influence knowledge sharing among colleagues? The study was rooted in the concept of social capital and referred to the work of Nahapiet and Ghoshal’s (1998) model on knowledge sharing to provide insight on the antecedents for knowledge sharing behavior.</td>
<td>Quantitative survey at a tertiary educational institution to understand how social and organizational factors impact knowledge sharing behavior. Sample of participants ranged between169 to 190 due to missing data. Demographics included approximately 42% male, 75% Chinese ethnicity, 11% Indian, 5% Malay with mixed remainder of races, 37% students, 50% administrative staff, and 13% faculty. Knowledge sharing dimensions of social capital assessed using an</td>
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</table>
alpha scale of 0.93 based on Liebowitz’ (1999) 5-item scale; structural dimension and organizational care and rewards using an alpha of 0.91 based on Rioux and Penner’s (2001) 4-item scale; agency dimension measures pro-social motives and impression management using an alpha of 0.89 based on Rioux and Penner’s (2001) 6-item scale; relational dimension measures competency and open-mindedness on Gefen’s (2000) 4-item scale to measure competency of co-workers; and a 4-item scale from Payne and Pheysey (1971) using an alpha of 0.76. Hierarchical regression analysis shows rewards, incentives, open-mindedness, and cost-benefit concerns of knowledge hoarding are the strongest predictors of knowledge sharing, rather than pro-social motives or organizational care; highly competent individuals less likely to share when perceive less rewards and organizational support; social capital drives knowledge sharing. Results indicated organizations must create climate based on rewards and incentives and social capital to encourage knowledge sharing.

Yang, C. W., Fang, S. C., and Huang, W. M. (2007). How do isomorphic pressures impact institutional processes that facilitate knowledge sharing in healthcare organizations? Study was rooted in DiMaggio and Powell’s (1983) Institutional Theory to understand how the organizational context is impacted by institutional pressures. Examined behavior patterns in hospitals and the relationship between the fit model of isomorphism pressures and the institutional strategies for knowledge sharing. Meta-Analysis of mixed method study on healthcare organizations to determine the impact of isomorphic pressures on institutional processes through which knowledge is created. First proposition explores the degree of perceived isomorphic pressures on health care administrators and institutional strategies. Second proposition explores institutional isomorphic pressures and institutional strategies and whether they increase the level of the health care organization’s knowledge creation performance. Focus on coercive, normative, and mimetic (three types of institutional isomorphism) and use theory to understand how these pressures impact healthcare organizations and their strategies for knowledge sharing. Findings suggested institutional strategies are impacted by isomorphic pressures; strategies defined based on either coercive (health policy changes), normative (management controls healthcare rather than physician autonomy) or mimetic (sustaining competition); the isomorphic force drives the strategies that drive the knowledge sharing structure implemented in a healthcare organization.
Ford, D., and Staples, D. S. (2008). How can knowledge sharing and knowledge hoarding activities and attitudes be used as a basis for classifying knowledge sharing behaviors? What behavioral categories can be discerned from the data?

This study was rooted in Fishbein’s (1980) Theory of Reasoned Action and Ajzen’s (1985) Theory of Planned Behavior.

Qualitative study, semi-structured phone interviews with 20 North American knowledge workers between the ages 24 and 55; data collection using recordings of phone transcripts. Researchers classified 6 forms of knowledge sharing behaviors: Full Knowledge Sharing (provide knowledge voluntarily); Discretionary Knowledge Sharing (giving knowledge but withholding some for external reasons); Partial Knowledge Sharing (Discretionary but knowledge withheld for personal reasons); Knowledge Hinting (sharer alludes to knowledge without providing application); Active Knowledge Hoarding (knowledge sharer withholds knowledge overtly or by avoidance); and Disengaging (knowledge sharer does not actively share or actively hoard knowledge).

Results indicated tendency to categorize “knowledge sharing” where findings may be distorted; knowledge sharing process difficult to observe; self-reporting can provide better insight.

Lu and Lajoie (2008) How does collaborative discourse impact decision making?


Argumentation plays key role in facilitating collaboration by confronting cognitions.

Explored naturalistic decision making (shared understanding of task goals and task relevant knowledge) for defining problems through shared mental models.

Technology-driven Argumentation tools enable participants to engage in interpersonal negotiation through online forums and cognitive apprenticeship.

Qualitative study based on the observation of two groups of medical students who co-construct medical arguments through collaborative decision making to facilitate patient care in emergency medicine; complex, high risk critical care creates intense cognitive demands on doctors to provide immediate care.

Analysis at the collective level of individuals engaging in medical argumentation through collaboration to create shared meaning for managed patient care.

Study explores two situations: individuals collaborating with technology (laptop/interactive whiteboard) and individuals engaging without technology (traditional whiteboard).

Results indicated interactive groups engage in adaptive decision making early, which leads to shared understandings and effective patient care; interactive produces more productive argumentation where informative data identifies pattern recognition and potential problems illustrated through simulation.
<table>
<thead>
<tr>
<th>Lehtonen, M. (2009).</th>
<th>How does cultural diversity impact knowledge sharing and trust in multicultural project teams?</th>
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<tr>
<td>This study extended Nonaka and Takeuchi’s (1995) Knowledge Creation Theory featuring SECI and the use of “ba,” using Peirce’s (1909) Semiotics Model that emphasizes symbols, metaphors, and linguistics as a basis for establishing common grounds that facilitate effective communication.</td>
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<td>Study focused on knowledge sharing and communication at the individual level where “communication by accident” occurs as a result of “trust” where individuals feel connected to share knowledge through common understanding of goals and objectives.</td>
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<td>Qualitative semi-structured interviews and focus groups in various locations of an organization in Finland and India; participants represent various levels of the organization.</td>
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<td>The study explored how Finnish and Indian team members share and communicate knowledge in multicultural project teams by examining the impact of “trust” on the process.</td>
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<td>Results indicated that the organizational context establishes trust which facilitates communication leading to knowledge sharing; study identifies six objects: language, interpersonal similarity, attitude toward knowledge sharing, organizational environment, trust, and personal relationships as having impact on effective knowledge sharing.</td>
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<tr>
<th>Mansingh, G., Osei-Bryson, K., and Reichgelt, H. (2009).</th>
<th>What factors impede or facilitate knowledge flow among individuals who share knowledge to accomplish common objectives?</th>
</tr>
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<tr>
<td>In a health care environment, knowledge sharing in-person in multi-facility forums provides information for decision management in the absence of formal Knowledge Management Systems. The study used a knowledge-based theory approach to understand knowledge sharing among individuals in an organization. Value of knowledge perception and barriers to knowledge sharing were addressed. Patterns of use and perceived usability were determined.</td>
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<td>Qualitative study that explored how medical professionals collaborate on patient care using knowledge as a resource, and how social barriers can impede knowledge flow based on patterns of accessibility, perceived usability, and relevance of a knowledge item. Data were collected using direct observation, interviews and documentation.</td>
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<td>Results indicated the economic costs of applying knowledge are associated with the activities by which knowledge is used; individuals must perceive that their knowledge contribution is valuable and encouraged, having opportunities to share with colleagues; barriers (different goals, lack of capacity) can prevent users from using knowledge even when they have it. Structure must facilitate the process and efficiency for application.</td>
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<tr>
<td>Author(s)</td>
<td>Question/Model</td>
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<td>Hewett, Watson, Gallois, Ward, and Leggett (2009)</td>
<td>How does intergroup communication impact the quality of patient care?</td>
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<td>Tsoukas, H. (2009).</td>
<td>How does social interaction using dialogical approach enable new knowledge creation in an organization?</td>
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<tr>
<td>McGivern, G., &amp; Fischer, M. (2010).</td>
<td>How do industry transparent medical regulations impact how doctors’ share knowledge (incident reporting)?</td>
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<tr>
<td>Yang, C. W., Fang, S. C., and Lin, J. L. (2010).</td>
<td>How do isomorphic pressures influence institutional strategies that impact knowledge creation in a healthcare organization?</td>
</tr>
<tr>
<td>Framework that enables an understanding of the organizational context and provides insight on how institutional pressures impact healthcare organizational change, providing a meta-analysis based on qualitative data from literature on institutional theory from a knowledge-based perspective.</td>
<td>Specific focus on quotes to provide insight on knowledge sharing activities and its antecedents. Results indicated normative isomorphic pressures from the healthcare industry, institutional traditions, individual knowledge stock, education and diversity, and the strength of social ties based on the quality and quantity of opportunity to exchange knowledge impact knowledge creation.</td>
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<td>Geiger, D. (2010). How do employees use narration and argumentation to share knowledge across geographic borders in an organization? This study was rooted in Toulmin’s (1958) argumentative framework model, Weick and Browning’s (1986) sensemaking model where making sense of the environment is done through interaction, and Habermas’ (1984) theory of communicative action to present a distinction between narration and argumentation used to validate claims used in communication processes.</td>
<td>Longitudinal qualitative study over 6 months in a large, European-based global company. Used exploratory interpretive method “cap management” to understand the communicative processes and shared linguistics used to share knowledge across borders. Data analysis conducted in three steps (documentation, communication mode, and interviews) to understand how knowledge seekers interpret and make sense of knowledge acquired from peers. Results consistent with literature; argumentation, sensemaking, and narration are interrelated complementary modes of communication effective for organizational knowledge sharing though highly context-specific and ambiguous making it challenging for those unfamiliar with the context when crossing borders.</td>
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<td>Waring, J. J. and Bishop, S. (2010). How do physicians share knowledge using an informal “backstage” to enhance their learning and improve patient care? This study was rooted in learning theories. Lave and Wenger’s (1991) situated learning theory establishes that learning occurs through situated activities based on socialization and participation to enable learning through collective learning, while Weick’s (1995) sensemaking theory enables individuals and groups to identify and understand uncertainty in the workplace through “situational awareness” where experiences are used to interpret against existing or new mental models.</td>
<td>Qualitative ethnographic study using observation at three day surgery units to explore the impact of organizational knowledge sharing from a socio-cultural perspective; explore “front stage” formal communication and “backstage” informal interaction. Staff lounge, storage area, and main corridor serve as the backstage setting; situational context” is characterized by three significant contextual features: spatial and temporal opportunity, homogeneity versus heterogeneity of participants, and patency versus privacy of interaction. Results indicate inclusive interaction occurs in staff lounge or office areas where content is functional, based on formal “staging talk”; while exclusive interactions occur in store room or corridor where “dark secrets” are shared in confidentiality. “Watercooler” knowledge sharing is situational and discretionary based on the event; collegiality among physicians facilitates knowledge sharing.</td>
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<td>Name</td>
<td>Question</td>
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<td>Leever, Huist,</td>
<td>How do physicians and nurses handle conflict situations that arise during</td>
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<tr>
<td>Berendsen, Boendemaker, Roodenburg, and Pols (2010).</td>
<td>that arise during collaboration?</td>
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<td>Study explored how nurses and physicians managed conflict resolution in a healthcare environment to facilitate patient care. Specifically, the study explored the different conflict management styles used to negotiate differences among nurses and physicians.</td>
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<td>Zigan, K., Macfarlane, F., &amp; Desombre, T. (2010).</td>
<td>How does context impact knowledge sharing activities in various organizational levels in a hospital?</td>
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<td>Author(s)</td>
<td>Title</td>
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<td>Weller, Barrow, &amp; Gasquoine (2011)</td>
<td>What is the nature of the social interactions among junior doctors and nurses in a hospital setting?</td>
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<td>Spilg, E., Siebert, S., and Martin, G. (2012).</td>
<td>What impact do communities of practice and social learning have on the professional development and competence of medical doctors as an approach to post-medical education?</td>
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<td>This study used Technology Acceptance Model to understand how attitude towards the technology influences behavior. Previous studies referred to social learning theory to understand knowledge that is socially constructed through peer collaboration. TAM was used to understand online collaborative learning where attitude and self-efficacy influence whether an individual will utilize the application.</td>
<td>Quantitative cross sectional study to understand why physicians (primary care and oncology) use social media to share medical knowledge with colleagues. National random sample; 485 participants (299 primary care physicians and 186 oncologists). Survey questions using multi-item scales to assess barriers to using social media; each response category consisted of a 7-point scale. Attitudes toward social media usage assessed using 10-point semantic differential scales; the outcome was the frequency of use of social media to share medical knowledge with other physicians (dependent variable). Study explored (1) the perceived barriers to social media adoption; (2) motivations to adopt social media, including desire to advance the profession, personal innovativeness, and access to peers; (3) attitudes toward social media; (4) perceived ease of use of social media; (5) perceived usefulness of social media; and (6) usage of social media to share medical knowledge with other physicians. Hierarchical regression analysis measured how the variables (demographic variables, individual factors, and attitude towards social media) impact behavior towards using social media. Results indicated 24% of the respondents use social media daily or many times in a day to explore medical information; 57.5% perceived social media to be beneficial, engaging, and a good way to get current, high-quality information; and 60.0% stated it improves the quality of patient care delivered. Social media is both efficient and effective as a way for doctors to learn about new medical innovations.</td>
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<td>Built on a conceptualization of knowledge sharing from a behavioral perspective to further understand how cognitive emotions impact knowledge sharing; pride and empathy affect attitudes and intentions that influence knowledge sharing. Extended the work of De Vries (2006), which distinguished between two attitude dimensions: willingness of an individual to grant access to their intellectual capital with the community based on the norm of reciprocity; and an individual's eagerness to share based on a strong internal desire to communicate their intellectual capital based on the</td>
<td>Quantitative study part of a target organizational survey to explore how pride and empathy (emotions) impact knowledge sharing attitudes and intentions. Designed four scenarios to measure the influence of pride and empathy on knowledge sharing attitudes and intentions using survey of 252 respondents. Preacher and Hayes (2008) enabled multiple mediators testing and analysis. Both analysis eagerness and willingness are the mediating variables while knowledge sharing intention is the dependent variable; pride and empathy were manipulated to compare low and high pride conditions while empathy was compared in low and high empathy conditions. Results: empathy impacts knowledge sharing by affecting willingness to share knowledge; pride and</td>
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content, not on collective behavior. empathy impact eagerness and willingness to share knowledge; and emotions influence knowledge sharing intentions mediated by eagerness and willingness where eagerness and willingness mediate the relationships between pride and knowledge sharing intention. However willingness is only linked to the relationship between empathy and knowledge sharing. The study emphasized that the emotional state of an individual at particular time influences attitude and intention for sharing knowledge. Study extended current research by linking emotions to knowledge sharing in a systematic way.

<p>| Tortoriello, Reagans, and McEvily (2012) | How do tie strength, network cohesion, and network range affect the level of knowledge acquired in cross-unit knowledge transfer relationships? The study explored the process of cross-functional knowledge transfer; common understanding among source and recipient, positive relationship status, and level of network connections enables individuals to more effectively share knowledge across boundaries to ensure initial meaning is maintained and that proper application is administered. Argued that social networks enable boundary-spanning that enables new distinctions. Based on previous research of Argote et al. (2003) that emphasized the benefits of social capital and why knowledge sharing is stronger when interpersonal ties are stronger and or social networks exist to facilitate knowledge sharing across boundaries. Mixed methods (questionnaire survey of 249 individuals who completed study and 24 interviews with managers and researchers of a multinational technology company) to understand the level of knowledge sharing across boundaries. Interviews showed boundary-spanning position had influence to facilitate knowledge across unfamiliar borders while empirical results indicated network ties had a positive effect on the amount of knowledge acquired in cross-unit transfers, but that boundary spanners were not predictable within unit transfers or across unit transfers since the strength of social ties can vary and not predictable. Regression analysis and Burt’s (1992) measure of indirect structural constraint (to account for third party networks) used to analyze data. |
| Geiger and Schreyögg (2012) | How is narration used as an informal medium for sharing knowledge among organizational members? Narration and storytelling serve as an “informal medium” for sharing complex knowledge in an organization. Advance the research on informal knowledge sharing rooted in the work of Habermas (1984), Argote (1999), Spender (1996), Brown and Duguid (2001), Carlile (2004), Von Krogh and Roos (1996) and Tsoukas (2009). Narratives help shape “best practices” through personal experiences. Narratives (like speech act) raise validity claims where individuals collaborate at the collective through argumentation to justify validity; discursive assessment enables a “learning process” where people change mindset based on mutual understanding of intention. Provide meta-analysis based on previous qualitative studies to explore the use of narration for knowledge sharing in various organizations. Knowledge resides at the individual level as implicitly cognitive and is explicitly shared at the collective level to provide practical know-how not found in the company manual. Actors unconsciously rely on narrative too as means for legitimation; implicit affirmation occurs as narrative is restated through collaboration where sensemaking leads to common understanding; justification of implicit claims by sharing narration through public discourse; sensemaking presents holistic “thick descriptions” of practices and their contexts, enabling actors to get a rich understanding of the complex nature of a problem and |</p>
<table>
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<tr>
<th>Gorini, Miglioretti, and Pravettoni (2012).</th>
<th>How does a traditional culture of blame impact transparency among healthcare professionals? Study explored how traditional “culture of blame” impacted the level of communication shared among healthcare professionals to determine whether fear of blame influenced individuals not to share incidental reports and potential errors from lessons-learned to avoid potential medical liabilities. Study emphasized a need for a transition toward a “culture of safety.”</th>
<th>Quantitative study using questionnaires using 5-point Likert scale to determine the level of fear of being blamed or punished among healthcare professionals. Two hundred forty-nine healthcare providers were included in the study (38 physicians, 11 medical students, 127 nurses, and 73 nursing students). The authors argued that the emphasis on blame and punishment translates directly to poor patient care as mistakes are not discussed and, lacking open discussion and analysis, are repeated. Both healthcare students and professionals were surveyed in order to gauge fear. In general students were more fearful than experienced personnel and those surveyed were more fearful of blame than punishment. Cronbach’s (1951) Alpha used to estimate internal reliability of two loading factors used. Findings indicated that perceived fear existed across all healthcare professionals and emphasized need for transition of culture towards “culture of safety.”</th>
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<td>MacIntosh, Beech, and Martin (2012)</td>
<td>To what extent are clinician-manager interactions dialogical in nature? Rooted in Bakhtin’s (1981) theories on the use of language and semiotics that emphasize “polophony” and “infinalizability,” arguing an individual’s voice is distinct from others. Utterances reflect a unique lifeworld that represents that of the speaker and receive influenced by socioculture; Bakhtin emphasized that the influences of others on the self have a strong impact on how one acts and negotiates in situations.</td>
<td>Qualitative study using observation, focus groups, personal interviews, and documentation review over 32 months at five healthcare organizations using stratified random sample; 46 interviews as follow-up to individuals initially observed and focus group meetings. Study was pertinent to understanding cross-functional communication among medical professionals, to explore whether differences in expertise impact social interaction and to determine whether tendency is to engage in dialogical or dialectical processes; a social constructionist approach to understanding the relational processes associated to knowledge sharing among healthcare professionals, to explore the social realities that influence social interactions at the individual level. Results indicated that cross-functional differences result in argumentation that is dialectical in nature despite the dialogical appearance that reinforces opposition between the parties; utterances have diverse meanings where the meanings emphasized the distinctions between those engaging in discourse; suggested local intervention to foster productive dialogues based on common goals where mutual understanding can lead to socially coordinated action.</td>
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<tr>
<td>Authors</td>
<td>Research Question</td>
<td>Study Design and Methods</td>
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<tr>
<td>Nair, D. M., Fitzpatrick, J. J., McNulty, R., Click, E. R., and Glembocki, M. M. (2012).</td>
<td>How frequently do nurses and physicians engage in collaborative behavior?</td>
<td>Study explored collaborative behaviors of nurse-physicians to determine how frequently they engaged with one another. Study explored traditional doctor-nurse game where doctors were prescribed and nurses fulfilled a supportive role to patient care, specifically the perceived power differences' impact on collaborative behaviors among the two professions.</td>
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<td>Clark, R. C., and Greenwald, M. (2013).</td>
<td>How does communication impact collaboration among nurses and physicians?</td>
<td>Study explored the role that communication played when nurses and physicians collaborated with one another. Specifically, the impact of shared goals, and perceived power and positional status among the two professions impacted how they engaged to facilitate patient care.</td>
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<td>Landman, Spatz, Cherlin, Krumholz, Bradley and Curry (2013)</td>
<td>How does hospital staff (doctors and nurses) engage with Emergency Medical Service professionals to collaborate on patients with myocardial infarction?</td>
<td>Study explored how effective collaboration and communication among emergency room doctors and emergency medical personnel led to a reduction of cardiac mortality rates. Specific communication initiatives were identified that led to high performing hospitals. Strong communication and collaboration was identified as key components to efficient and effective patient care.</td>
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Study explored applications of social constructivist approaches to understanding effective knowledge translation among healthcare professionals. Study explored the benefits of social pragmatics for constructing knowledge where individuals defined reality through intersubjective consensus. Study argued that to date limited and unsystematic use of social pragmatics had been used to understand knowledge transfer among individuals in the healthcare industry. | Qualitative study using a meta-analysis or review of the literature centering on knowledge translation (KT) in healthcare environments using the lens of the social constructivist theory. Study explored 514 articles and 35 papers between 1992 and 2011. Their goal was to inform the design and evaluation of KT initiatives and processes. The researchers used six online databases as a literature pool; Ovid Medline, Ovid EMBASE, CINAHL, ERIC, Psycinfo and AMED. The researchers found the analysis to vary a great deal in quality and substance, with the common theme being a lack of justification in the application of theory in general and social constructivist theory more specifically. |
Study explored nurse-physician dyads to better understand how inter-professionals engaged in collaboration in healthcare using mixed approaches that explored relationships and communication among nurses and physicians and whether accommodation was used to facilitate knowledge sharing. Study also explored the impact of role and how individuals proceeded to communicate with one another as a result. | Mixed methods study in Canadian multi-hospital site to understand three dimensions of collaboration: communication, accommodation, and isolation. Mixed study provided insight on how tension between the two professions affects collaboration. Qualitative was based on inductive approach where 20 semi-structured interviews were designed to elicit participants’ experiences about communication and collaboration (13 nurses and seven doctors). Descriptive observations were conducted to provide further insight on communication patterns and the nature of the context. Quantitative design using survey questionnaire of 51 physicians and 190 nurses completed. Cronbach’s coefficient alpha used for internal consistency. Yuen’s T-test statistic and Wilcox’s R Function used to test statistical significance. Findings indicate physicians rated nurses higher on accommodation and isolation and judged nurses more positively than nurses did of doctors. Nurses emphasized that physicians’ communication skills needed improvement. Physicians did not respond as negatively toward nurses. |

Study explored communication and collaboration among inter-professionals in a hospital to understand how they coordinated patient care. The authors explored the positive influence of electronic communication, which provided structure and facilitated knowledge sharing among healthcare professionals, improving efficiency and leading to optimal patient care. In addition, they argued there was a need to build social relationships among inter-professionals that would foster better communication and enable them to establish common understanding, leading to better outcomes where each profession had a better understanding about the other’s priorities and job-related tasks.

Qualitative study conducted in two urban Canadian hospitals. Two interviewing techniques totaled 47 (doctors, nurses, and medical professionals) interviews. Informal interviews used to probe observational fieldwork, while formal interviews provided deeper understanding of clinicians’ views on inter-professional communication, the nature of communication, and collaboration in internal medicine wards. Data coded using thematic analysis. Broad themes included intra-professional communication in structured/unstructured context and inter-professional communication in structured/unstructured context. Findings indicated inter-professional communication face-to-face were terse and specific in nature while intra-professional communication showed physicians who interacted within own group was rich. Findings indicated working within one’s group may be due to similar professional background, lack of knowledge across borders, and positional status. Suggest need for interventions through formal structures to improve communication inter-professionally.
Appendix C: Memo of Understanding

Lawrence Memorial Hospital of Medford (Hallmark Health System)
Dr. Edward Butler, Chief Academic Officer

This is a memo of understanding that concerns Katherine Patras Carvalho’s dissertation thesis toward the completion of her doctoral degree at Northeastern University in Boston, Massachusetts. Northeastern University requires permission by the sponsoring organization that is in accordance with the human subjects’ research guidelines.

The following human subjects dimensions have been incorporated into the design of the dissertation project to be conducted within The Lawrence Memorial Hospital of Medford: (a) all interview data will be coded to remove both site and participant identifying information; (b) data will be stored in files accessible only to the researcher; (c) confidentiality of the subjects will be preserved; (d) data will be reported in aggregate form and in cases where data cannot be aggregated, any information that could indirectly identify the subjects will be removed; (e) the study will not in any way refer to patients of The Lawrence Memorial Hospital of Medford (Hallmark Health System), past or present, and the study will not have any direct or indirect contact with any patients of the Lawrence Memorial Hospital of Medford (Hallmark Health System); (f) the purpose of the project and informed consent elements such as confidentiality, voluntary participation, and the nature of the project will be reviewed both at the point of contact for the study and at the commencement of each data-gathering session along with informed consent document to ensure that the participants understand what the study entails and are afforded sufficient time to decide whether to participate. In addition, if there is any publication beyond the dissertation publication, the organization will be notified and given the right to review any publication prior to release to ensure that the organization remains confidential if the organization so chooses.

This memo verifies that Dr. Edward Butler will act as the organizational representative for the approval of this research process within the Lawrence Memorial Hospital of Medford (Hallmark Health System).

Name _____________________________________date_____________
Lawrence Memorial Hospital of Medford (Hallmark Health System)

Katherine Patras Carvalho _________________________________date_____________
Northeastern University

carvalho.k@husky.neu.edu
Appendix D: Informed Consent

Northeastern University, Doctor of Education Program

Researcher: Katherine Patras Carvalho

Title of Project Title: Knowledge sharing behaviors: A descriptive case study to explore the knowledge sharing behaviors of medical doctors located in a community hospital in the Northeastern United States.

Dear Participant:

You are invited to take part in a research study. This is a voluntary consent form to inform you about the study, but the researcher will explain it to you first. You may ask the researcher any questions that you have. When you are ready to make a decision, you may tell the researcher if you wish to participate or not. You do not have to participate if you do not want to do so. If you decide to participate, the researcher will ask you to sign this statement and will give you a copy to keep.

Why am I being asked to take part in this research study?

You have been selected to speak with me today because you have been identified as someone who has a great deal to share about how doctors share knowledge with other healthcare professionals (including other medical doctors).

Why is this research study being done?

This study is being conducted to explore the knowledge sharing behaviors of medical doctors in a community hospital located in the Northeastern United States. The goal is to gain insight on the social interactions, communication processes, and knowledge flow that takes place among doctors and other healthcare professionals to identify the types of knowledge that medical doctors share and the types of actions they use to share knowledge.

What will I be asked to do?

With your consent, the researcher will interview you using a data recording device. The interview will be held in a meeting room of your choice and last approximately 30 minutes long. The interview will be tape recorded using a data recording device that will enable the researcher to later analyze the data using verbatim and will ensure the interpretations accurately represent your “voice”. Following data analysis, you will be asked to listen to the recording and be provided a copy of the transcript to validate and confirm that the researcher’s interpretation of the data is consistent with your intentions to ensure that your “voice” is accurately represented.

Where will this take place and how much of my time will it take?
Your interview will be held at the location of your choice. Each interview will last approximately 30 minutes. Upon transcribing the data, you will be asked to clarify any data in the transcription. This process will only take an additional 15 minutes of your time.

**Will there be any risk or discomfort to me?**

There are no known risks associated with the procedures of this study. It is not possible to identify all potential risks in research procedures; however, the researcher has taken reasonable safeguards to minimize any known and potential risks.

**Will I benefit by being in this research?**

There are no direct benefits to the study participants. However, the overall potential benefit from conducting this study will provide the medical community with valuable insight on doctors’ knowledge sharing behaviors; this contribution is critical given the emphasis for patient collaboration mandated by the healthcare industry and governmental regulations. The findings from this research can be used to further explore the topic of doctors’ knowledge sharing behaviors for grounding theory.

**Who will see the information about me?**

Your part in this study will be confidential, to the extent allowed by law. If the researcher feels you are a threat to yourself or others, legally the researcher must report the information to appropriate authorities. All participants will be given a pseudonym. Only the researcher conducting this study will see information about you. This form will be maintained in a locked drawer for three years after completion of the study. All other data will be destroyed upon completion of the study. Your information will be combined with information from other people taking part in the study to establish themes. Data will be transcribed and analyzed using the qualitative study approach. In rare instances, authorized people may request to see the research information from this study. This is done to ensure that the research has been conducted properly. The researcher would only permit people who are authorized by organizations such as the Northeastern University Institutional Review Board to see the information.

**What will happen if I suffer any harm from this research?**

No special arrangements will be made for treatment solely because of your participation in this research.

**Can I stop participation in this study?**
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty.

**Who can I contact if I have questions or problems?**

You can contact the Principal Investigator, Dr. Margaret Delaney Gorman Kirchoff or call her at (202)425-7111 or mdkirchoff@gmail.com. You may also contact the Student Investigator, Katherine Patras Carvalho at kathycarvalho33@gmail.com or call her at 781-475-9933.

**Who can I contact about my rights as a participant?**

If you have any inquiries about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617-373-4588, Email: irb@neu.edu. You may call anonymously if you wish.

**Will I be paid for my participation?**

You will not be paid for your interview.

**Will it cost me anything to participate?**

There are no monetary costs for you to participate in this study, but there is a small time commitment to participate in the interview.

**Is there anything else I need to know?**

You must be at least 18 years of age to participate in this study.

---

I agree to take part in this research.

___________________________________ Date ________________

Signature of person agreeing to take part

___________________________________

Printed name of person above

___________________________________ Date ________________

Signature of person who explained the study to the participant above and obtained consent

Katherine Patras Carvalho

Printed name of person above
Appendix E: Document Review Sheet

Type of Document ____________________________________________________________

Source (Retrieved from) ____________________________________________________

Date_______________________

Length _________________________

Publication Status (Internal/External)

________________________________________________________
### Appendix F: Observational Sheet

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Field Notes</th>
<th>Reflection Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who/What/Where/When</td>
<td>Description of the Social Interaction</td>
<td>(What happened, How long was interaction)? Personal comments</td>
</tr>
<tr>
<td>Observation # 1</td>
<td></td>
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<tr>
<td>Observation # 2</td>
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<td>Observation # 3</td>
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<td>Observation # 4</td>
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<td>Observation # 5</td>
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<td>Observation # 6</td>
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<td>Observation # 7</td>
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<td>Observation # 8</td>
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<td>Observation # 9</td>
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<tr>
<td>Observation # 10</td>
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</table>
Appendix G: Interview Protocol

Organization ___________________________________

Participant (Interviewee) _________________________

Researcher’s Name ______________________________

Date ____________________________________________

Subject: Doctors’ Knowledge Sharing Behaviors

Hello, my name is Katherine Patras Carvalho I am a doctoral student working on my dissertation thesis at Northeastern University. I am interested in learning about the knowledge sharing behaviors of medical doctors and would like to attain your insight and reflections on this matter.

Thank you for agreeing to participate in this study. Please note that your participation in this study is voluntary and you have the right to terminate your participation at any time during this process. All of the information that you provide during this interview will remain confidential. I would like permission from you to tape record our conversation to ensure that my interpretations accurately represent your thoughts on this matter. You will receive a copy of the interview transcript for your review and you will have the opportunity to modify any data that is not consistent with your initial responses.

Part I. Introductory Protocol

The introductory session enables the researcher to establish rapport with the participant, describe the study, and to answer any questions. [Prior to proceeding, the participant will be asked to sign the informed consent that authorizes the researcher to begin].
You have been selected to speak with me today because you have been identified as a medical doctor who can provide insight based on your personal experiences in sharing knowledge with other healthcare professionals (includes other medical doctors). This study focuses on the personal experiences of medical doctors to explore their knowledge sharing behaviors with other healthcare professionals in a community hospital and specifically, the types of knowledge they share and the types of actions they use to share knowledge. This study seeks to explore the social interactions, communication processes, and knowledge flow among doctors and other healthcare professionals to gain insight about the knowledge sharing behaviors of medical doctors.

Because your responses are important, a tape recording device will be used to capture everything you say, I would like your permission to tape record our conversation today. Do I have your permission to record this interview? (if yes, thank respondent and reiterate that they may be asked again once ready to begin recording). I will also be taking written notes and assure you that all responses will be confidential; each participant will be referred to using a pseudonym. I will be the only one privy to the tapes which will be eventually destroyed after they are transcribed. To meet our human subjects’ requirements at Northeastern University, you must sign the forms I have with me [provide informed consent to the participant]. Essentially, this document states that: (1) all information will be held confidential throughout the study, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) the researcher does not intend to inflict any harm to the participant or to the hospital organization that serves as the setting for this study. Do you have any questions about the interview process or how your data will be used?
This interview is planned to last no longer than approximately 30 minutes. During this time, I have several questions that I would like to ask you. If time begins to run short, it may be necessary to interrupt you to facilitate the process to ensure that all the questions are answered.

Do you have any questions at this time?

Part I. Participant Background

Semi-Structured Interview Questions

Part I. Participant Background: How long have you practiced medicine? What is your areas of specialty?

I. Part II. Describe Knowledge Sharing Behavior:
1. Describe how you engage the viewpoints of other healthcare professionals on medical-related consultations.
2. Describe what measures you take to ensure your message is understood and applied as intended when you communicate with interdisciplinary healthcare professionals.
3. Describe a typical situation where language needed clarification to ensure shared meaning among healthcare professionals.
4. Describe what measures you take to establish common understanding with other healthcare professionals when you discuss lab reports and test results?

II. Types of Knowledge:
5. Describe how you use clinical data to assess and prescribe patient care when you engage with other healthcare professionals?
6. Based on your experiences, describe what benefit social conversation has contributed to your working relationships with other healthcare professionals?
7. Describe a typical situation where you would provide practical insight to add value to a clinical assessment when you engage with other healthcare professionals?
8. Describe a time when you reflected upon “lessons-learned” to consult on a medical matter and tell me what types of information you provided that added value to your discussion.

Types of actions shared:
9. Describe a typical situation when doctors rationalize their actions to other healthcare professionals.
10. Describe a typical situation when a doctor would assess and prescribe patient-care without any external input?
11. Describe what measures doctors take to organize a critical consultation?
12. Describe the benefit of establishing personal communication channels with other healthcare professionals and how it fosters your working relationship.

Thank participant and let them know they will be contacted to review their transcript for accuracy of interpretation.
Appendix H: Non-Verbal Assessment Form

<table>
<thead>
<tr>
<th>Non verbal Body Movements</th>
<th>Occurrence</th>
<th>Notes / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gestures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emblems (symbolic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beat/Baton</td>
<td>(rhythmic hand movements)</td>
<td></td>
</tr>
<tr>
<td>Conversational</td>
<td>(illustrators/gesticulations)</td>
<td></td>
</tr>
<tr>
<td><strong>Negative Gestures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tight Jaw, Squinting, lips disappear</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Positive Gestures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loose furrow lines forehead, relaxed mouth, tilted head, exposed neck</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kinesics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illustrators (pointing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapters (touching / release body tension)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulators (turn taking/raising head)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affect Displays (Emotion, Sigh)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paralanguage (vocal cues/symbolic cues)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haptics (shake hands, greeting, patting, hugging)</td>
<td></td>
<td></td>
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<tr>
<td>Proximity/Distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Facial Signals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nodding (positive reinforcement)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaking head (side/side/negative)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back Channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Mimicry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eyebrow movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forehead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mouth/lips</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gaze Pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(eyes)</td>
<td>Direct</td>
<td></td>
</tr>
<tr>
<td>Averted</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vocal Tone/Prosody</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pitch (high/low)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume (loud/soft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed/Rate</td>
<td>Rhythm</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
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<td></td>
</tr>
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</table>

**Verbal Content**

<table>
<thead>
<tr>
<th>Lang. Intensifiers</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pause</td>
</tr>
<tr>
<td></td>
<td>Interruption</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Linguistic Utterance</th>
<th>locutionary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>illocutionary</td>
</tr>
<tr>
<td></td>
<td>Perlocutionary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronemics</th>
<th>Time of exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of control</td>
</tr>
</tbody>
</table>
Appendix I: Four Types of Actions (Habermas, 1984)

1. **Teleological Action**:  
Goal/purpose oriented; means to end; objective/empirical actions.  
Intentional behavior; goal directed behavior/strategic calculations means to an end.  
Actions were descriptive; directive; explanatory; informational.  
Provided orders/guidance/prescriptions; *here’s what to do when….*  
Individuals were concerned with consequentialism.

**Observable behaviors/action:**  
Speaker controlled the floor when they spoke, stated, or explained.  
Strong emphasis on self control (resist temptation from inappropriate action)  
People engaged in cooperative behavior but usually through manipulation merely for the purpose of coordinating action.

2. **Normative Action**:  
Emphasized expected social behaviors; shared values among collective; cultural in nature.  
Normative traditions guided proper and formal conduct of individuals (rules, regulations, processes, protocol, and discipline).  
Prescriptive grammar on “how things are done”; Conforming behaviors; “how to” or “what to do” when this happens…Behavioral responses are predetermined  
Language was used to espouse norms and values.  
Norms triggered cues where individuals adjusted to the context based on language/rules. Utterances were complimentary and generally accepted as valid especially if positive utterances; grammar emphasized correct use of language (linguistics meaning, syntax, semantics, phonetics).

**Observable Behaviors/Actions:**  
Speaker showed signs of disfluency (pausing, revising, prolonging, repeating, and hesitating). Actions or behaviors sought to: reinforce, affirm, encourage, acknowledge.  
Social action was based on reciprocity where individuals conformed to behaviors that reflected shared norms and values; social duties over personal gains.  
People used language to reach agreement on problematic claims.

3. **Dramaturgical Action**: Role playing/subjective/actions were psychological in nature.

**Observable Behavior/Actions:**  
Speakers showed attributes of style; aesthetic expression; emotional and symbolic gestures; way things were made to appear to others; emblems that conveyed semantic meaning (hand shake, nodding) emotional and physical appearance was significant to maintain certain role/positional status; projection of public image; self presentation.  
Implicitly strategic actions were used to elicit intended response from recipient  
In theatre of life, it was assumed as a condition of mutual trust that the roles played by
the actors were congruent with their true characters and so for performances to be “rational” they had to be sincere and the intentions had to be authentic otherwise perceived as deceptive.

People may use language without expressly intending to reach agreement over problematic claims.

4 Communicative Action: Intersubjective mutuality (Integrated objective, subjective, and social world to define context or reality. Members sought concerted effort to reach voluntary agreement for the sake of cooperation.

Observable Behavior/Actions:
Individual claims were questioned, rationalized, justified, and validated using language and argumentation; misunderstanding was resolved through rational discourse; debate; rational reconstruction; discursive justification.

Assumed each member had equal opportunity to present and validate factual and counterfactual claims; ethical, genuine intentions; use of familiar grammar/linguistics

***Communicative action enabled the integration of the objective, social, and subjective where individuals engaged in intersubjectivity to achieve consensus through shared meaning and interpretation which enabled them to define context.

Locutionary: that which was stated explicitly; competence; empirical (objective)

Illocutionary: that which was not stated, but understood (norms) performative rules (social)

Perlocutionary: Persuasive; utterances were used to make compelling arguments (subjective)

Turn-taking; paraphrasing, questioning, justifying, rationalizing

Speakers had equal opportunity to speak; back/forth; clarification, reiteration; gestures (nodding) to affirm meaning.

Universal Pragmatics must demonstrate performative verbs “I declare that this is”, “I promise”, “I know” etc. followed by propositional clause and predicate that served to establish the proper form of a “speech act”.

Habermas noted that the locutionary and illocutionary combined the objective and the social conditions or obligations under which truthful reference and right action were agreed upon! perlocutionary served to identify one’s intentions to coordinate action strategically where the context defined what would happen.
Appendix J: Thematic Analysis Table Data Aggregated across all three Phases of Study

<table>
<thead>
<tr>
<th>Summary of Document Review</th>
<th>Summary of Observations</th>
<th>Summary of Semi-Instructed Interviews</th>
<th>Emergent Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Work together across organizational boundaries (Corporate Website, 2014)”, “engage different stakeholders’ viewpoints to achieve better outcomes (Corporate Website, 2014)”, “community partnership identifies needs for programs and educational initiatives (Corporate Website, 2014)”, “working as a team to facilitate patient care (Corporate Website)”, systems support enhanced the delivery of patient care, latest scientific findings (Corporate Website, 2014)”, “implemented the latest MRI instrumentation (Corporate Website, 2014)”</td>
<td>**Observation # 4 Nurses’ Station: Verbal: Dr: “Looks like a bit of an infection going on; I know this usually results when xyz happens”. Nurse: “So, does this mean we need to prescribe medicine”, Dr: “Yes, I will prescribe something that will offset the infection”. Nurse: “yes, it seems to me that patient has been acting a bit lethargic so it is a good idea”, Dr: “I think we need to do this as soon as possible otherwise it may be due to xyz”. “Dr. (Gastro): I wanted to get your opinion”, “Dr. (Cardio): Let’s consider this data “real” until proven otherwise.” Nonverbal: (Dr. pointed to computer screen). Observation # 5 Nurses’ Station: Verbal: Dr. (Gastro): “I would like to discuss EKG report regarding patient “x”….I am surprised by the numbers that I see”, Dr. (Cardio): “Yes, I agree, it seems a bit off. I believe it may be due to xyz”. “Dr. (Gastro): I wanted to get your opinion”, “Dr. (Cardio): “Let’s consider this data “real” until proven otherwise.”</td>
<td><strong>Question 2: Dr. 3: “make sure that the individual you are speaking to understands completely what you’re telling them by asking them”</strong>, Dr. 5: “follow-up with patients”, Dr. 6: “sometimes the order will not make sense … the question is on why we are doing it for the patient”, Dr. 7: “in an interdisciplinary team there’s a lot of back/forth interplay that can happen”, Dr. 8: “if something needs to be addressed immediately, I would call the specialist: if hospitalist I would physically track them down.”, Dr. 9: “certainly don’t follow-up on every note that I send to a provider”, Dr. 10: “working together over time … we speak the same language”, Dr. “because this is out of my wheelhouse.”, Dr. 10: “approach, especially in cancer, we work together as a team”, Dr. 13: “there are multidisciplinary meetings”. <strong>Question 5: Dr. 4: “I call radiologist, pathologist if I think there’s a mistake”, Dr. 4: “there’s a lot of back and forth; one-on-one interaction; at least there should be”, Dr. 6: “I decide does patient need to see specialist to make final diagnosis”, Dr. 10: “what I can do better; feedback”, Dr. 10: “we discuss these findings so that everyone else is aware of a change in practice”</strong></td>
<td><strong>Emergent Theme One: Interdisciplinary collaboration emphasized evidence-based medicine to coordinate action.</strong></td>
</tr>
<tr>
<td><strong>Observation # 6 Nurses’ Station: Verbal: Dr. (Gastro): “Hi, I just did “p” procedure on patient and I wanted to update you so that we are on the same page”, Dr. (Hospitalist): “So, you feel this procedure will help?”, Dr. (Gastro): “Yes, I think it will because “p” procedure usually relieves symptoms ‘s” though I am not sure how much it varies, but it was necessary to do the procedure otherwise the patient could eventually have suffered from condition ‘c’</strong> Nonverbal (Backchannel (nodded) indicates consensus; Hand Gesture uplifted palms indicates speaker is sincere; non-aggressive, and seeks agreement from receiver). Observation # 13 Nurses’ Station: Verbal: Dr. (Gastro): “Hi, I just did “p” procedure on patient and I wanted to update you so that we are on the same page” Nonverbal (Direct Gaze indicated the speaker was awaiting response from the other doctors; facial expression: raised eyebrows indicated an expression of surprise while arms stretched indicates person is being genuine) Verbal: Dr. (Hospitalist): “So, you feel this procedure will help?”, Dr. (Gastro): “Yes, I think it will because “p” procedure usually relieves symptoms ‘s” though I am not sure how much it varies, but it was necessary to do the procedure otherwise the patient could eventually have suffered from ‘c’ condition.”</td>
<td><strong>Observation # 29 ICU Verbal: Dr. “how is patient “x” doing”, Nurse: “well, he has seemed a bit passive”, Dr: “did he go to the bathroom and did he eat okay”, Nurse: “Yes, he ate a light breakfast today”, Dr: “good.” “I</strong></td>
<td><strong>Question #5: Dr. 1: “Educational and informative aspect of knowledge sharing should go on at all levels”, Dr. 4: “controlled and uncontrolled scientific studies, expert opinion studies”, Dr. 5: “use that experience to explain to other...”</strong></td>
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</tbody>
</table>
do not want to continue doing tests on this patient since there is not much else that can be done especially since age is a factor”. Nurse: “agreed, so right now we are giving the patient medicines ‘m’ and ‘mm’ or shall I add any other medications”. Dr: “for now, we are set...I think the current medications will alleviate any pain and will continue to fight infection which is the goal”. Nurse: “I agree.”

Question #9: Dr. 1: “Part of my job to educate nurses and other health professionals”; Dr. 3: “they can understand better, and so we are on the same page”; Dr. 7: “Interdisciplinary team meeting is area that that happens most”; Dr. 9: “there was back and forth between me and endocrinologist”, Dr. 14: “Emergency room physician...compelled to share a situation with me”

Question #11: Dr. 2: “getting collateral information from ...medical record, and other health professionals”, Dr. 5: “bring in more sub-specialists to get more data to determine the best way to handle the situation”, Dr. 5: “avoid off-the-cuff pathways based on what someone else says”, Dr. 6: “I need your help”, Dr. 7: “I get curb-sided all the time by other colleagues”, Dr. 10: “pick up the phone”, Dr. 11: “Most consultations are in computer”

“optimizes patient flow and communications (Corporate Website, 2012)”, “integrates data across different systems (External Newspaper, July, 2013)”, “set of integrations with external systems throughout the healthcare community (Corporate Website, 2014)”, “leading edge diagnostics enable physicians to collaborate (Hospital Magazine, Fall, 2012)”, “network-wide data visibility (External Newspaper, July, 31, 2013).”

Question #1: Dr. 2: “access patient notes on the electronic medical record”, Dr. 2: “might call a physician, sometimes they are available by pagers and cell phones”. Dr. 2: “With physicians, namely one way is direct communication, either face-to-face or over the phone or by looking at what they’ve already written in the medical record”, Dr. 4: “quite common for me to get hold of the other doctor...usually by telephone...sometimes send an email”, Dr. 6: “it happens face-to-face, phone call, when we do our rounds”, Dr. 6: “more one-on-one, that’s what we like, does it happen all the time, no, but that’s what we would like to see happen”, Dr. 8: “I generally do not engage the other physician face-to-face or directly”, Dr. 8: “indirectly through the patient’s electronic chart to seeing what the other physician has written in the medical record”, Dr. 11: “do it in person and verbally...more effective”, Dr. 14: “Send flag using EMR if in same system...maybe a text”, send email or call those outside our system.”

Emergent Theme Two: Continuous verbal and electronic communication driven by audience awareness and message continuity.
another; do you have time for us to meet regarding our previous discussion…want to make sure that we are on the same page and make sure we do what is right”. Dr: “yes, how about sometime around 6pm”, Dr: “great, talk then.”

Observation # 21 Cafeteria: Verbal: Dr: “Hello”, Nurse: “I was looking for you earlier you must have been busy; I wanted to see if we could meet to discuss patient ‘x’; I wanted to share my thoughts on how we are going to treat and get your opinion on him; would later on this afternoon work for you”, Dr: Yes, “how about 5pm after I am done with rounds.”

2: “Every specialty has a certain amount of jargon”, Dr. 5: “With non physicians careful right at the get-go, clarify everything, don’t assume they’re going to know what I’m talking about”, Dr. 5: “if it’s a non-physician I won’t assume they know what I’m speaking about…won’t use abbreviations won’t use short phrases, I will spell it out”, Dr. 6: “Happens with accents…can always be a sort of confusion as basic as name of the patient, patient name difficult to pronounce”, Dr. 10: “Sometimes have to repeat with different description”, Dr. 11: “people in some disciplines have desire to communicate succinctly using abbreviations, but they have to remember that the listener may not know those abbreviations”, Dr. 14: “this is a situation where we have to clarify for the radiologist to actually see what we are looking for”.

Question #11: Dr. 2: “getting collateral information from …medical record, and other health professionals”, Dr. 5: “bring in more sub-specialists to get more data to determine the best way to handle the situation “, Dr. 5: “avoid off-the-cuff pathways based on what someone else says”, Dr. 6: “I need your help”, Dr. 7: “I get curb-sided all the time by other colleagues”, Dr. 10: “pick up the phone”, Dr. 11: “Most consultations are in computer”

| Observation # 1 Lobby Event: Verbal: Dr 1: “looks appealing and healthy…I wonder if it is”, Dr 2: “Well, it’s better than eating pizza”…pizza is more caloric and less nutritious which is definitely what we strive for” Nonverbal backchannel (smiled and nodded with emphasis) which indicated positive emotion, Dr 2: “It is important that we practice what we preach.” |
| Observation # 27 ICU: Verbal: Dr: So, I think I am going to leave patient “x” alone and not do procedure ‘p’ because it’s the right thing to do”, Nurse: “okay how is the patient doing overall”, Dr: “well, since the patient is stable they do not need procedure ‘p’; so I think it’s the right thing to do given the situation.” |
| Observation # 31 Grand Round Session: Verbal: Speaker: “traditionally the healthcare industry has reflected a “culture of blame” and “culture of secrecy” as the norm, “current culture in the healthcare industry perceives that “well trained and vigilant professionals don’t make mistakes.”, “culture of low expectation, “healthcare education emphasizes error-free practice”, “action plan is to develop a “culture of safety” that will encourage physicians to report errors which will lead to error reduction”, “poor communication” has resulted from “groupthink” where everyone thinks they see the same thing” (Professional Education Session) |
| Question #6: Dr. 3: “Good deal of social interaction with nurses and doctors; helps get comfort level with the other person”, Dr. 3: “Establishing a good social interaction is key to good communication.”, Dr. 3: “Helps a lot; it encourages a teamwork mentality”, Dr. 5: “More effective bilateral communication”, Dr. 6: “To me it makes the day go by easier because eventually your work becomes your community”, Dr. 10: “not much time for socializing”, Dr. 10: “some chatting before and after meetings”, Dr. 11: “sharing stories about your own family with the staff builds rapport”, Dr. 11: “Building social rapport makes people feel like part of a team … share vulnerabilities”, Dr. 13: “brings humanity to our profession”, Dr. 14: “It allows me to see how they are as people rather than as clinicians; it improves my relationship with them” |

Question #10: Dr. 4: “Seeing patient as a repeat where you have pretty good fundamental knowledge already”, Dr. 5: “Most of the time, just go by my own experience”, Dr. 6: “no bias”, Dr. 7: “when you must take action immediately”, Dr. 9: “If someone has a simple problem…give them antibiotic and tell them to come back and see me”, Dr. 9: “don’t necessarily send people to the specialist… there’s a push-back not to use the specialist”, “When things are typical straight-forward presentations…don’t usually feel the need to discuss”, Dr.

Emergent Theme Three: A cultural environment characterized by transparency and shared values bounded by normative traditions.
Newsletter, December, 2013”, “we want to create a comfortable environment...to engage in open discussion (Monthly Newsletter, December, 2013).”

13: “Straightforward; general surgery cases...very clear-cut diagnosis”, Dr.
13: “very clear management of the pathology; pathology doesn’t involve other specialties”. Dr. 13: “things you can do yourself”.

**Question #12:** Dr. 1: “familiarity can foster better understanding”, Dr.
3: “Different points of view and recommendations eventually molded together form the right treatment plan”, Dr.
3: “Benefit between the doctors is kind of a mutual understanding”, Dr.
4: “Builds trust; has to be trust for this communication to go back and forth”, Dr.
5: “Very important; being social with non-professionals; it’s a teamwork thing” , Dr.
5: “Once you’ve established communication with a group of physicians you feel part of the same team”, Dr.
8: “Lot of stuff can be accomplished through the electronic medical record”, Dr.
8: “By having working relationship...prone to sending those doctors’ patients”, Dr.
10: “benefit patient...get the best standard of care”, Dr.
10: “Meet once a week but some people still don’t want to attend”, Dr. 11: “By adding personal touch I think you are in a much stronger place”

**Question #9:** Dr. 1: “Part of my job to educate nurses and other health professionals; part of it is self-preservation”, Dr. 12: “happens all the time”, Dr.
3: “Very often explain to the other physicians involved in the case and nurses what my impression is, my recommendations, and why I came to those conclusions”, Dr.
4: “It comes up all the time...why did you do that, why didn’t you do that?”, Dr.
4: “The referring physician will say “why did you do that”, and then I have to explain my reasons”, Dr.
7: “Interdisciplinary team meeting is area that that happens most”
“Why I picked a particular medication”, Dr.
8: “Do that in every single one of my notes; end of note saying my impression and plan”, Dr.
8: “Rationalize every patient that I see, trying to explain why I’m doing”, Dr.
8: “I rationalize routinely”, Dr.
11: “many times I tell team what we expected to happen didn’t happen: let’s figure out how to do it correctly next time”, Dr. 11: “I say to them, I made a mistake this is why so we can all move forward together”, Dr.
13: “important to justify before the event”
| Observation # 6 | Nurses’ Station Verbal: Dr. (Gastro): “Condition ‘c’ is what I do not want to happen given the patient’s history since it happened before when we did not act upon it.” Nonverbal: Direct Gaze (looked right at hospitalist) indicated he was informing him of past experience. 
Observation # 7 | Nurses’ Station Verbal: Dr. (fellow) speaking to the student noted “meanwhile, knowing the history of this patient means we need to keep an eye on the risk factors to make sure they remain stable since this was an issue previously and resulted in condition ‘c’ which resulted in us having to do ‘p’ procedure” Nonverbal Direct Gaze (looked directly at medical student) indicated direct contact to education from past experience. 
Observation # 9 | Nurses’ Station Verbal: Dr. (Hospitalist): “But this episode does not appear to be related to what has happened before; this seems to be just a simple case of “c” condition which is not cardio related.” Nonverbal Direct gaze (looked at nurse while speaking) indicated he was directly sharing his past experience with the patient based on historical content. Nonverbal facial expression (eye brows raised upward; raised both hands upward while speaking; taps desk as he finishes statement) this indicated that speaker was trying to elicit reaction using Nonverbal Gestualition (baton-tapping) indicated gesture was semantic in nature, and used to emphasize point in story. 
Observation # 31 | Grand Round Verbal: Speaker noted that “According to the institute of Medicine (2000) 44,000 to 98,000 deaths annually due to adverse medical events due to human error.” Professional Development Session where past scientific findings were shared to educate past historical data as guideline. 

| Question #8 | Dr. 1: “Personal individual experience”, Dr. 3: “All the cases...over the years kind of add to your medical knowledge base”. Dr. 3: “use past experiences all the time to help us kind of form treatment plans for current situations”, Dr. 4: “there are lessons-learned every single day”, Dr. 4: “It’s not a new lesson, but something we’ve seen again and again; it’s a lesson that you learn over and over”, Dr. 5: “drawing on my experience to explain “curve balls”, Dr. 6: “Anytime a patient passes away in which it was not predicted or anticipated there’s a lesson to be learned”, Dr. 6: “you learn what could have been done”, Dr. 6: “That’s how it is in medicine; every day we learn new things”, Dr. 7: “Mistakes made; things to be done differently”, Dr. 8: “everything is a lesson-learned”, Dr. 10: “Cases where you thought you could have done better”, “I just won’t do that anymore”, Dr. 10: “listen to patients before and after surgery procedure , most important thing, feedback”, Dr. 11: “how to take all that knowledge and apply to this one patient...by asking a few pertinent questions you narrow their universe down pretty dramatically”, Dr. 13: “Have to have a sixth sense of when a patient really needs to go to surgery right away...you learn by that experience”, Dr. 14: “Situations that I’ve seen in the past help me going forward” 

| Question #9 | Dr. 2: “happens all the time”, Dr. 2: “from my experience this kind of approach...tends not to work”, Dr. 2: “Based on clinical experience...what I know of the research literature of such an approach, it wouldn’t be helpful”, Dr. 5: “Sharing experiences happens more in an academic setting”, Dr. 10: “Most common thing is during surgery because you’re here and you have to make a decision, and then you’re done and you might have to explain it”, Dr. 11: “When you make an error you want to share that fact with other physicians” 

This table shows the emergent themes as discovered in the Phase I or the Documentation Review Phase, Phase 2 or the Unobtrusive Observation Phase and Phase 3 or the Semi-Instructed Interview phases of the study. As this table reflects, the emergent themes can be found across the spectrum of information sources. Norms and values that were promoted in the organizations documentation and literature were reflected in both the words and deeds of the observations and interviews. From this we can see that the organization has inculcated it’s professionals with a clear sense of propriety and duty.
Appendix K: Research Question Analysis Table

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<tr>
<th>Summary of Data Collection Method</th>
<th>Research Questions</th>
<th>Evidence From Data Collection Summary</th>
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**Documentation**
RQ1. What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?

“Committed to collaborating with the entire health care team (Corporate Website values, 2014).” “The passion for patient and family centered-care are embedded within the culture of the hospital system and drive the entire clinical team to look at each other’s work flow to ensure they are all in sync to provide optimal and highest quality of patient care (Corporate Website, values, 2014).” “Promotes and encourages each stakeholder’s contribution where collaboration involves interdisciplinary work with colleagues to negotiate and resolve conflict within and across borders (Corporate Website, values, 2014).” “Mutual support between our doctors and organization to meet ambitious goals (Quarterly Magazine, Spring, 2013).” “A key tenet of improving patient safety is teamwork (Hospital Monthly Newsletter, January, 2014).” “we retrained all staff by heightening their awareness through education (Hospital Monthly Newsletter, February, 2014).” “Increased network wide data visibility improves care coordination (Corporate Website, knowledge base, 2014).” “Anyone who ever feels retaliated against for making a report should contact the Corporate Compliance Officer immediately (Corporate Website, compliance, 2014).” “Team approach to care where physician collaboration is emphasized throughout the cardiac and endovascular center and physicians routinely work together to provide highest level of care (MDNews.com, 2011).”

**Observations**
RQ1. What are medical doctors’ knowledge sharing behaviors in a community hospital located in the Northeastern United States?

**Observation #5 Nurses’ Station:** Dr. (Gastro): “I would like to discuss EKG report re: my patient” “I am surprised by the numbers that I see”, Observation # 6 Nurses’ Station: Dr. (Gastro): “Hi, I just did “p” procedure on patient and I wanted to update you so that we are on the same page”, Dr. (Hospitalist): “So, you feel this procedure will help”, Dr. (Gastro): “Yes, I think it will because “p” procedure usually relieves symptom “s” though I am not sure how much it varies, but it was necessary to do the procedure otherwise the patient could eventually have suffered from ‘c’ condition.” Observation # 7 Nurses’ Station: Dr. (Fellow): “Let’s look at this EKG and review it together….Dr. (Fellow): “Tell me what you think is going on… Does it appear normal, abnormal, your thoughts?” Observation # 11 Nurses’ Station: “Let me share an interesting story of a situation that happened; it will illustrate case point.” Observation # 17 Nurses’ Station: “We need to get ‘n’ number down because this may present a problem later on.” “You see, if this happens, then condition ‘c’ may happen”, Nurse 2: “This explains why the patient has been complaining about various issues although the patient has been able to eat well”, Nurse 1: “so, it would make sense to run some additional tests to ensure there is nothing else going on”, Dr: “yes, this was my thinking too.” Observation # 18 Nurses’ Station: Dr. (Cardio): Here is what is happening with patient “x”: the patient will have ‘p’ procedure tomorrow….The procedure is being done because the patient had a positive stress recently and was being monitored closely with medication as an inpatient but the patient was told that if further symptoms became present it would mean having procedure ‘p’ which is the case since he is having chest pains….any questions”, Observation # 27 ICU: I think I am going to leave patient “x” alone and not do procedure ‘p’….it’s the right thing to do.” Observation # 31 Grand Round: “Traditionally the healthcare industry has reflected a “culture of blame” and “culture of secrecy” as the norm…., auction plan is to develop a “culture of safety” that will encourage physicians to report errors which will lead to error reduction” Observation # 20 Cafeteria: Dr: “Hello, how goes it today”, Nurse: are you going to be coming up for rounds soon”, Dr: “Yes, in about an hour and a half”, Nurse: “can we meet re: patient with the catheter would like to update you on his progress”, Dr: “yes, has anything radical happened”, Nurse: “No, just want to touch base to make sure we are still going to continue treating as we have been.” “The patient appears a bit anxious so we want to discuss that too”, Dr: “ok, see you then”, Observation # 1 Lobby: Dr 1: “looks appealing and healthy… I wonder if it is”, Dr. 2: “Well, it’s better than eating pizza” “pizza is more caloric and less nutritious which is definitely what we strive for…..it is important that we practice what we preach.” Observation # 22 Office Corridor near doctors’ office areas: Dr: “I want for you to schedule this procedure ‘p’ for the patient”, Medical Technician: “OK, will do”, Dr: “I want it done as soon as they have an opening see what the schedule is like…..it is important that we act on asap”, Observation # 29 ICU: Dr: “how is patient “x” doing”, Nurse: “well, he has seemed a bit passive”, Dr: “did he go to the bathroom and did he eat okay”, Nurse: “Yes, he ate a light breakfast today”, Dr: “good.” “I do not want to continue doing tests on this patient since there is not much else that can be done especially since age is a factor” Observation # 31 Grand Round: “According to the institute of Medicine (2000) 44,000 to 98,000 deaths annually due to adverse medical events due to human error.”
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<tr>
<th>Structured Interviews</th>
<th>Medical doctors' knowledge sharing behaviors in a community hospital located in the Northeastern United States?</th>
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<td>Dr. 2: “Depends on the clinical circumstance”. Dr. 3: “With physician, namely one way is direct communication”. Dr. 4: “usually by telephone”. Dr. 5: “If it’s a consult that I feel reasonably confident, I don’t usually consult other consultants”. Dr. 7: “interaction is face-to-face…fair amount of discussion and information sharing that takes place in an informal way such as walking into the office of a social worker or into the nursing units”. Dr. 8: “indirectly through the patient’s electronic chart”. Dr. 9: “to send to send flags to providers who use the same electronic record system that I do”. Dr. 10: “at weekly tumor board meetings we meet as a group”. Dr. 11: “do it in person and verbally…more effective”. Dr. 12: “Summarize what referring physician expressed in their chart”. Dr. 13: by my notes…stating the latest evidence…recommended…on everyday basis a phone call is most effective”. Dr. 14: Send flag using EMR (if in same system).</td>
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<td>Question Two: Dr. 1: “to be accurate I talk with nurses and if it’s something that I am specifically looking for…. I will describe to the nurse the specific circumstances of what I’m looking for”. Dr. 2: “written record of a patient consultation can ensure clarity”. Dr. 3: “writing my impression or viewpoint in the written electronic record… do not veer from my spoken word with the allied professional or my written message in the permanent medical record… follow up …on the patient to ensure …recommendations are being enacted on the way you intended”. Dr. 4: “follow-up visits, follow-up phone calls”. Dr. 5: “I spell out my thoughts and what I wish to see happen….follow-up with patients….ascertain or monitor to see that what has happened is what I want to see happen”….trust they will call if they don’t understand”. Dr. 6: “read it back to nurse to make sure; “If there is any question that she (nurse) misunderstood we will start the whole process again including the thought behind what I am doing and what it means”. Dr. 7: “in an interdisciplinary team there’s a lot of back and forth interplay that can happen”; “I do not ask direct question like “do you understand what I am saying...but I do ask a more general question “are there questions or issues that need to be brought up up…to determine if there’s other relevant pieces that I’ve discussed but were not understood or not discussed and need to be discussed”. Dr. 8: “something routine; I just write a note”; “something out of the ordinary; acute, I send flag directly to the person through electronic medical record”. Dr. 9: “if there’s question they will call me directly”. Dr. 10: “Best forum for any questions…on any of my patients away from the mainstream is sitting together that is the best method; group participation”. Dr. 11: “if communicating with peers I might not ask if they understood; may find insulting”; “rather than just give an answer, I tell them “why” I am doing it”; “one has to be careful; one has to be mindful all the time of who they’re speaking to, their language, and the level of knowledge capabilities”. Dr. 12: “check with the patient … to see if my recommendation went through”. Dr. 13: “click” to see if the tests have been met”; “routine in place….each of us is expected to update the record so we can share information”. Dr. 14: “If I have question for another physician about a patient….Its incorporated as part of the electronic record so I have access…to make sure….follow up with the patient”.</td>
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<td>Question Three: Dr. 1: “Important in clarification to specify what it is that you’re looking for in literal graphic terms”. Dr. 2: “saying it explicitly in plain English”. Dr. 3: clarifying what abbreviations you are referring to”. Dr. 4: “if I feel strongly about something and I’ve explained it to another doctor and I’m not sure they got the message, I’ll call back”. Dr. 5: won’t use abbreviations won’t use short phrases; I will spell it out”. Dr. 6: “spell it out”. Dr. 7: “means you have to clarify and be more specific about what it means”. Dr. 8: “try very hard not to use endocrine specific jargon”. Dr. 9: “try to be succinct”. Dr. 10: “Sometimes have to repeat with different description”. Dr. 11: have to remember that the listener may not know those abbreviations”. Dr. 12: “I try to be through in my notes and explain what I am looking for and the purpose of the medical plan”. Dr. 13: “this is a situation where we have to clarify for the radiologist to actually see what we are looking for”.</td>
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<td>Question Four: Dr. 2: “speak directly to the person about the test results and ask if they have questions”. Dr. 3: “Lot of confirmation between myself and other healthcare professional…this is the primary measure that I use to ensure that we are on the same page”. Dr. 4: “I have to take initiative and call the other person”; “redundancy is important”. Dr. 5: “Go through differential with team to establish common understanding”. Dr. 6: “To interpret what a number means is always a relative comparison”. Dr. 7: “talking about it…if particular concern raises issue”. Dr. 8: “If thought it was really unusual, I would call… If something routine or abnormal is expected; I don’t communicate with the other physicians”. Dr. 9: “If question about a lab report that another provider ordered, might print out lab report, write question or comment or indicate how I’m going to follow-up that lab report and fax to provider”; “must keep other provider “in the loop”. Dr. 10: “work as a team”. Dr. 11: “I explain to caregiver that the patient has pneumonia and diabetes… I may print out something in the computer and put in the record”. Dr. 12: “enter all tests ordered and all interpretations of the results and my instructions into the electronic record that is shared and can be accessed by other providers”. Dr. 13: “Really critical that we meet and look at the same study and we evaluate because abnormal results can fall through the cracks”. Dr. 14: “have to clarify…very explicit; detail exactly what I am looking for”.</td>
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‘look at each other’s work flow to ensure they are all in sync to provide optimal and highest quality of patient care (Corporate Website, values, 2014)’; come up with comprehensive treatment plan that will outline how best to attack the cancerous cells (Hospital Quarterly Magazine, Spring, 2013)’. “Leading edge diagnostic technologies that enable physicians to collaborate using high tech to enhance clinical assessments(Hospital Quarterly Magazine, Fall, 2012)”, “we are trying to create an environment where staff can make a mistake, self-report it, and feel that it will be a constructive and non-punitive experience for them and a learning experience for others (Hospital Monthly Newsletter, January, 2014)” , “stories that really resonate with all those who interact with patients (Hospital Monthly Newsletter, March, 2014)” , “integrated system for clinical and financial management in medical organizations (Corporate Website, knowledge base, 2014)” , “reports that could pose an immediate safety risk or a situation that puts the safety of a patient (Corporate Website, compliance, 2014)” ; ‘employees empowered to identify concerns and questions for improvement (Corporate Website, compliance, 2014)”; hospitals, their clinicians and their communities are doing tremendous work to enhance their IT systems in ways that support care and delivery (American Hospital Association, Most Wired, 2011-2014)”, “Utilizing the latest MRI technology (American College of Radiology, 2005-2013).”

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<th>Documentation</th>
<th>RQ 1a.) What types of knowledge do doctors share (Habermas, 1984)?</th>
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<td>Observation #4: Nurses’ Station: “Looks like a bit of an infection going on.” “I know this usually results when xyz happens”.</td>
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<td>Observation #6: Nurses’ Station: Dr. (Gastro): “Condition ‘c’ is what I do not want to happen given the patient’s history since it happened before when we did not act upon it”; Observation #7: Nurses’ Station: “see this(pointed to EKG report)…this is how we know that the cardiac function is normal; also the risk factors indicate that things are stable for the time being”, Medical student: “Yes, the numbers are all within normal limits…meanwhile knowing the history of this patient means we need to keep an eye on the risk factors to make sure they remain stable since this was an issue previously and resulted in condition ‘c’ which resulted in us having to do ‘p’ procedure.”</td>
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<td>Observation #9: Nurses’ Station: Dr. (Hospitalist): “But this episode does not appear to be related to what has happened before; this seems to be just a simple case of ‘c’ condition which is not cardio related.”</td>
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<td>Observation #10: Nurses’ Station: The patient had ‘c’ condition so they were treated by doing ‘p’ procedure which lead to ‘c’ condition which required doing ‘p’ procedure and then more tests revealed ‘c’ condition which ultimately led to procedure ‘P’.”</td>
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<td>Observation #17: Nurses’ Station: Dr. “The GI shows condition ‘c’ which means potential condition ‘cc’ that may be present”, Nurse 1: “well it appears he has multiple issues going on from looking at the film”, Dr: “Well, I am most concerned about this number ‘n’”, Observation #26: ICU: Dr. “what is her H &amp; H”, Nurse: “it has been ranging from number ‘n’ to number ‘nn’”, Dr. “that sounds okay” “what about other labs” , Nurse: “well, lab ’I’ was in the normal range and blood test ’b’ was normal so that was good.”</td>
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<td>Observation #28: Grand Round. Speaker: “I out of every 4 cardio patients or 25% used drugs according to recent studies which means that doctors need to screen patients to determine if this may present a potential problem”, Observation #3: Lobby Event: Dr. 1 “I spoke with Dr. D who spoke with Dr. DD regarding the medical matter...both indicated that they want to meet as a group regarding the matter to make sure we are on the same page” , Observation #22: Office Corridor near doctors’ office areas: Dr. “schedule procedure ‘p’”.</td>
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| Observation #20: Cafeteria: Nurse: “No, just want to touch base to make sure we are still going to continue treating as we have been.” “The patient appears a hit anxious so we want to discuss that too.” |
| Observation #30: ICU: Dr. “see this chest x-ray; it shows us what is going on with the patient”, Nurse: “perhaps this is why the patient has been experiencing symptoms ‘s’ and ‘t’", Dr. “well, see this shows us condition ‘c’ is present, and this shows it may present a potential issue….what happens is when x happens, y happens on many occasions which causes condition ‘c’ to occur, as well...does this make sense to you?” |
| Observation #15: Lobby Event: Dr. 1: “I was hoping to run into you”, Dr. 2: “we got the new equipment installed wanted to meet and discuss with you since you are already using it in your office”, Dr. 1: “great, what about Friday afternoon when things are quiet”, Dr. 2: “perfect”, Observation #27: ICU: “well, since the patient is stable they do not need procedure ‘p’; so I think it’s the right thing to do given the situation.” |

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<th>Semi-structured Interviews</th>
<th>RQ 1a.) What types of knowledge do doctors share (Habermas, 1984)?</th>
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| Question five: Dr. 1: “lab data is important…you need all the interpretative tests, but the patient is not just their x-ray”, Dr. 2: “sometimes we use scales to assess so there is objective data...sometimes we rely on a patient’s subjective sense of things memory so there is objective data”, Dr. 3: “use clinical data in a variety of ways”, “based on history that patient gives me, findings from my exam, and accompanied laboratory data, I form my clinical expression”, Dr. 4: “look at all the pieces of evidence that you think you need and make decision”, Dr. 5: usually refer to numbers as an objective assessment of the patient’s function”, Dr. 6: “look at the reading, look at patient, ask do these things match”, Dr. 7: “lab data must be put into context of overall assessment and overall formulation of that particular clinical situation”, Dr. 8: “review medications, review past medical history in the chart, look-up whatever work-up has been done.. Dr. 9: “Depending on the test results, decide what changes need to be made .…can’t look at patient and tell if their diabetes is in or out of control;"
use blood test to determine treatment plan", 
Dr. 10: "Each person is an individual so you have the data...but then you always apply it to the individual, Dr. 11: "given hypothesis, does the exam support or dispute hypothesis ...sometimes, if you don’t have sufficient precision you resort to lab testing, x-rays, and the like....using your knowledge of disease states, you can achieve a fair amount of precision...the context shapes the data", Dr. 12: "It is supportive evidence from what you hear from patient; use data to “tease-out” diagnosis; helps narrow down the patient’s clinical symptoms", Dr. 13: Data is published...becomes available ...this is how I become aware of the latest evidence-based technical data that says..." you should do this with this data"; then I implement into my practice", Dr. 14: "When I do order tests, I’m usually looking for something; it usually confirms whether I’m thinking is actually happening."

Question six: Dr. 1: “Social pleasant conversation is a way of maintaining emotional stability”. Dr. 2: "If you have a comfort level ...people feel more comfortable asking about technical things", Dr. 3: “Good deal of social interaction... data flows between the two parties more easily...if you're more comfortable to ask questions and query other person it (social conversation) forms level of trust.", Dr. 4: “more acceptance because they've seen you be accurate again and again and again”, Dr. 5: “It (social conversation) helps a lot; it encourages a teamwork mentality”, Dr. 6: "if it’s not about patients it’s about baseball...and if you would not know...the openness would not be there", Dr. 7: "I’m a medical director and social conversations tend to be very brief and superficial....tend not to do that”, Dr. 8: Benefit of social conversation ...makes you more comfortable calling that person for carthide information”, Dr. 9: "at various staff meetings; touch base about their family members all of that sort of lends itself to the facility of just reaching out and talking to the person", Dr. 10: "at my office fair amount of social conversation; distraction for the patients”, Dr. 11: "share their stories with stuff which builds rapport, Dr. 12: way of learning people’s approach to things and perspective on things”, Dr. 13: “Learn to be a better physician and better colleague to that person...if you understand their background, stressors, and different obligations”. Dr. 14: “It (social conversation) allows me to see how they are as people rather than as clinicians; it improves my relationship with them.”

Question seven: Dr. 1: “Healthcare professionals want to know what it is you are talking about; explain diagnosis”. Dr. 2: “share past experience with previous patient outcomes”, Dr. 3: "practically speaking putting that data into context... Can’t look at one laboratory value and make complete judgment ... we apply practical knowledge every day with all the data coming in we have to synthesize it and apply our practical knowledge”, Dr. 4: “Practical means the knowledge I’ve accumulated from experience....make an assessment of how serious ...what testing needs to be done”, Dr. 5: “people’s experiences with things...a lot of people have already made up their mind on what somebody has... how they’re going to treat it or how it should be treated” Dr. 6: "If your mind doesn’t know it, you won’t be able to diagnose it... saying from my experience, do your labs point to this, clinically”, Dr. 7: "seeing patient at home ...something you bring to the discussion when taking care of patients in the hospital...what they were functioning like at home, Dr. 8: “rule of thumb, comes from experience... if changing dose of medicine I generally do it by 20%”, Dr. 9: “I know this person is really different from what they usually are... will send a note to the therapist (if patient okay)...this is not the way she or he usually is”, Dr. 10: “experience on what can help get the patient through their treatment or diagnosis... experiential comes in; “I’ve seen this in the past”, Dr. 11: "Seen a lot of things multiple times take cues of how they look... for example, there’s a patient whose fever is 103 and is quite ill...incoherent... there’s a person who has temperature of 103 ...from flu...having lunch, attentive to hygiene...who’s going to be fine...they don’t teach you that in medical school!”, Dr. 12: “Useful to know in practical sense based on my experience if I think someone can tolerate the diagnostic work-up”, Dr. 13: “you can’t just say “the literature states this, so this is what I’m going to do...you’ll say, I’ve always managed these patients in this way and it’s always been successful so practice experience is very valuable”, Dr. 14: “doctor felt he had to tell someone what was happening."

Question eight: Dr. 1: "Personal individual experience...common experience; reflect on published experience out of the science of profession of medicine has determined as its experience with that procedure; Dr. 2: “Lessons-learned”, Dr. 3: “similar set of signs and symptoms... past experiences ... use past faults or mistakes to help teach my students”, Dr. 4: lessons-learned every single day... patients with pain ...who take non-steroidal medication ...has side effects...reflect upon scientific studies... expert opinion studies, and meta-analysis which combines multiples of pooled data; the latest scientific evidence as an objective measure”, Dr. 5: “it’s a lesson-learned... i someone didn’t act as anticipated... drawing on my experience for anticipating and explaining “curve balls”, Dr. 6: “Anytime a patient passes away in which it was not anticipated there’s a lesson to be learned... describe to them clinically this is what the situation was, this was the lab monitoring, and then the patient did not live... retrospect, this is how things could have gone”, Dr. 7: “Mistakes made; things to be done differently”, Dr. 8: “everything is a lesson-learned...when I see onset of type one diabetes in an unusual situation; always prone to CT scan to make sure it’s not a pancreatic tumor”, Dr. 9: “bad stress test...didn’t get called about it”, Dr. 10: “most important thing, feedback”, Dr. 11: “duration of the symptoms and clinically, the exacerbating and ameliorating factors; how to take all that knowledge and apply to this one patient”, Dr. 12: “with a lot of common GI complaints... sometimes useful to express...to doctors that what a patient is feeling has been seen multiple times in the past”, Dr. 13: “experience to look-back that I’ve done several cases and all those cases... were a complete catastrophe... Those stick with you... lessons-learned”, Dr. 14: “situations that I’ve seen in the past."
| Documentation | RQ 1b.) What types of actions do doctors use to share knowledge (Habermas, 1984)? | promotes and encourages each stakeholder’s contribution where collaboration involves interdisciplinary work with colleagues to negotiate and resolve conflict within and across borders (Corporate Website, values, 2014). “Multi-disciplinary team...come up with comprehensive treatment plan that will outline how best to attack the cancerous cells (Hospital Quarterly Magazine, Spring, 2013)” “Discussions that occur at the committee focus on different approaches that may lead to a better outcome (Hospital Monthly Newsletter, December, 2013)” “Increased network-wide data visibility improves care coordination and more proactive population health management (Corporate Website, knowledge base, 2014).” “Employees empowered to identify concerns and questions for improvement directly to managers or administration without fear of retribution Corporate Website, compliance, 2014)” “This achievement is a result of teamwork training and skill building (Leapfrog Group, 2010-2013)” |
| Observations | RQ 1b.) What types of actions do doctors use to share knowledge (Habermas, 1984)? | Observation # 4 Nurses’ Station: “Yes, I will prescribe something that will offset the infection”, Nurse: “Yes, it seems to me that patient has been acting a bit lethargic so it is a good idea”, DR: “I think we need to do this as soon as possible otherwise, it may result in further complication.” Observation # 8 Nurses’ Station: Nurse: “Hi Doctor, are you discharging this patient”, DR: “Not yet, would like to do ‘p’ and ‘pp’ procedures first, then I will let you know”, DR: “here is the chart and specific instructions on which tests I want done.” Observation # 10 Nurses’ Station: Dr: (Cardiol): Let’s run some more labs that are more specific; that should give us more data”, Nurse: “I definitely agree we should re-visit “L” labs”, Dr: (Cardio 2): “Agreed let’s do the tests and reconvene when we get the results.” Observation # 19 Office Corridor near doctors’ office areas: Dr: “was going to give you a call... glad we ran into one another; do have you time for us to meet re: our previous discussion” “want to make sure that we are on the same page and make sure we do what is right.” Observation # 2 Lobby Event: Dr: 1 (Male): “Need to speak with you about various procedural matters”, Dr: 2 (Male): “Ok, do you have some time later this week, maybe Friday”, Dr: 1 (Male): “Friday would be great”. Observation # 29 ICU: Dr: “I do not want to continue doing tests on this patient since there is not much else that can be done especially since age is a factor.” Observation # 20 Cafeteria: Dr: “yes, has anything radical happened?” Observation # 31 Grand Round: Speaker: “poor communication” has resulted from “groupthink” where everyone thinks they see the same thing. Observation # 21 Cafeteria: Dr: Yes, how about 5pm after I am done with rounds.” |
| Semi-structured Interviews | RQ 1b.) What types of actions do doctors use to share knowledge (Habermas, 1984)? | Question nine: Dr. 1: “communication is about sharing not only of information but sharing of understanding.” “Part of my job to educate nurses and other health professionals...It’s important to tell them what I’m looking for, what I expect to be called about, and when I expect to be called”, “routinely do this with nurses”, Dr. 2: “from my experience this kind of approach...tends not to work”, “Based on clinical experience...what I know of the research literature of such an approach, it wouldn’t be helpful”, Dr. 3: “very often explain to the other physicians involved in the case and nurses what my impression is, my recommendations, and why I came to those conclusions”, Dr. 4: “have to explain my reasons...have to remind them that you have to take a very broad view of things...If you take narrow view of a problem and there’s another problem then you’ll miss it”, Dr. 5: “when we do have an opportunity to go through what we were thinking and why we did it; it’s usually in a forum like morbidity mortality rounds; it’s usually a negative context”, Dr. 6: “One way is through education on DVT prophylaxis”, Dr. 7: “Why I picked a particular medication, why it was given during certain time of day, what were the other options, ups and downs or risk and benefits”, Dr. 8: “end of note saying my impression and plan...rationize every patient that I see. trying to explain why I’m doing something not just say “increase”...put in the note so it’s always goes to PCP and other specialist; that note would get routed to both PCP and specialist”, Dr. 9: “Standard of care...I speak to endocrinologist who says it sounds reasonable; there was back and forth between me and endocrinologist”, Dr. 10: “sit together as group...why did you do that...try to rationalize and explain it...want to explain it”, Dr. 11: “When you make an error you want to share that fact with other physicians...I tell the team what we expected to happen didn’t happen...let’s figure out how to do it correctly next time...I say to them, I made a mistake this is why so we can all move forward together”, Dr. 12: “bad outcomes...go over with other doctors why you did certain things”, Dr. 13: “When there is three or four ways of managing this exact case...that’s when I justify to the multidisciplinary board...the way I would like to proceed with this patient’s surgery”; “now that I know things went wrong what have I learned from this and what could I have done differently.” |

**Question ten:** Dr. 1: “my job to teach the nurse”, Dr. 2: “sometimes I’ll be prescribing care without the full picture because of the patient’s preference”, Dr. 3: “Life or death decision...don’t have time to consult with other individuals for their input” Dr. 4: Seeing patient as a repeat...pretty good fundamental knowledge already...you’ve done a lot of testing...comfortable with what information you have and not seek other informational viewpoints”, Dr. 5: Most of the time, just go by my own experience...“make about two hundred decisions a day... “Second nature”...I’ll pick up phone and seek opinion, but that’s not common probably less
“the question isn’t about taking a consensus… when you must take action immediately”, Dr. 7: “Always inform PCP on what I’m doing but generally do not involve them in the decision… I’m a specialist… PCP has sent them to me to find out what to do…I just do it, then send PCP a note, I did this; this is why I did it”, Dr. 9: “Nine out of ten times I’m not seeking anybody’s input or 99 out of 100… If someone has a simple problem… give them antibiotic and tell them to come back and see me”, Dr. 10: “If it’s a smaller problem, simpler I would just manage it myself”, Dr. 11: “what they (patient) need is first-aid… in a circumstance like… you’re not going to say “let me call a nose specialist and call you back”… give the best advice that seems appropriate for the circumstance”, Dr. 12: “typical straight-forward presentations… don’t usually feel the need to discuss”, Dr. 13: “very clear management of the pathology… doesn’t involve other specialties… things you can do yourself”, Dr. 14: “see patient and I treat him; usually do not consult.”

**Question eleven:** Dr. 1: “I’m old-fashioned; I pick up the phone… explain to the nurse… what the priority is… and why I’m concerned”, Dr. 2: “Try to be as thorough as possible; including getting collateral information from… medical record, and other health professionals”, Dr. 3: “Communicate directly with the other physician immediately… whether communication takes place face-to-face… over the phone, immediate direct communication… to manage a very critically acute case”; “If critically ill patients… trying to come up with a plan… it’s usually physician to physician”, Dr. 4: “Speak with people who called me”, Dr. 5: “Coming up with problem list and… prioritizing those problems… getting the test results to help stratify the severity of those problems”; “bringing in specialists, tertiary care, to bring in more sub-specialists to get more data to determine the best way to handle the situation”; “look for lab result, echo results, test results, bios, as much status about the patient… before I make decision”, Dr. 6: “Tell nurse what I think of the situation… if nothing works, tell secretary it’s a code three and everyone comes right away”, Dr. 7: “Depends on level of urgency; curbside consult… can sometimes be useful… this is what’s going on what do you think”, Dr. 8: “Depends upon the relationship”, Dr. 9: “May do initial laboratory work and EKG depending on problem; decide how acutely the person needs to be seen… I may write an office note… fax… to doctor with my thoughts or referral”, Dr. 10: “pick up the phone… if doctor is on the line and want to speak with you, you stop what you’re doing”, Dr. 11: “It’s my contention… if number three consult (critical) there ought to be phone calls”, Dr. 12: “Usually a Phone call; depends on what you need, Dr. 13: “you call, it is the most important way if it is critical”, Dr. 14: “Call other specialists and tell them what patient has and that they need to be seen right away.”

**Question twelve:** Dr. 1: “if others have seen the same presentation or complications… how to approach or manage that issue the next time”, Dr. 2: “if you have a relationship before with another health professional… much more likely to impart information”, Dr. 3: “Benefit between the doctors is kind of a mutual understanding… develop mutual respect between healthcare professionals knowing that you’re working together on the same team for the benefit of the patient”, Dr. 4: “has to be trust for this communication to go back and forth”, Dr. 5: “being social with non-professionals; it’s a teamwork thing”, Dr. 6: “very important to establish relationship with all of the consultants and the nurses… so we can get desired result”, Dr. 7: “having direct lines of communication with colleagues in different areas of practice is very important in taking care of patients”, “through the electronic healthcare record, physicians have the ability to message other physicians about questions and issues”, Dr. 8: “Lot of stuff can be accomplished through the electronic medical record… send her a flag and she gets back to me immediately… she’s by far the persons I refer more patients to because I know she will be responsive”, Dr. 9: “Sometimes, I’ll speak to the physician directly… use electronic mail as a vehicle… I’ll flag the doctor”, Dr. 10: “meeting with these people weekly, core group, has made it just so easy… usually multidisciplinary… benefit patient… who get the best standard of care”, “build rapport with those that come; who to go to, what their thoughts are, so everyone is flexible”, Dr. 11: “because of the personal communication channel with specialist… able to facilitate the plan… patient feels like they are being taken care of… By adding personal touch I think you are in a much stronger place”, Dr. 12: “If you communicate well with the referring physician… timely and good about communication”, Dr. 13: “nurse, physician's assistant, secretary; they are part of a team… working nicely with them; having respect for one another builds trust”, Dr. 14: “if I can send somebody a flag, email or text it’s tremendous… communication happens right away… I know the doctor and can quickly ask him the results.”
Appendix L: Document Review Data Analysis

*Data analysis from mission statement*

Table illustrates the Hospital Mission Statement from Documentation Review in Phase I.

One Primary Theme was identified: collaboration and coordination

<table>
<thead>
<tr>
<th>In Vivo</th>
<th>Axial Codes</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Primary Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The hospital dedicates appropriate resources to collaborations with community partners and the utilization of community member’s input toward improving health services (Corporate Website, 2014).”</td>
<td>Collaborations with community; community members input</td>
<td>Stakeholder Collaboration</td>
<td>Collaborative Partnership</td>
<td>Collaboration and Coordination: Concurrent with knowledge sharing as a transformational process based on communicative rational and social pragmatics that enables members to explore individual know-how and know-that at the collective level through “intersubjective mutuality” where shared meaning and interpretation defines context to coordinate social action</td>
</tr>
<tr>
<td>“We pledge to act as a resource and to work with the community during emergencies (Corporate Website, 2014).”</td>
<td>Act as a resource, work with the community</td>
<td>Collaborative Commitment</td>
<td></td>
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</tr>
</tbody>
</table>
Data analysis of the organizational values
Table illustrates two primary themes that resulted from the data analysis; collaboration and coordination and organizational culture.

<table>
<thead>
<tr>
<th>In Vivo</th>
<th>Axial Codes</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Primary Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Mobilizing all of our physicians and employees to work in partnership (Corporate Website, 2014),”</td>
<td>Physicians and employees to work in partnership; committed to collaboration with the entire health care team (Corporate Website, 2014).”</td>
<td>Interdisciplinary Partnership</td>
<td>Interdisciplinary Collaboration</td>
<td>Collaboration and Coordination</td>
</tr>
<tr>
<td>“committed to collaboration with the entire health care team (Corporate Website, 2014).”</td>
<td>where collaboration involves interdisciplinary work with colleagues to negotiate and resolve conflict within and across borders</td>
<td>Interdisciplinary teamwork</td>
<td>Collaboration among cross-functional groups to coordinate a common goal.</td>
<td>Concurrent with knowledge sharing as a transformational process based on communicative rational and social pragmatics that enables members to explore individual know-how and know-that at the collective level through “intersubjective mutuality” where shared meaning and interpretation defines context to coordinate social action</td>
</tr>
<tr>
<td>“promotes and encourages each stakeholder’s contribution where collaboration involves interdisciplinary work with colleagues to negotiate and resolve conflict within and across borders (Corporate Website, 2014).”</td>
<td>“deep commitment to mgmt and staff shared throughout the system to achieve excellence (Corporate Website, 2014),”</td>
<td>Deep commitment throughout the system; embedded within the system; shared goals and objectives; look at each other’s workflow to ensure they are all in sync.</td>
<td>Shared goals and objectives embedded within the system</td>
<td>Shared Values a person’s principles or standards of behavior; one’s judgment of what is important in life</td>
</tr>
<tr>
<td>“The passion for patient and family centered-care are embedded within the culture of the hospital system and drive the entire clinical team to look at each other’s work flow to ensure they are all in sync to provide optimal and highest quality of patient care (Corporate Website, 2014).”</td>
<td></td>
<td></td>
<td></td>
<td>Organizational Culture</td>
</tr>
<tr>
<td>“deep commitment throughout the system”</td>
<td></td>
<td></td>
<td></td>
<td>Concurrent with collective behaviors among individuals in an organization who share the same norms, values, vision, and beliefs.</td>
</tr>
</tbody>
</table>
Table presents the data analysis of the hospital magazine
Table illustrates four primary themes: collaboration and coordination, organizational culture, computer-mediated communication, and evidence-based medicine.

<table>
<thead>
<tr>
<th>In Vivo</th>
<th>Axial Codes</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Primary Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“We are very proud of the hard work and collaboration that all of the staff at every level of the hospital has put forth to implement this very important step toward enhancing the patient care in our hospital (Quarterly Magazine, Spring, 2012), “mutual support between our doctors and organization to meet ambitious goals (Hospital Quarterly Magazine, Spring, 2013), “what will make us successful is our willingness to work together (Quarterly Magazine, Spring, 2013).”</td>
<td>“Collaboration that all of the staff at every level of the hospital has put forth” “mutual support”, “willingness to work together”</td>
<td>Working Together</td>
<td>Teamwork</td>
<td>Collaboration and Coordination</td>
</tr>
<tr>
<td>“Collaboration among parents, athletes, coaches, and specialty doctors to educate on how to prevent injuries and or work together to provide optimal patient care during critical stage to post concussion and rehab through multi phase program that include various stakeholders (Quarterly Magazine, Winter 2012).”</td>
<td>Work together to provide optimal patient care</td>
<td>Collaborative Knowledge Sharing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Our goal is to manage this transitional process of change with transparency and thoughtful preparation (Quarterly Magazine, Spring, 2013).” “I am impressed with the knowledge, high-level skills, experience and compassion that you find throughout our medical staff (Quarterly Magazine, Spring, 2013).”</td>
<td>Transparency</td>
<td>transparency</td>
<td>Open Communication</td>
<td>Organizational Culture</td>
</tr>
<tr>
<td>“Leading edge diagnostic technologies that enable physicians to collaborate using high tech to enhance clinical assessments (Hospital Quarterly Magazine, Fall, 2012).”</td>
<td>“enable physicians to collaborate using high tech”</td>
<td>Data Exchange</td>
<td>Data Sharing</td>
<td>Computer-Mediated Communication</td>
</tr>
<tr>
<td>“multi-disciplinary team made up of experts …come up with comprehensive treatment plan that will outline how best to attack the cancerous cells (Hospital Quarterly Magazine, Spring, 2013).”</td>
<td>“multidisciplinary team…comprehensive plan …”</td>
<td>Multidisciplinary Team</td>
<td>Perspective</td>
<td>Evidence-Based Medicine</td>
</tr>
<tr>
<td>“Multidisciplinary team made up of …experts in radiation oncology (Quarterly Magazine, Winter, 2013).”</td>
<td>“how best to attack”</td>
<td>Treatment Plan</td>
<td>Standards</td>
<td>Clinical Experts</td>
</tr>
<tr>
<td>“pride ourselves on being patient-focused …where people aren’t just a number (Quarterly Magazine, Spring, 2013).”</td>
<td>“experts”</td>
<td>Skills</td>
<td>Clinical Experts</td>
<td>Context</td>
</tr>
<tr>
<td></td>
<td>“patient-focused”</td>
<td>Patient Status</td>
<td></td>
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</tr>
</tbody>
</table>
Data analysis of monthly newsletter.

Table illustrates three primary themes: organizational culture, collaboration and coordination, and reflective learning.

<table>
<thead>
<tr>
<th>Quote</th>
<th>Primary Themes</th>
<th>Structure</th>
<th>Protocol</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>“communicated throughout the organization” “Speaking up can sometimes be immediate or if not, involves a chain of command such as going to your director or supervisor” (Hospital Monthly Newsletter, August, 2013)”</td>
<td>Organizational Culture</td>
<td>Structure</td>
<td>Protocol</td>
<td>Environment</td>
</tr>
<tr>
<td>“communicated throughout” “speaking up…involves chain of command”</td>
<td>Formatted Communication</td>
<td>Communication</td>
<td>Protocol</td>
<td>Environment</td>
</tr>
<tr>
<td>“structured, standardized communication improves safety” (Hospital Monthly Newsletter, October, 2013)”</td>
<td>Formal Structure</td>
<td>Protocol</td>
<td>Electronic Communication</td>
<td>Environment</td>
</tr>
<tr>
<td>“create awareness”</td>
<td>Formal Structure</td>
<td>Protocol</td>
<td>Electronic Reporting</td>
<td>Environment</td>
</tr>
<tr>
<td>“a patient safety report creates awareness” (Hospital Monthly Newsletter, January, 2014)”, “improvements including daily catheter reporting …instituting a “tracer” system for monthly rounding” (Hospital Monthly Newsletter, April, 2014).”</td>
<td>Formal Structure</td>
<td>Protocol</td>
<td>Protocol</td>
<td>Environment</td>
</tr>
<tr>
<td>“System can track and catalog infections that must be publicly reported”, “Its protocol library is a back-up resource for the team when dealing with an infection” (Hospital Monthly Newsletter, December, 2013).”</td>
<td>Protocol Structure</td>
<td>Protocol</td>
<td>Protocol</td>
<td>Environment</td>
</tr>
<tr>
<td>“Color-coded tabs let clinicians know of special risks” (Hospital Monthly Newsletter, April, 2014).”</td>
<td>Formal Structure</td>
<td>Protocol</td>
<td>Electronic Protocols</td>
<td>Environment</td>
</tr>
<tr>
<td>“ID wristbands aimed at improving patient safety and comfort…color-coded tabs to let clinicians know of special risks associated to patient wearing it” (Hospital Monthly Newsletter, April, 2014).”</td>
<td>Protocol Structure</td>
<td>Protocol</td>
<td>Electronic Protocols</td>
<td>Environment</td>
</tr>
<tr>
<td>“speak up”, “say something immediately if I see something unsafe”, create a culture in which everyone feels empowered and supported in speaking up without fear of retribution” (Hospital Monthly Newsletter, November, 2013)”; “if you see something, say something ‘combat bystander apathy’ and improve safety” (Hospital Monthly Newsletter, November, 2013)”; “we must create a culture in which everyone feels empowered and supported in speaking up without fear of retribution (Hospital Monthly Newsletter, December, 2013)”</td>
<td>Climate Communication</td>
<td>Communication</td>
<td>Transparency Discussion</td>
<td>Disclosure</td>
</tr>
<tr>
<td>“We want to create a comfortable environment …to engage in open discussion”, “we are all very comfortable about raising questions and concerns when patient safety is at stake” (Hospital Monthly Newsletter, December, 2013)”</td>
<td>Open Environment</td>
<td>Open Discussion</td>
<td>Open Communication</td>
<td>Disclosure</td>
</tr>
</tbody>
</table>
“It gives our board members an opportunity to have direct conversations with the staff responsible for ensuring safe care (Hospital Monthly Newsletter, November, 2013).”

“new program is low-tech but highly effective and extraordinarily collaborative (Hospital Monthly Newsletter, August, 2013)”, “always work as a team”, “A team approach eases transition (Hospital Monthly Newsletter, August 2013)”, “a key tenet of improving patient safety is teamwork (Hospital Monthly Newsletter, January, 2014)”, “we are all responsible for the series of checks and double-checks through software, checklists, and other tools that ensure the quality of our work (Hospital Monthly Newsletter, April, 2014).”

“family sometimes speak up when hearing the report to share with us clarifications of new information that is helpful towards the patients care (Hospital Monthly Newsletter, August 2013).”

“Discussions that occur at the committee focus on different approaches that may lead to a better outcome (Hospital Monthly Newsletter, December, 2013).”

“we retrained all staff by heightening their awareness through education”, “we need…to learn from “near misses and errors so that we can make care safer and better(Hospital Monthly Newsletter, July, 2013)”, “we are trying to create an environment where staff can make a mistake, self-report it, and feel that it will be a constructive and non-punitive experience for them and a learning experience for others Hospital Monthly Newsletter, January, 2014)”,

“Stories that really resonate with all those who interact with patients (Hospital Monthly Newsletter, March, 2014).”

| "It gives our board members an opportunity to have direct conversations with the staff responsible for ensuring safe care (Hospital Monthly Newsletter, November, 2013).” | “opportunity to have direct conversations” | Participation | Employee Engagement | Collaboration and Coordination |
| “new program is low-tech but highly effective and extraordinarily collaborative (Hospital Monthly Newsletter, August, 2013)”, “always work as a team”, “A team approach eases transition (Hospital Monthly Newsletter, August 2013)”, “a key tenet of improving patient safety is teamwork (Hospital Monthly Newsletter, January, 2014)”, “we are all responsible for the series of checks and double-checks through software, checklists, and other tools that ensure the quality of our work (Hospital Monthly Newsletter, April, 2014).” | “extraordinarily collaborative”, “always work as a team”, key tenet of improving patient safety is teamwork” | | | |
| “family sometimes speak up when hearing the report to share with us clarifications of new information that is helpful towards the patients care (Hospital Monthly Newsletter, August 2013).” | “share with us clarifications” | Information Clarification Knowledge Sharing | | |
| “Discussions that occur at the committee focus on different approaches that may lead to a better outcome (Hospital Monthly Newsletter, December, 2013).” | “discussions… focus on different approaches” | Encourage Diversity Perspectives | | |
| “we retrained all staff by heightening their awareness through education”, “we need…to learn from “near misses and errors so that we can make care safer and better(Hospital Monthly Newsletter, July, 2013)”, “we are trying to create an environment where staff can make a mistake, self-report it, and feel that it will be a constructive and non-punitive experience for them and a learning experience for others Hospital Monthly Newsletter, January, 2014)”, | “heightening their awareness” “we need ….to learn from near misses” “create an environment …feel …it will be constructive” | “awareness” “Lessons-learned” | Past Experiences Reflective Learning | Concurrent with learning from having the capacity to use lessons-learned and story-telling to reflect upon past experience. |
| “Stories that really resonate with all those who interact with patients (Hospital Monthly Newsletter, March, 2014).” | “stories that resonate” | “Meaning-Making” | | |
Data analysis of knowledge base.
Table (below) illustrates the data analysis of the Knowledge Base (computer system). One primary theme identified: Computer-mediated communication

<table>
<thead>
<tr>
<th>“Information technology that protects patient data and optimizes patient flow and communications (Corporate Website, knowledge base, 2014).”</th>
<th>“optimizes patient flow and communications”</th>
<th>Data Flow</th>
<th>Data Sharing</th>
<th>Primary Theme: Computer-Mediated Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Integrated system for clinical and financial management in medical organizations (Corporate Website, knowledge base, 2014).”</td>
<td>“integrated system”</td>
<td>Data Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Cloud-based technology successfully integrates data across different systems and our current IT infrastructure (Corporate Website, knowledge base, 2014).”</td>
<td>“integrates data across different systems”, “set of integrations with external systems throughout the healthcare community”</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>“Well-developed set of integrations with external systems throughout the healthcare community (Corporate Website, knowledge base, 2014).”</td>
<td>“network-wide data visibility”</td>
<td></td>
<td>Data Transfer</td>
<td></td>
</tr>
<tr>
<td>“Increased network-wide data visibility improves care coordination and more proactive population health management (Corporate Website, knowledge base, 2014).”</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Data analysis of corporate compliance.
Table (below) Illustrates Corporate Compliance of hospital. Organizational culture was the primary theme identified from the data analysis.

<table>
<thead>
<tr>
<th>Incident Reporting</th>
<th>Formal Communication Channel</th>
<th>Policies and Procedures</th>
<th>Primary Theme: Organizational Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>“employees empowered to identify concerns and questions for improvement directly to managers or administration without fear of retribution” and &quot;anyone who ever feels retaliated against for making a report should contact the Corporate Compliance Officer immediately (Corporate Website, compliance, 2014)”, “Reports that could pose an immediate safety risk or a situation that puts the safety of a patient, co-worker or another individual in jeopardy should be made to a manager, supervisor or to the security department immediately in order to mitigate the immediate risk (Corporate Website, compliance, 2014).”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“identify concerns and questions …directly to managers or administration”, “if anyone feels retaliated against contact corporate compliance officer”, reports that put people in jeopardy should be made to a manager, supervisor, or security” ”compliance … is a condition of employment”, “expected to familiarize ourselves with the laws and regulations that pertain to our areas of specialty”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating in mandatory compliance education and training is a condition of employment” and “we are all responsible and are expected to familiarize ourselves with the laws and regulations that pertain to our areas of responsibility”, “complying with both “every day” laws and regulations as well as those specific laws and regulations that pertain to healthcare and to non-profit entities (Corporate Website, compliance, 2014).”</td>
<td>Incidental Reporting</td>
<td>Formal Communication Channel</td>
<td>Policies and Procedures</td>
</tr>
</tbody>
</table>
Data analysis of the organization’s community outreach.

Table (below) Highlights the Community Outreach Initiatives. Collaboration and coordination was the primary theme identified from the data analysis.

<table>
<thead>
<tr>
<th>Community Needs Assessment</th>
<th>Community Engagement</th>
<th>Primary Theme Collaboration and Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Collecting data to identify the health care needs of the communities we serve” (Corporate Website, 2014)”, “strong connections with the population” (Corporate Website, 2014)”, “better understand the needs and assets of the communities” (Corporate Website, 2014)”, “Team to identify the specific needs of underserved populations” (Corporate Website, 2014).”</td>
<td>“Partner with the American Red Cross to host blood drives” (Corporate Website, 2014).”</td>
<td>“Collaboration and coordination”</td>
</tr>
<tr>
<td>“Collaborate with our communities to provide education” (Corporate Website, 2014).”, “Supermarket Savvy program” to assist elderly with label reading and making healthy food choices” (Corporate Website, 2014)”, “Education lectures by trained professional staff and physicians” (Corporate Website, 2014)” , “Just-in-time” education for ambulance providers” (Corporate Website, 2014).”</td>
<td>“Collaborate with communities to provide education”, “assist elderly with label reading”, “educational lectures”, “CPR training in collaboration with local agencies”</td>
<td></td>
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<tr>
<td>“Community Needs Assessment”</td>
<td>“Concurrent with working together with community to identify needs and to provide services that meet those needs.”</td>
<td>“Collaboration and coordination”</td>
</tr>
</tbody>
</table>
Data analysis of external sources. 

Table below illustrated four external sources reviewed during Phase I (Documentation Review). There were three primary themes identified from the data analysis: Collaboration and coordination, computer-mediated communication, and evidence-based medicine.

<table>
<thead>
<tr>
<th>Source</th>
<th>Quote</th>
<th>Theme</th>
<th>Collaboration and Coordination</th>
<th>Computer-Mediated Communication</th>
<th>Evidence-Based Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leapfrog Organization Hospital Safety Score (2010-2013)</td>
<td>“This achievement is a result of teamwork training and skill building”</td>
<td>Team Building</td>
<td>Concurrent with collaboration among cross-functional groups to coordinate a common goal.</td>
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<td>MD News.com (2011)</td>
<td>“Team approach to care where physician collaboration is emphasized throughout the cardiac and endovascular center and physicians routinely work together to provide highest level of care”</td>
<td>Team Oriented</td>
<td>Concurrent with collaboration among cross-functional groups to coordinate a common goal.</td>
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<tr>
<td>American Hospital Association (2011-2014) Most Wired Hospital Award Hospitals and Health Networks (2011-2014).</td>
<td>“Greater adoption of IT can bring important tools to our efforts to improve the safety and quality of care in hospitals, and better coordinate care across settings”</td>
<td>Data Coordination</td>
<td>Computer-Mediated Communication</td>
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</tbody>
</table>
## Appendix M: Observation Data Analysis

<table>
<thead>
<tr>
<th>Observation # 1-3</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Primary Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation # 1</td>
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<tr>
<td>Lobby “Grand Rounds” Conference Educational Social Event</td>
<td>“Grand Rounds” Conference; Topic: Obesity: Consequences and Cures Observations in lobby area outside of conference room. Doctors socially engaged with one another over lunch. Table: visuals; speaker credentials; feedback survey; confidentiality and waiver documentation; Audience: Medical Doctors (surrounding metro area). Multiple conversations took place over luncheon spread. Nutritional lunch consistent with conference topic; “food” was segue for social dialogue.</td>
<td>Dr. (Female): “looks appealing and healthy” “I wonder if it is” Dr. (Male): “Well, it’s better than eating pizza” “pizza is more caloric and less nutritious which is definitely what we strive for.” Dr. “It is important that we practice what we preach.”</td>
<td>Looks at Dr. (male) for response. Smiles and nods while speaking to emphasize his point.</td>
<td>&lt;Gaze Direction&gt; indicated that Dr. was seeking response from other doctor. &lt;Backchannels&gt; indicated agreement.</td>
<td>Normative Values</td>
<td>Enacted Values</td>
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<td>Observation # 2</td>
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<td>Dr.1 (Male): “Need to speak with you about various procedural matters.” Dr.2 (Male): “Ok, do you have some time later this week, maybe Friday?” Dr.1 (Male): “Friday would be great”</td>
<td>Looks at doctor Nods head up/down Nods head up/down</td>
<td>&lt;Direct Gaze&gt; indicated response awaited. &lt;Backchannel&gt; indicated agreement &lt;Direct Gaze&gt; indicated response awaited &lt;Backchannel&gt; indicated agreement.</td>
<td></td>
<td>Request Meeting</td>
<td></td>
<td>Meeting</td>
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<td>Observation # 3</td>
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<td>Dr. (Female) I spoke with Dr. D who spoke with Dr. DD regarding the medical matter...both indicated that they want to meet as a group regarding the matter to make sure we are on the same page” Dr. (Male): Great, I was thinking the same; I will send an email to schedule meeting; I will provide some possible times for getting together</td>
<td>Stands sideways looks in distance as speaks then turns and looks directly at the doctor as she finishes her thought.</td>
<td>&lt;Gaze Aversion&gt; indicated that Dr. (female) was in control of conversation; &lt;Direct Gaze&gt; indicated Dr. (male) was done speaking and awaited Dr. (males) response. &lt;Backchannel&gt; indicated consensus on plans to meet.</td>
<td></td>
<td></td>
<td></td>
<td>Meeting</td>
</tr>
<tr>
<td>Observation # 6</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<tr>
<td>Nurses Station Work-Related Environment</td>
<td>Dr. (Gastro; male) walks over to Dr. (Hospitalist; male) seated at nurses station to update on mutual patient. Very busy station; 5:30 pm. Many nurses coming and going accessing charts, etc.</td>
<td>Dr. (Gastro): “Hi, I just did “p” procedure on patient and I wanted to update you so that we are on the same page.” Dr. (Hospitalist): “So, you feel this procedure will help”? Dr. (Gastro): “Yes, I think it will because “p” procedure usually relieves symptom ‘s’ though I am not sure how much it varies, but it was necessary to do the procedure otherwise the patient could eventually have suffered from ‘c’ condition.</td>
<td>&lt;Direct Gaze&gt; Relinquish speaking floor to receiver. &lt;Gesture&gt; indicated positive emotion; &lt;Direct Gaze&gt; indicated the speaker was awaiting response from recipient. &lt;Vocal Intonation&gt; louder indicates emphasis; &lt;Backchannel&gt; indicates consensus; &lt;Hand Gesture&gt; uplifted palms indicates speaker is sincere; non-aggressive, and seeks agreement from receiver. &lt;Gaze Aversion&gt; indicated speaker wished to continue talking.</td>
<td>Clinical Update</td>
<td>Perspective</td>
<td>Collaboration and Coordination Concurrent with: knowledge sharing as a transformational process based on communicative rational and social pragmatics that enables members to explore individual know-how and know-that at the collective level through “intersubjective mutuality” where shared meaning and interpretation defines context to coordinate social action (Habermas, 1984).</td>
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<td>Dr. (Gastro): “Condition ‘c’ is what I do not want to happen given the patient’s history since it happened before when we did not act upon it.”</td>
<td>Looks at Hospitalist</td>
<td>&lt;Direct Gaze&gt;</td>
<td>Past Experience</td>
<td>Lessons-learned</td>
<td>Reflective Learning</td>
</tr>
</tbody>
</table>

Concurrent with the properties associated to learning from lessons-learned and story-telling to reflect upon past experience.
<table>
<thead>
<tr>
<th>Observation # 7</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses Station Work-Related Environment</td>
<td>Dr. (Fellow): “Let’s look at this EKG and review it together.”</td>
<td>Looks down while speaking.</td>
<td>&lt;Gaze Aversion&gt; indicates speaker wants to continue speaking.</td>
<td>Engage Discussion</td>
<td>Social Deliberation</td>
<td>Collaboration and Coordination</td>
</tr>
<tr>
<td></td>
<td>Dr. (Fellow): “Tell me what you think is going on?“ Does it appear normal, abnormal, your thoughts?“</td>
<td>Looked directly at Cardio (Fellow) while speaking.</td>
<td>&lt;Direct Gaze&gt; indicates that he seeks response from receiver.</td>
<td>Encourage Viewpoint</td>
<td>Perspective</td>
<td>Concurrent with: knowledge sharing as a transformational process based on communicative rational and social pragmatics that enables members to explore individual know-how and know-that at the collective level through “intersubjective mutuality” where shared meaning and interpretation defines context to coordinate social action (Habermas, 1984).</td>
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<td>Medical student: “looks normal?“</td>
<td>Vocal pitch increased at end of statement.</td>
<td>&lt;Vocal Intonation&gt; rising at the end of statement indicates uncertainty; questioning.</td>
<td>Seek Understanding</td>
<td>Clarification</td>
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<td></td>
<td>Dr. (Fellow): “Agreed”</td>
<td>Nodded head</td>
<td>&lt;Backchannel&gt; indicated agreement was established between both parties.</td>
<td>Agreement</td>
<td>Consensus</td>
<td></td>
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<td>Dr. (Fellow): “yes, the rhythm strips would serve as a key indication if something were not right.”</td>
<td>Nods head/up down</td>
<td>&lt;Baton&gt; rhythmic motion corresponded with verbal content.</td>
<td>Clinical Perspective</td>
<td>Perspective</td>
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<td>Dr. (Fellow): “see this…this is how we know that the cardiac function is normal; also the risk factors indicate that things are stable for the time being”</td>
<td>Dr. (Fellow) pointed to EKG Report while speaking.</td>
<td>Clinical Protocol</td>
<td>Clinical Assessment</td>
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<td></td>
<td>Medical student: Yes, the numbers are all within normal limits.</td>
<td>Looks directly at medical student</td>
<td>&lt;Direct Gaze&gt;</td>
<td>Past Experience</td>
<td>Clinical Evaluation</td>
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<td>Dr (Fellow)“meanwhile knowing the history of this patient means we need to keep an eye on the risk factors to make sure they remain stable since this was an issue previously and resulted in condition ‘c’ which resulted in us having to do ‘p’ procedure.”</td>
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<td>Lessons-learned</td>
<td>Reflective Learning</td>
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<tr>
<td>Observation # 8</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<td>Nurses Station Work-Related Environment</td>
<td>Doctor (Cardio, male) socially interacts with Nurse (female) re: patient status. Doctor does most of the speaking; informs nurse that he needs for her to schedule certain procedures before he can release patient.</td>
<td>Nurse: “Hi Doctor, are you discharging this patient? Dr: “Not yet, would like to do 'p' and 'pp' procedures first, then I will let you know.” Dr. “Here is the chart and specific instructions on which tests I want done.” Nurse: “Great, I will get right on it and will let you know when the results are in.” Points to chart Looks down at chart while speaking. Looks directly at nurse while handing her the instructions Nods head; motions palm upward while speaking.</td>
<td>&lt;Illustrator&gt; Pointed at chart to reference patient in question.</td>
<td>Clinical Inquiry Clinical Procedure Clinical Tests</td>
<td>Clinical Instructions</td>
<td>Physicians’ Orders Concurrent with the instructions ordered for patient care based on the evaluation of a patient’s physical condition and prognosis for treatment</td>
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<td>Observation # 9</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<td>Nurse (Charge, female) engages with Dr. (Hospitalist; male) on patient case to update. Both seemed familiar with patient history previous &quot;episodes&quot; and behaviors. Appears both individuals collaborate to make sure patient is not in any danger.</td>
<td>Nurse: &quot;The patient had an “episode” but vitals appeared stable.</td>
<td>Points to chart to share patient numbers.</td>
<td>&lt;Illustrator&gt; indicated to doctor the puzzling numbers on patient chart.</td>
<td>Clinical perspective</td>
<td>Perspective</td>
<td>Collaboration and Coordination</td>
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<td>Dr. (Hospitalist): “It may be due to ‘c’ condition which would not be related to the main problem so I do not think it is serious from what I know.”</td>
<td>Looks down at the chart while continues to speak.</td>
<td>&lt;Gaze Aversion&gt; indicated doctor wants to continue speaking.</td>
<td>Clinical Perspective</td>
<td>Perspective</td>
<td>Practical Perspective</td>
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<td></td>
<td>Dr. (Hospitalist): “hmmm, actually ‘n’ number does appear to go up quickly” “see this?” Nurse: “yes, this is what I found to be odd” “I agree”</td>
<td>Squinting eyes</td>
<td>&lt;Gaze Aversion&gt; indicated he would continue speaking.</td>
<td>Clinical Perspective</td>
<td>Perspective</td>
<td>Consensus</td>
</tr>
<tr>
<td></td>
<td>Nurse: “The patient had an “episode” but vitals appeared stable.”</td>
<td>Nods head</td>
<td>&lt;Gesture&gt; indicated negative emotion; puzzled. &lt;Illustrator&gt; points to number on chart</td>
<td>Agreement</td>
<td>Clinical Perspective</td>
<td>Agreement</td>
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<td></td>
<td>Dr. (Hospitalist): “But this episode does not appear to be related to what has happened before; this seems to be just a simple case of “c” condition which is not cardio related.”</td>
<td>Looks at nurse</td>
<td>&lt;Back Channel&gt; indicated agreement</td>
<td>History</td>
<td>Past Experience</td>
<td>Reflective Learning</td>
</tr>
<tr>
<td>Observation # 10</td>
<td>Nurses Station Work-Related Environment</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
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<td>Two Cardio doctors (Cardio; male and a Cardio, Fellow; male) collaborate with a nurse (female) re: patient status (inform, provide perspective; potential causes; potential treatments; overall assessment).</td>
<td>Dr. (Fellow): “So (pause) patient has been experiencing ‘s’ symptoms!” Dr. (Cardio 1): “I noticed that it has been going on, as well.” Dr. (Fellow): “I’m concerned why the patient is experiencing these symptoms since the patient has been on medication.” Nurse: “Well, did the patient tell you that they have been experiencing “s” symptoms for a few days, as well?” Dr. (Cardio 2): “Well, I think the patient had not eaten which made it worse.” Dr. (Cardio1): I agree that it is unusual that patient is experiencing symptoms since medication has been administered but then not eating may be a sign that something else is going on.” Dr. (Cardio1): Let’s run some more labs that are more specific; that should give us more data.” Nurse: I definitely agree we should re-visit “L” labs.” Dr. (Cardio 2): Agreed let’s do the tests and reconvene when we get the results.”</td>
<td>Looks at the other individuals for response.</td>
<td>&lt;Intensifier&gt; pause used for clarity, &lt;Direct Gaze&gt; indicated that speaker was seeking response.</td>
<td>Practical Perspective</td>
<td>Perspective and Coordination</td>
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</table>

Nurse: “So, what tests do you think we should do? Dr. (Cardio 1): “I think we should do ‘p’ procedure if things continue to make sure nothing else is going on.” Nurse: “Ok, that makes sense I will keep you both posted so we are on same page” Dr. (Cardio 2): “I know we stopped one medication, but maybe we should restart it!” Dr. (Fellow): “Well, I think the equipment we provided has helped with breathing” Dr. (Cardio 1): “yes, it is helping quite a bit at least this tells us it’s not a pulmonary related matter.” “Yes, and I think it is a good idea to restart the medication to be on the safe side.” | Looks at both doctors while speaking; voice increases. | <Direct Gaze> and <flux intonation> indicated awaited response. | Seek Understanding | Perspective |

Hand movement wrist upward; voice increases. | <Body Language> indicated defending position. | In Sync | Mutual Understanding |

Nods head | <Back Channel> indicated consensus | Seek Understanding | Clarification |

Nods while speaking | <Baton> rhythmic hand movement used to emphasize declarative statement. | Practical Perspective | Perspective |

Nods while eye widen and brows appeared lifted. | <Back Channel> nod-agreement | Practical Perspective | Perspective |

< Gestures> indicated positive emotion; loose muscles. | Practical Perspective | Practical Perspective | Perspective |
<table>
<thead>
<tr>
<th>Observation #11</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
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</thead>
<tbody>
<tr>
<td>Nurses Station – Work-related Environment</td>
<td>Cardio (male) engages with two cardio fellows (males) as part of educational training initiative on-the-job.</td>
<td>Cardio: “Let me share an interesting story of a situation that happened; it will illustrate case point.” “The patient had “c” condition so they were treated by doing “p” procedure which lead to “c” condition which required doing “p” procedure and then more tests revealed “c” condition which ultimately led to procedure “P” Cardio (Fellow #1): “Wow, seems like one thing kept happening after the next.” Dr. (Cardio): “Well, yes here’s the interesting thing, after a while there was a recurrence and everything happened again…we had to do everything again…same way… and what’s interesting was the same things kept happening the same way as the first” “it is a classic case of “c” condition. Dr. (Cardio): Knowing the history added value in this case”</td>
<td>Doctor looks straight ahead and speaks while he rapidly raises both arms in the air. Dr. (cardio) continues to speak while glancing both ways to make contact with the doctors. Eyes shrug; voice is loud as he makes a comment. Eye brows upward; raised both hands upward while speaking; taps desk as he finishes statement.</td>
<td>&lt;Gaze Aversion&gt; indicated speaker wanted to continue speaking; &lt;Conversational Gesture&gt; indicated exaggeration to emphasize verbal content. &lt;Direct Gaze&gt; indicates speaker is finishing up and looking for some type of response from listeners. &lt;Facial expression&gt; speaker conveyed surprise &lt;Vocal Intonation&gt; increase of voice indicated emphasis. &lt;Facial Expression&gt; speaker trying to elicit reaction from receivers by raising and holding eyebrows indicated speaker was seeking agreement. &lt;Gesticulation&gt; unplanned gesture that accompanies speech and is related to semantic content. &lt;Baton&gt; tapping indicated emphasis that point was made.</td>
<td>Storytelling</td>
<td>Past Experience</td>
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<td>Narrative</td>
<td>Reflection</td>
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<td>Lessons-learned</td>
<td>Reflective Learning</td>
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<tr>
<td>Observation #</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
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<td>12 Nurses Station – Work-related environment</td>
<td>Dr: “regarding patient ‘x’ the person will be going home today; the patient does not have ‘c’ or ‘cc’ condition according to the labs so it is okay to discharge the patient.” Dr: “Since the patient does not have a history of these potential conditions I think it is safe enough to discharge them.”</td>
<td>Dr. looks directly at the nurse while speaking. Motions with hand raised palm upright; continues to speak.</td>
<td>&lt;Direct gaze&gt; indicated doctor was awaiting response from nurse. &lt;Conversational Hand gesture&gt; occurs with speech and to support interaction; indicated non aggressive pose while justifying action; congenial.</td>
<td>Clinical Data</td>
<td>Clinical Evaluation</td>
<td>Clinical Assessment Concurrent with properties that provide an evaluation of a patient's physical condition and prognosis based on information gathered from physical and laboratory examinations and the patient's medical history.</td>
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<tr>
<td>Internal Medicine Doctor (Female) speaks with Nurse (female) re: patient status/update</td>
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<td>Clinical Status</td>
<td>Clinical Protocol</td>
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**Observation #**
**13**

**Nurses Station Work-related Environment**

| Gastro (male) speaks to hospitalist (male) and Psyche doctor (female) regarding patient status/update on medication and procedures that were performed. | Observation |
| --- |
| Appeared doctors were familiar with patient and context of the situation from previous efforts. | Verbal In Vivo Codes |
| Gastro: "I did 'p' procedure and gave 'm' medicine to patient "x". (Continues): "I did not find anything significant but the procedure will at least relieve the symptoms." | Non-Verbal Descriptive Codes |
| Psyche: "Yes, I think it will help with the ongoing problem." "I know this generally helps in these cases." | Non-Verbal Interpretation (Krauss & Chiu, 1998) |
| Hospitalist looks at Gastro doctor and asks: "so, you didn’t find the patient to be experiencing condition ‘c’?" "I know sometime a patient will experience ‘s’ symptoms. Gastro: “I did procedure because I thought the patient may be experiencing condition ‘c’, but I did not see any trace so I ruled it out for now but will monitor because sometimes things change.” Hospitalist: "Okay, I will monitor the patient and keep you posted on any changes.” | Sub-Category |
| Looks directly at doctor | Clinical Status |
| Arm folded while looking at hospitalist | Update; Agreeement |
| Nodded head | Clinical Diagnosis; Insight; Perspective |
| Nodded head up/down | Practical Perspective |
| <Direct Gaze> indicated the speaker was awaiting response from the other doctors. <Facial Expression> raised eyebrows indicated an expression of surprise while arms stretched indicates person is being genuine. <Back channel> indicated agreement; <Gaze Aversion> indicate dr wants to continue speaking. | Agreement Practical Perspective |
| <Direct Gaze> indicated speaker awaited response from receiver. <Body gesture> indicated defensive position felt need to justify action and thought process. <Direct Gaze> awaited response from receiver. | Seek Understanding Practical Perspective |
| <Back channel> indicated confidence in his decision. <back channel> indicated consensus | Clarification Explanation; Reasoning Justification AgreementConsensus |

**Clinical Status**

*Update; Agreement* **Clinical Diagnosis; Insight; Perspective** **Practical Perspective** **Agreement Practical Perspective** **Seek Understanding Practical Perspective** **Clarification Explanation; Reasoning** **Justification Agreement** **Consensus**
<table>
<thead>
<tr>
<th>Observation # 14 Grand Round Event “Chronic Heart Failure”</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
</tr>
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<tbody>
<tr>
<td>Renowned medical doctor speaks to a group of medical doctors on topic as part of physicians professional development and continuing education initiative. The setting is formal and restricted to physicians. The dialogue is predominately one way as part of lecture format although attendants are welcomed to ask questions as part of the educational process.</td>
<td>Speaker (Dr.): Studies consistently show a five year mortality rate using advanced therapies.” “there is a 25% chance for re-admittance for those with acute heart failure.” “there is a 52% risk reduction with optimal blood pressure control “therapy includes a combination of blood pressure medications (statins), aspirin and exercise relative to the patient’s status for maximum risk reduction”</td>
<td>Speaker points to the whiteboard while speaking. Speaker continues talking while glancing down at notes. Then looks up at audience member and nods for them to speak. Speaker responds by nodding positively and speaking.</td>
<td>&lt;Illustrator&gt; pointed to whiteboard to quantify his discussion by referencing empirical data from studies. &lt;Gaze Aversion&gt; speaker continued to provide numerical data to support his claims by referencing study findings. &lt;Direct Gaze&gt; looked directly at audience and paused for impact</td>
<td>Mortality Rates</td>
<td>Clinical Prognosis</td>
<td>Evidence-Based Medicine</td>
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<td>Clinical Statistics</td>
<td>Clinical Findings</td>
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<td>Risk Reduction</td>
<td>Context</td>
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<td>Patient Status</td>
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- **Context**
- **Clinical Findings**
- **Clinical Statistics**
- **Clinical Prognosis**
- **Evidence-Based Medicine**
- **Mortality Rates**
- **Re-Occurrence**
- **Risk Reduction**
- **Sub-Category**
- **Theme**
- **Non-Verbal Descriptive Codes**
- **Non-Verbal Interpretation (Krauss & Chiu, 1998)**
- **Observation # 14 Grand Round Event “Chronic Heart Failure”**
- **Verbal In Vivo Codes**
<table>
<thead>
<tr>
<th>Observation # 15</th>
<th>Social Event Provider Networking Social</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
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<tbody>
<tr>
<td>Two doctors interact in the lobby during a social event</td>
<td>Dr. 1: “I was hoping to run into you.” Dr. 2: “we got the new equipment installed wanted to meet and discuss with you since you are already using it in your office.” Dr 1: “great, what about Friday afternoon when things are quiet.” Dr. 2: “perfect”</td>
<td>Looks at the doctor Looks at the doctor Nods head up/down smiles</td>
<td>&lt;Direct Gaze&gt; indicated he awaited response from the doctor. &lt;Direct Gaze&gt; indicated he awaited response from the other doctor. &lt;Backchannel&gt; agreement</td>
<td>Request Meeting</td>
<td>Meeting</td>
<td>Communication</td>
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</table>
Observation # 16
Nurses’ Station Work-Related Environment

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<thead>
<tr>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub- Category</th>
<th>Category</th>
<th>Theme</th>
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<tbody>
<tr>
<td>Surgeon Doctor visits in patient and determines the need for emergency surgery; he takes initiative to coordinate action by instructing nurses to contact other attending physicians, operating room, recovery, radiology, anesthesia, and transport. Also, requests nurses prep patient for surgery and inquires about patient’s status throughout day.</td>
<td>Surgeon: “patient is experiencing condition ‘c’ which I do not like. “Please contact OR and let them know that we need to take immediate action as soon as possible! I want to do this now because I do not want the surgical team to leave since it is the long weekend.”</td>
<td>&lt;Gaze Aversion&gt; indicated doctor wanted to continue speaking. &lt;Gaze Direction&gt; indicated he awaited a response from the nurses. &lt;Illustrator&gt; glancing at watch indicated sensitivity to “time” and that matter was urgent.</td>
<td>Patient Status</td>
<td>Context</td>
<td>Collaboration and Coordination</td>
</tr>
<tr>
<td>The situation took place late Friday afternoon start of holiday weekend; doctor wants to make sure surgical team and anesthesiologist are notified to ensure they are available given start of long weekend.</td>
<td>Charge Nurse: “So you will need the OR team?”</td>
<td>&lt;Direct Gaze&gt; indicated nurse awaited response.</td>
<td>Practical Perspective</td>
<td>Organize Actions; Context</td>
<td></td>
</tr>
<tr>
<td>Surgeon: “Yes” and “contact Dr. X and Dr. Y to let them know that I am setting up surgical procedure and let them know it is a vital we take care of this immediately.”</td>
<td>Charge Nurse: “I will call RIGHT now!”</td>
<td>&lt;Vocal Intonation&gt; indicated that increase in loudness of voice emphasized urgency. &lt;Vocal Intonation&gt; loud voice indicated acknowledgement that she understood the urgency.</td>
<td>Seek Understanding</td>
<td>Consensus</td>
<td></td>
</tr>
<tr>
<td>Nurse: “Will it require recovery so we can coordinate?”</td>
<td>Nurse: “Will it require recovery so we can coordinate?”</td>
<td>&lt;Vocal Intonation&gt; increase of vocal tone at end of statement indicates question.</td>
<td>Seek Understanding Agreement</td>
<td>Clarification</td>
<td></td>
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<tr>
<td>Surgeon: “Yes, please do so!”</td>
<td>Surgeon: “Yes, please do so!”</td>
<td>&lt;Vocal Intonation&gt; voice increase at end of statement indicated question while Direct Gaze&gt; meant he awaited the nurses response.</td>
<td>Seek Understanding Agreement</td>
<td>Consensus</td>
<td></td>
</tr>
<tr>
<td>Surgeon: “When did the patient last eat?”</td>
<td>Nurse: “around noon”</td>
<td>&lt;Direct Gaze&gt; indicated nurse was relinquishing discussion to the doctor.</td>
<td>Seek Understanding Agreement</td>
<td>Clarification</td>
<td></td>
</tr>
<tr>
<td>Surgeon: “Ok, once you prep the patient we are ready to go!”</td>
<td>Surgeon: “Ok, once you prep the patient we are ready to go!”</td>
<td>&lt;Vocal Intonation&gt; indicated confidence.</td>
<td>Seek Understanding Agreement</td>
<td>Consensus</td>
<td></td>
</tr>
<tr>
<td>Observation # 17</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
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<tr>
<td>Nurses’ Station Work-Related Environment</td>
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<tr>
<td>Intern (Male) consults with two nurses on patient status; all appear to be familiar with context of the situation. While engaging in dialogue they all refer to computer screen to view the patient’s GI.</td>
<td>Dr. “The GI shows condition ‘c’ which means potential condition ‘cc’ that may be present. Nurse 1: “well it appears he has multiple issues going on from looking at the film” Dr: “Well, I am most concerned about this number ‘n’”</td>
<td>Doctor Looks at nurses</td>
<td>&lt;Direct Gaze&gt; indicated that dr. awaited response from the nurses.</td>
<td>Clinical Data</td>
<td>Clinical Evaluation</td>
</tr>
<tr>
<td></td>
<td>Nurse 1 looks at GI and then at doctor as she speaks. Points to specific clinical data on screen</td>
<td>Nurse 1 looks at GI and then at doctor as she speaks.</td>
<td>&lt;Direct Gaze&gt; indicated nurse awaited response from the doctor. &lt;Illustrator&gt; looking at picture of the GI indicated clinical reference.</td>
<td>Clinical Status</td>
<td></td>
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<td></td>
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<td>Verbal message that doctor was referencing clinical data for assessment.</td>
<td>Clinical Data</td>
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<td></td>
<td>. we need to get ‘n’ number down because this may present a problem later on.” “You see, if this happens, then condition ‘c’ may happen.” Nurse 2: “This explains why the patient has been complaining about various issues although the patient has been able to eat well. Nurse 1: “so, it would make sense to run some additional tests to ensure there is nothing else going on?” Dr: “yes, this was my thinking too.”</td>
<td>Raises voice as he speaks and nods.</td>
<td>&lt;Vocal Intonation&gt; indicated emphasis that it was serious matter while &lt;back channel&gt; nodding was used as &lt;Gesticulation&gt; that indicated semantic meaning to accompany verbal message.</td>
<td>Practical Perspective</td>
<td>Perspective</td>
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<tr>
<td></td>
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<td>Looks at doctor while speaking and nods head up and down.</td>
<td>Looks at doctor</td>
<td>Practical Perspective</td>
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<td></td>
<td></td>
<td>Nods head up/down</td>
<td>Nods head up/down</td>
<td>Practical Perspective</td>
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<td>Agreement</td>
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<td>Consensus</td>
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**Observation # 18**  
**Nurses’ Station Work-Related Environment**

<table>
<thead>
<tr>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
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<tbody>
<tr>
<td>Impromptu meeting where cardiologist (male) speaks with two female nurses regarding patient status and update on the patient’s care. The cardiologist informs the nurses about procedure scheduled for the patient and the reasoning for why the procedure was being done. It appears that the nurses are familiar with the patient.</td>
<td>Dr: “Here is what is happening with patient ‘x’; the patient will have ‘p’ procedure tomorrow.” The procedure is being done because the patient had a positive stress recently and was being monitored closely with medication as an inpatient but the patient was told that if further symptoms became present it would mean having procedure ‘p’ which is the case since he is having chest pains.” Dr. “Any questions” Nurse: “what will happen after the procedure?” Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Eyes look upward while speaking; palms upright; lips tighten at end of statement</td>
<td>&lt;Gaze Aversion&gt; indicated doctor wanted to continue speaking. &lt;Gestures&gt; palm upright indicated nonaggressive pose; congeniality, while lips indicated possible negative emotion.</td>
<td>Patient Update</td>
<td>Perspective and Coordination</td>
</tr>
<tr>
<td></td>
<td>Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Looks directly at nurses</td>
<td>&lt;Gaze Avoid&gt; indicated doctor wanted to continue speaking. &lt;Gestures&gt; palm upright indicated nonaggressive pose; congeniality, while lips indicated possible negative emotion.</td>
<td>Patient Update</td>
<td>Clinical Testing</td>
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<td>Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Looks directly at doctor</td>
<td>&lt;Gaze Avoid&gt; indicated doctor wanted to continue speaking. &lt;Gestures&gt; palm upright indicated nonaggressive pose; congeniality, while lips indicated possible negative emotion.</td>
<td>Patient Update</td>
<td>Clinical Testing</td>
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<td>Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Looks directly at nurse</td>
<td>&lt;Gaze Avoid&gt; indicated doctor wanted to continue speaking. &lt;Gestures&gt; palm upright indicated nonaggressive pose; congeniality, while lips indicated possible negative emotion.</td>
<td>Patient Update</td>
<td>Clinical Testing</td>
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<td></td>
<td>Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Looks directly at doctor</td>
<td>&lt;Gaze Avoid&gt; indicated doctor wanted to continue speaking. &lt;Gestures&gt; palm upright indicated nonaggressive pose; congeniality, while lips indicated possible negative emotion.</td>
<td>Patient Update</td>
<td>Clinical Testing</td>
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<tr>
<td></td>
<td>Dr: patient will be monitored and procedure will tell us if we need to do surgery.” Nurse: So we will keep an eye on labs and patient symptoms and get together to further discuss over the next few days?” Dr: “Yes” let’s make sure to keep good notes and to let me know of anything unusual “that’s the game plan!”</td>
<td>Doctor nods and pats his hands against his legs while getting up from seat.</td>
<td>&lt;Back Channel&gt; confirmation they are in agreement; &lt;Gesture&gt; slap legs and stand; Baton&gt; rhythmic to indicate “ready to go” or done.</td>
<td>Patient Update</td>
<td>Clinical Testing</td>
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**Perspective**  
 Clinician  
Clarification  
Documentation; Perspective  
Seek Understanding  
Clinical Perspective  
Seek Understanding  
Written notes; encourages practical perspective;
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<tr>
<th>Observation # 19</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
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<tr>
<td>Office Corridor near doctors’ office areas.</td>
<td>2 Drs (male and female) exchange social pleasantries while passing in the corridor outside of doctors offices; serendipitous but afforded opportunity for them to schedule opportunity to communicate on existing patient matter. Carefully refer to preexisting situation without referencing specific information.</td>
<td>Dr. (female): “Hi, what is on the agenda today.” Dr. (male): &quot;getting through patients&quot; Dr. (female): “was going to give you a call… glad we ran into one another; do you have time for us to meet re: our previous discussion” “want to make sure that we are on the same page and make sure we do what is right.” Dr. (male) “yes, how about sometime around 6pm?” Dr. (female): “great, talk then.”</td>
<td>Looks directly at the doctor. Looks directly back Nods while speaking Nods Nods and smiles while walking away.</td>
<td>&lt;Direct Gaze&gt; indicated awaiting response. &lt;Direct Gaze&gt; indicated awaiting response. &lt;Back channel&gt; indicated confirmation.</td>
<td>Social Greeting Potential Meeting</td>
<td>Meeting Communication</td>
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<td>&lt;Back Channel&gt; indicated confirmation/agreement re: meeting. &lt;Back Channel&gt; agreement; content.</td>
<td>Arrange Meeting Confirm Meeting</td>
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<td>Observation #</td>
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<td>20 Hospital Cafeteria</td>
<td>Dr. (male) buys lunch; briefly stops to greet female nurse exchange some information then doctor proceeds to leave cafeteria with his lunch.</td>
<td>Dr: “Hello, how goes it today?” Nurse: are you going to be coming up for rounds soon.” Dr: “Yes, in about an hour and a half.” Nurse: “can we meet re: patient with the catheter would like to update you on his progress.”</td>
<td>&lt;Direct Gaze&gt; indicated awaited response from doctor. &lt;Direct Gaze&gt; indicated awaited response from nurse. &lt;Direct Gaze&gt; indicated awaited response from nurse. &lt;Back channel&gt; smile indicated sign of confirmation and positive emotion. &lt;Vocal Intonation&gt; raised voice at end of statement indicated question was asked.</td>
<td>Social Greeting</td>
<td>Meeting</td>
<td>Communication</td>
</tr>
<tr>
<td>21 Hospital Cafeteria</td>
<td>Dr. (male) walking through cafeteria stops to greet a nurse (female) sitting at lunch table. Dr. continues to stand but stops to engage with them.</td>
<td>Dr: “Hello” Nurse: “I was looking for you earlier you must have been busy; I wanted to see if we could meet to discuss patient ‘x’. “I wanted to share my thoughts on how we are going to treat and get your opinion on him; would later on this afternoon work for you.” Dr: Yes, how about 5pm after I am done with rounds.”</td>
<td>&lt; Backchannel&gt; Greeting &lt;Gaze Aversion&gt; indicated the nurse wanted to continue speaking&gt;</td>
<td>Request Meeting</td>
<td>Meeting</td>
<td>Communication</td>
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<tr>
<td>22 Office Corridor near doctors office areas</td>
<td>Doctor approaches medical technician to schedule a clinical procedure as soon as it can be done.</td>
<td>Dr: “I want for you to schedule this procedure ‘p’ for the patient” Medical Technician: “Ok, will do.” “I want it done as soon as they have an opening see what the schedule is like.” Dr: “it is important that we act on asap!”</td>
<td>Looks directly at the technician Nods Raises voice as doctor walks away. Voice increased</td>
<td>&lt;Gaze Direction&gt; indicated a response was awaited. &lt;Back channel&gt; indicated agreement. &lt;Vocal Intonation&gt; indicated emphasis to support verbal content. &lt;Vocal Intonation&gt; indicated emphasis</td>
<td>Clinical Instructions Schedule Procedure Clinical Priority</td>
<td>Physicians’ Orders Concurrent with the instructions ordered for patient care based on the evaluation of a patient’s physical condition and prognosis for treatment.</td>
</tr>
<tr>
<td>Observation #</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
</tr>
<tr>
<td>23 Nurses’ Station</td>
<td>Doctor (hospitalist; male) engages with nurse (female) re: questions about a clinical lab test where doctor explains using clinical protocol as reference.</td>
<td>Nurse: “Dr. can you please tell me if a 24 hour urine test is done first thing in the morning?” Dr: “well, usually policy says yes because we are able to retrieve a more accurate reading on various things that we measure.” Nurse: “ok, so I should then set up the test early in the a.m. before the patient has a chance to eat?” Dr: “yes, this will provide the most effective means to measure the output.”</td>
<td>Looks directly at the doctor while voice increases. Looks directly at the nurse while speaking. Upright palm while asking question Nods</td>
<td>&lt;Direct Gaze&gt; indicated that response was awaited. &lt;Vocal Intonation&gt; indicated a question was being asked. &lt;Direct Gaze&gt; indicated doctor awaited nurse’s response to his answer. &lt;Hand Gesture&gt; rhythmic supported tone of her follow-up question; no significant meaning. &lt;Back channel&gt; agreement</td>
<td>Seek Understanding Clinical Perspective Clarification Seek Understanding Seek Understanding</td>
<td>Collaboration and Coordination Perspective Clarification Agreement; Reasoning</td>
</tr>
<tr>
<td>Observation # 24</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
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<tr>
<td>Intensive Care Unit</td>
<td>Two doctors engage re: patient status and treatment</td>
<td>Dr. 1: “so, do you think they will go down to the floor”</td>
<td>Looks at doctor</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<td>Dr. 2: “no...no, not yet, I must run additional testing and have a psyche doctor do evaluation first.”</td>
<td>Shakes head sideways</td>
<td>&lt;Direct Gaze&gt; awaited response</td>
<td>Interrogative</td>
<td>Clinical Instructions</td>
<td>Physicians’ Orders</td>
</tr>
<tr>
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<td>Dr. 1: “do you want me to hold the medications?”</td>
<td>Voice increases</td>
<td>&lt;Back Channel&gt; indicated negative emotion. &lt;vocal intonation&gt; loudness indicated emphasis</td>
<td>Interrogative</td>
<td>Clinical Instruction</td>
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<td>Dr. 2: “Well, the patient should not be on medicine ‘m’ because that was stopped.”</td>
<td>Shakes head sideways</td>
<td>&lt;Direct Gaze&gt; indicated awaited response from doctor. &lt;vocal intonation&gt; indicated question</td>
<td>Interrogative</td>
<td>Clinical Instruction</td>
<td></td>
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<td>Dr. 2: “I have listed the medicines to be taken on the chart...let’s go with this plan for now.”</td>
<td>Looks down at chart</td>
<td>&lt;Back Channel&gt; negative emotion indicated that he was telling the doctor to stop the behavior</td>
<td>Interrogative</td>
<td>Medication Instructions</td>
<td></td>
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<thead>
<tr>
<th>Observation # 25</th>
<th>Verbal In Vivo Codes</th>
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<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
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<tbody>
<tr>
<td>Intensive Care Unit</td>
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<tr>
<td>Doctor (male) and nurse (female) engage re: patient status and treatment</td>
<td>Dr: “how is patient “x””</td>
<td>Looks directly at nurse</td>
<td>&lt;Direct Gaze&gt; indicated awaited response.</td>
<td>Clinical Inquiry</td>
<td>Clinical</td>
<td>Evaluation</td>
</tr>
<tr>
<td>Nurse: “the patient Tmax was 101.”</td>
<td>Nurse: “Yes, temperature maxed out at 101 degrees.”</td>
<td>Looks at doctor</td>
<td>&lt;Direct Gaze&gt; indicated awaited further question</td>
<td>Clinical Data</td>
<td>Clinical</td>
<td></td>
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<tr>
<td>Dr: Tmax?</td>
<td>Dr: “I stopped medicine ‘m.’” “Did you give the patient anything to eat?”</td>
<td>Quick head shake sideways</td>
<td>&lt;Gesture&gt; tilted head sideways indicated awaited further information.</td>
<td>Clinical Inquiry</td>
<td>Clinical</td>
<td></td>
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<tr>
<td>Nurse: “yes”</td>
<td>Nurse: “Ok, will do”</td>
<td>Looks down at chart while speaking Nods, continues looking down at chart</td>
<td>&lt;Gaze Aversion&gt; indicated that he wanted to continue speaking</td>
<td>Clinical data</td>
<td>Clinical</td>
<td></td>
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<tr>
<td>Dr: “Ok, that is fine, continue medicine ‘mm’ but give only one dose in the p.m.” “in the meantime, I will do blood labs to check blood sugars”</td>
<td>Dr: “I also put the patient back on blood pressure medicine”</td>
<td>Walks away while speaking</td>
<td>&lt;Back Channel&gt; indicated agreement</td>
<td>Clinical Status; Clinical Interrogation</td>
<td>Clinical</td>
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<tr>
<td>Nurse: “Ok, will do”</td>
<td></td>
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<td>&lt;Gaze Aversion&gt; indicated doctor wanted to continue speaking</td>
<td>Clinical Instructions; Clinical Procedures</td>
<td>Clinical</td>
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<td>&lt;Gaze Aversion&gt; indicated doctor was done speaking.</td>
<td>Clinical instructions</td>
<td>Physicians’</td>
<td>Orders</td>
</tr>
<tr>
<td>Observation #</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<td>26</td>
<td>Intensive Care Unit</td>
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<tr>
<td>Specialist (male) engages with nurse (female) re: patient condition; both appear familiar with context but update one another using clinical data to inform on patient treatment plan.</td>
<td>Dr: “how has patient “x” been doing? Nurse: “Appears well, actually; should we keep the patient up here or transfer to the floor.” Dr: “as long as we do not need the bed space for a critical case, we should keep the patient up here since they are still experiencing condition ‘c’.”</td>
<td>Looks at nurse Nods head up/down</td>
<td>&lt;Direct Gaze&gt; indicated awaited response &lt;Back Channel&gt; indicated positive emotion</td>
<td>Interrogative Practical Perspective Clinical Perspective</td>
<td>Clinical Status Clinical Data Clinical Inquiry Clinical Data</td>
<td>Collaboration and Coordination</td>
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<td>Dr: “what is her H &amp; H? Nurse: “It has been ranging from number ‘n’ to number ‘nn’.” Dr: “that sounds okay” “what about other labs” Nurse: “well, lab ‘l’ was in the normal range and blood test ‘b’ was normal so that was good.”</td>
<td>Voice increases Looks in the computer and points to numbers. Palm upright while asking question Looks directly at the doctor</td>
<td>&lt;Vocal Intonation&gt; loud voice as one talks can indicate questioning &lt;Illustrator&gt; indicated that she was referencing the data on the screen &lt;Hand Gesture&gt; indicated congeniality; &lt;Direct Gaze&gt; indicated awaited response.</td>
<td>Clinical Status Clinical Data Clinical Inquiry Clinical Data</td>
<td>Practical Perspective Practical Perspective Perspective</td>
<td>Clinical Testing Clinical Evaluation Clinical Assessment</td>
<td>Clinical Testing Clinical Evaluation Clinical Assessment</td>
</tr>
<tr>
<td>Observation # 27</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<tr>
<td>Pulmonary Specialist checks computer for update on patient, then visits ICU patient and engages with nurse (female) following patient assessment to discuss patient condition and treatment plan</td>
<td>Dr: So, I think I am going to leave patient “x” alone and not do procedure ‘p’;” Dr: “it’s the right thing to do” Nurse: “okay” “how is the patient doing overall” Dr: “well, since the patient is stable they do not need procedure ‘p’; so I think it’s the right thing to do given the situation.”</td>
<td>Kind of looking upward and nodding head up/down Looks directly at nurse Voice increases Looks at nurse and nods head up/down</td>
<td>&lt;Gaze Aversion&gt; indicated doctor wanted to continue speaking; &lt;back channel&gt; indicated confidence in his decision. &lt;Direct Gaze&gt; indicated awaited response &lt;Vocal Intonation&gt; indicated awaited response to question &lt;Direct Gaze&gt; indicated awaited response from nurse; &lt;back channel&gt; indicated confidence and reaffirmed his decision</td>
<td>Values</td>
<td>Norms</td>
<td>Organizational Culture</td>
</tr>
</tbody>
</table>

Social Inquiry | Values
<table>
<thead>
<tr>
<th>Observation # 28</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialist speaks to group of medical doctors regarding the use of recreational drugs and their effect on the heart”</td>
<td>Speaker: “new findings indicate that recreational drugs can have a major impact on the heart over time.”</td>
<td>Looks at whiteboard while speaking</td>
<td>&lt;Gaze Aversion&gt; wants to keep speaking</td>
<td>Recent Data</td>
<td>Clinical Findings</td>
<td>Evidence-Based Medicine</td>
</tr>
<tr>
<td></td>
<td>Speaker: “for example, some fatal incidents resulting from drug use occurred when”</td>
<td>Raises voice</td>
<td>&lt;Vocal Intonation&gt; indicated he wanted to emphasize key point</td>
<td>Clinical Example</td>
<td>Clinical Findings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speaker: 1 out of every 4 cardio patients or 25% used drugs according to recent studies which means that doctors need to screen patients to determine if this may present a potential problem”</td>
<td>Points to whiteboard</td>
<td>&lt;Illustrator&gt; supported verbal content by pointing to statistics from recent study.</td>
<td>Statistics</td>
<td>Clinical Findings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speaker: “here is a graphic illustration that shows the types of symptoms that are present”</td>
<td>Points to #’s that indicate what he is speaking about</td>
<td></td>
<td>Graphic Presentation</td>
<td>Technical Illustration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doctor: “have studies identified if certain blood pressure medications are not to be used if previous history of recreational drugs?</td>
<td>Looked at whiteboard while speaking</td>
<td>&lt;Illustrator&gt; supported verbal content with statistical data</td>
<td>Interrogation</td>
<td>Clinical Inquiry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speaker: “studies show that certain drugs are more apt to be a problem as you can see from these findings”</td>
<td>Looked at the doctor who asked the question.</td>
<td></td>
<td>Study Results</td>
<td>Clinical Findings</td>
<td></td>
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<tr>
<td></td>
<td>Speaker: “Important to take the patient’s personal history into account when developing a treatment plan.”</td>
<td></td>
<td>&lt;Illustrator&gt; indicated that verbal content was supported with statistics from recent study as noted on whiteboard.</td>
<td>Patient-Specific Data</td>
<td>Context</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;Direct Gaze&gt;</td>
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</table>
**Observation #29**  
*Intensive Care Unit*

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<thead>
<tr>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr: “how is patient ‘x’ doing?”</td>
<td>Looks at nurse</td>
<td>&lt;Direct Gaze&gt; indicated a response was awaited</td>
<td>Interrogative</td>
<td>Inquiry</td>
<td>Collaboration and Coordination</td>
</tr>
<tr>
<td>Nurse: “well, he has seemed a bit passive”</td>
<td>Looks at doctor</td>
<td>&lt;Direct Gaze&gt; indicated a response was awaited</td>
<td>Practical Perspective</td>
<td></td>
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<tr>
<td>Dr: “did he go to the bathroom and did he eat okay?”</td>
<td>Looks at nurse</td>
<td>&lt;Direct Gaze&gt; indicated a response was awaited</td>
<td>Interrogative</td>
<td></td>
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<tr>
<td>Nurse: “Yes, he ate a light breakfast today.”</td>
<td>Nods head up/down</td>
<td>&lt;Back Channel&gt; agreement</td>
<td></td>
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<tr>
<td>Dr: “good.” “I do not want to continue doing tests on this patient since there is not much else that can be done especially since age is a factor.”</td>
<td>Nods head up/down while speaking</td>
<td>&lt;Back Channel&gt; indicated positive emotion and agreement with other party.</td>
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<tr>
<td>Nurse: “agreed, so right now we are giving the patient medicines ‘m’ and ‘mm’ or shall I add any other meds?”</td>
<td>Tilts head sideways as speaking</td>
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<tr>
<td>Dr: “for now, we are set” I think the current medications will alleviate any pain and will continue to fight infection which is the goal”, Nurse: “I agree.”</td>
<td>Looks at nurse</td>
<td>&lt;Direct Gaze&gt; indicated he finished speaking</td>
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</tbody>
</table>

Hospitalist (male) engages with nurse (female) re: patient status and ongoing treatment; both appeared familiar with context where social interaction was ongoing from previous discussions...
<table>
<thead>
<tr>
<th>Observation # 30</th>
<th>Verbal In Vivo Codes</th>
<th>Non-Verbal Descriptive Codes</th>
<th>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</th>
<th>Sub-Category</th>
<th>Category</th>
<th>Theme</th>
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</thead>
<tbody>
<tr>
<td>Intensive Care Unit</td>
<td>Hospitalist (male) engages with nurse (female) re: patient status and ongoing treatment; both appeared familiar with context where social interaction was ongoing from previous discussions...</td>
<td>Dr: “see this chest x-ray; it shows us what is going on with the patient.” Nurse: “perhaps this is why the patient has been experiencing symptoms ‘s’ and ‘ss’.” Dr: “well, see this shows us condition ‘c’ is present, and this shows it may present a potential issue.” “What happens is when x happens, y happens on many occasions which causes condition ‘c’ to occur, as well...does this make sense to you?” Nurse: “yes, it makes sense.” “what happens if this were to get worse?” Dr: “well, we would treat the problem with medication to make the patient comfortable.”</td>
<td>Points to computer screen that illustrates a patient’s chest x-ray. Eyebrows raised as she looks at the x-ray. Points to x-ray. Nods head up/down. Looks at nurse. &lt;Illustrator&gt; indicated to nurse to look at the x-ray on the screen to support verbal content. &lt;Facial Gesture&gt; indicated surprised by what she saw. &lt;Illustrator&gt; indicated for nurse to continue looking at the x-ray while doctor pointed to other areas of interest to support his verbal content.</td>
<td>Clinical Data</td>
<td>Clinical Evaluation</td>
<td>Clinical Assessment</td>
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<td></td>
<td>Dr: how has the patient appeared to you? Have they been experiencing pain or discomfort?” Nurse: “overall, the patient has been okay generally speaking Dr: “how about the patient’s overall emotional state?” Nurse: well, at times the patient appears anxious while sometimes not”</td>
<td>Looks at nurse. Looks at doctor. Looks at nurse. Looks at doctor.</td>
<td>&lt;Direct Gaze&gt; indicated awaited response from nurse. &lt;Direct Gaze&gt; indicated awaited response from dr. &lt;Direct Gaze&gt; indicated he awaited the nurse’s response. &lt;Direct Gaze&gt; indicated that the nurse awaited the dr’s response.</td>
<td>Practical Inquiry</td>
<td>Practical Perspective</td>
<td>Practical Perspective</td>
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<td></td>
<td>Dr: I will have psyche do an evaluation to be sure.”</td>
<td>Looks at his notes as he finishes discussion.</td>
<td>&lt;Gaze Aversion&gt; indicated doctor was done speaking.</td>
<td>Clinical Testing</td>
<td>Evaluation</td>
<td>Clinical Assessment</td>
</tr>
<tr>
<td>Observation 31 Lobby “Grand Round” Event “Culture of Safety”</td>
<td>Verbal In Vivo Codes</td>
<td>Non-Verbal Descriptive Codes</td>
<td>Non-Verbal Interpretation (Krauss &amp; Chiu, 1998)</td>
<td>Sub-Category</td>
<td>Category</td>
<td>Theme</td>
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<tr>
<td><strong>Speaker</strong></td>
<td>“Traditionally the healthcare industry has reflected a “culture of blame” and “culture of secrecy” as the norm “current culture in the healthcare industry perceives that “well trained and vigilant professionals don’t make mistakes.” “culture of low expectation “healthcare education emphasizes error-free practice” “action plan is to develop a “culture of safety” that will encourage physicians to report errors which will lead to error reduction.” “poor communication” has resulted from “groupthink” where everyone thinks they see the same thing.”</td>
<td>Loud volume</td>
<td>Looks at slide And points to this statement</td>
<td>Nods head sideways while speak</td>
<td>&lt;vocal intonation&gt; indicated speaker making a key point</td>
<td>Traditional Culture</td>
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<tr>
<td><strong>“Traditionally, Hospitals react to errors as though they occur in isolation; as an anomaly”</strong></td>
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<td>Cultural Perception</td>
<td>Cultural Expectations</td>
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<td><strong>“According to the institute of Medicine (2000) 44,000 to 98,000 deaths annually due to adverse medical events due to human error.”</strong></td>
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<td>Historical Experience</td>
<td>Historical Findings</td>
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## Appendix N: Semi-structured Interviews - Data Analysis

<table>
<thead>
<tr>
<th>Question 1: Primary Theme: Communication</th>
<th>Secondary Themes: Collaboration and Coordination</th>
<th>Organizational Culture</th>
<th>Evidence-Based Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories: Communication Context, Communication Medium, Cross-Functional Communication Perspectives, Interpretation Communication Structures, Meetings Scientific Research</td>
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<thead>
<tr>
<th>Doctor</th>
<th>In Vivo Quote</th>
<th>Axial Codes</th>
<th>Sub Category</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>“Ask physicians for their opinions and ask nurses for an objective measure of how they have observed their patients acting”</td>
<td>Ask physicians for their opinions, Ask nurses’ for an objective measure of how they observed their patients acting</td>
<td>Subjective Perspective Objective Perspective</td>
</tr>
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<td>2</td>
<td>“Depends on the clinical circumstance; depends on the clinical context.” “access patient notes on the electronic medical record”, “might call a physician; sometimes they are available by pagers and cell phones”</td>
<td>Depends on the clinical circumstance, Access patient notes on electronic medical record, might call physician</td>
<td>Situational Communication Indirect Communication Channel Direct Communication Channel</td>
</tr>
<tr>
<td>3</td>
<td>“With physicians, namely one way is direct communication; either face-to-face or over the phone or by looking at what they’ve already written in the medical record” “With nurses either face-to-face on the floor, over the telephone; verbal communication, and lastly by looking at their written notes in the hospital chart.”</td>
<td>Namely one way is direct communication either face-to-face or over the telephone, by looking at what they’ve already written in the medical record. With nurses face-to-face…over the telephone; verbal communication lastly by looking at their written notes in hospital chart</td>
<td>Direct Communication Channel Indirect Communication Channel Direct Communication Channel</td>
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<td>4</td>
<td>“Somebody will call me for a consult and it will be dictated into the electronic record; sharing the process usually starts with the dictation” “Quite common for me to get hold of the other doctor …usually by telephone…sometimes send an email” “I may get questions, I may get agreement, I may get disagreement; there is generally feedback.”</td>
<td>Quite common for me to get a hold of the other doctor usually by telephone...sometimes send an email</td>
<td>Direct Communication Channel</td>
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<td>5</td>
<td>“If it’s a consult that I feel reasonably confident, I don’t usually consult other consultants”, “Rarely do I pick up the phone and ask another doctor”, “I’m the senior guy; usually other doctors ask me”, ”go with my own knowledge base and experience” “If it’s something I haven’t dealt with recently usually consult to get up-to-date or even Google on that topic”</td>
<td>If it’s something I haven’t dealt with recently usually consult to get up-to-date even Google on that topic</td>
<td>Direct Communication Channel</td>
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<td>6</td>
<td>“It happens face-to-face, phone call, when we do our rounds” “we speak to the nurses every day; they are the front line to our patients for delivery of care” “when there are consultants who are consulting on my patients we talk to them; easier than looking on the chart and easier to see what their impression is or what they were thinking about the patient” “more one-on-one; that’s what we like; does it happen all the time, no, but that’s what we would like to see happen; “ different comfort levels for different providers; some of them are very open to sharing the information while some providers would not be as forthcoming as far as knowledge sharing”, “for the most part the engagement happens”</td>
<td>it happens face-to-face, phone call, when we do our rounds when there are consultants who are consulting on my patients we talk to specialists to see impressions and thinking process, generally encourage one-on-one interaction; continuously engage with nurses</td>
<td>Direct Communication Channel</td>
</tr>
</tbody>
</table>
Interaction is face-to-face, interactions can take form as interdisciplinary team meetings, rounds, and nursing reports; fair amount of information sharing takes place in an informal way such as walking into the office of a social worker or into the nursing units., "I generally do not engage the other physician face-to-face or directly", indirectly through the patient’s electronic chart to seeing what the other physician has written in the electronic record.

At weekly tumor board meetings, open forum, might call a consultant, more rarely send note through electronic record.

Do it in person verbally….it is more effective.

“Summarize it in my chart” if further clarification is needed email….specific questions using electronic medical record or call them only if needed.

“By our notes stating the latest evidence” “Educate the internist to understand my train of thought” “Quality improvement meetings… multidisciplinary” “Quality committee is a system to make sure …all healthcare providers engage into this model to collaborate” “Other ways, weekly Tumor Board meetings, Weekly GI meetings, Grand Rounds”, “on everyday basis a phone call is most effective”, “also use electronic medical record where we share information”.

Send flag using EMR if in same system…maybe a text, send email or call those outside our system.” Only see other doctors at hospital meetings and Grand Round where we can talk for a few minutes but that is not regular’.

Send flag using electronic medical record maybe a text Send email or call ‘At hospital meetings and Grand Round”

Direct Communication Channel Inter-disciplinary Team Meetings Indirect Communication Channel Informal Communication
**Question 2: Primary Themes:**
- Collaboration and Coordination
- Communication
- Secondary Theme: Organizational Culture

**Categories:**
- Group Dynamics, Mutual Understanding, Context, Perspective, Inquiry
- Corroboration, Interpretation
- Communication Channel, Audience-Analysis, Message Continuity
- Norms, Structure, Prescribe

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<thead>
<tr>
<th>Doctor</th>
<th>In Vivo Quote</th>
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<th>Sub Category</th>
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<tbody>
<tr>
<td>1</td>
<td>“you can tell by the person’s nonverbal and verbal response whether or not you’re making sense,” “I’m often the bridge between the laboratory… I will often bring clinical information to them from my field and ask them (nurses) the questions about what I need to know”, “whether it’s the objective findings or whether the patient has been in pain”, “to be accurate I talk with nurses and if it’s something that I am specifically looking for”, “if the nurse doesn’t realize what I am looking for…. I will describe to the nurse the specific circumstances of what I’m looking for”, “people mean different thing by diarrhea…so, I will often explain to the nurse EXACTLY what I mean or that certain tests can only be done with certain kinds of specimens”, “I will explain that and say put that in your note because I always read the nurses’ notes”, “I will say, I’m going to be the one reading your note SO PLEASE include that down even if it’s a negative”</td>
<td>“by the person’s response…nonverbal or verbal” “ask them (nurses) the questions about what I need to know…objective findings or whether the patient has been in pain” “to be accurate I talk with nurses…describe to the nurse the specific circumstances of what I’m looking for…people mean different things by diarrhea” “explain that and say put that in your note” Document all clinical observations and actions</td>
<td>Verbal Communication Non Verbal Communication Seek Explanation Seek Clinical Perspective</td>
</tr>
<tr>
<td>2</td>
<td>“written record of a patient consultation can ensure clarity”, “certain aspects of a record remain confidential to non mental health professionals…. so I make some extra phone calls to the other colleagues”</td>
<td>“Written record can ensure clarity” “make some extra phone calls to the other colleagues”</td>
<td>Written Communication Verbal Communication</td>
</tr>
<tr>
<td>3</td>
<td>“through interpersonal communication…whether face-to-face or over the telephone”, “as importantly, writing my impression or viewpoint in the written electronic record” “Do not veer from my spoken word with the allied professional or my written message in the permanent medical record”, “one way to ensure, is that you continue to check on the patient”, “the gold standard is to make sure to follow up or look back on the patient to ensure that your recommendations are being enacted on the way you intended”, “make sure that the individual you are speaking to understands completely what you’re telling them by asking them”, “give your impression and recommendations, then say, “do you understand” to get verbal acknowledgment”</td>
<td>“face-to-face or over the telephone” “Writing my impression…in the written electronic record” Do not veer from my spoken word….or my written message in the permanent medical record” “gold standard ….follow-up on the patient to ensure your recommendations are being enacted in the way you intended” “Make sure individual… understands completely what your telling them by … verbal acknowledgement”</td>
<td>Verbal Communication Written Communication Message Consistency Indirect Confirmation Verbal Consensus</td>
</tr>
<tr>
<td>4</td>
<td>“Phone calls, email messages, sometimes a text message if that’s appropriate”, “follow-up visits, follow-up phone calls, question…sometimes, I get questions put to me, I get emailed”, “I send back a message in kind either email, telephone depends on how they sent”, “sometimes, you find out that the message has gotten through because the phone doesn’t ring; patient is better and so there is no communication.” “a letter from referring doctor who sees the patient in follow-up”, “inpatient situation, feedback will come with telephone calls…face-to-face…where I will clarify”</td>
<td>“phone calls, email, text follow-up visits” “a letter from referring doctor who sees the patient in follow-up” “inpatient situation, feedback will come with telephone calls…face-to-face…where I will clarify”</td>
<td>Verbal Communication Indirect Confirmation Written Communication Verbal Communication Provide Clarification</td>
</tr>
<tr>
<td>5</td>
<td>“keep the assessment plan or notes concise and clear”, “at the very end of the note, I have a very well defined area where I spell out my thoughts and what I wish to see happen”, “follow-up with patients”, “ascertain or monitor to see that what has happened is what I want to see happen”, “order test myself”, “follow-up with patient; ensure it was done “that” “take steps to make sure that what I want to see happen, happens”, “Don’t know that they’ve understood the messages as intended….”</td>
<td>“Keep notes concise and clear….spell out thoughts” “order test myself” “Follow-up with patients to see what’s happened is what I want to see happen” “take steps to make sure what I want to see happen, happens” “trust they will call if they don’t understand”</td>
<td>Written Communication Order Tests Indirect Confirmation Self-Initiate Actions</td>
</tr>
<tr>
<td></td>
<td>As a specialist, I have specialized knowledge that some primary care physicians trust they will call if they don’t understand”, “it’s not that they didn’t understand the mechanics of what I said, but that they didn’t understand the concepts of what I was saying that they will call about” “have to assume that they understand. I’m assuming they (physicians) can grasp the medical concept”</td>
<td>“assume that they (physicians) can grasp medical concept”</td>
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<td></td>
<td>“with nurse; it’s on the phone…read it back to nurse to make sure…when I give order to the nurse she must read it back to me to confirm this is what I meant”, “with providers, I don’t think the read back happens often, but if there is a lack of understanding…I would not hesitate in saying I do not understand”, If there is any question that she (nurse) misunderstood we will start the whole process again including the thought behind what I am doing and what it means”, “sometimes the order will not make sense and it’s not the medication itself, but the question is on why we are doing it for the patient….that’s where the thought process comes in…helps us get on the same page.” “Best forum for any questions…on any of my patients away from the mainstream”</td>
<td>“read it back to nurse to make sure…to confirm this is what I meant” “if there is a lack of understanding….saying I do not understand” “any question…start whole process over” “explain by including thought behind process and what it means”, “Sometimes question is why we are doing it….that’s where the thought process comes in”</td>
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<tr>
<td>6</td>
<td>“in an interdisciplinary team there’s a lot of back/forth interplay that can happen”, “verbal and nonverbal cues…shaking head “yes”, looking puzzled or perplexed sort of clues to use”, “I do not ask direct question like “do you understand what I’m saying” but I do ask a more general question “are there questions or issues that need to be brought up…to determine if there’s other relevant pieces that I’ve discussed but were not understood or not discussed and need to be discussed”</td>
<td>“there’s a lot of interdisciplinary interplay” “verbal and nonverbal cues”, “shaking head, looking puzzled or perplexed “ask general question”</td>
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<td>7</td>
<td>“something routine; I just write a note….as documentation of what I’m doing…and send to primary care provider or nurse practitioner”, “something out of the ordinary; acute, I send flag directly to the person through electronic medical record in addition to sending my note to them”, “if something needs to be addressed immediately, I would call the specialist; if hospitalist I would physically track them down.”</td>
<td>“something routine, just write a note …documentation and send to PCP or nurse practitioner” “acute, I send flag through electronic record in addition to sending note” “if something needs to be addressed immediately, call specialist or physically track them down”</td>
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<td>8</td>
<td>“presume if there’s question they will call me directly”, on specific issue may send note and wait for response…keep on desktop as active note until comfortable that the info was received”, “If medical clearance for surgery give patient note to take to other doctor and fax note to the provider or send note electronically depending if provider is on same system”, “certainly don’t follow up on every note that I send to a provider.”</td>
<td>“Presume if there’s a question they will call me directly” “specific issue may send note “fax note to the provider” “keep on desktop as active note until comfortable that the information was received” “send electronically if provider shares same system”</td>
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<td>9</td>
<td>“Best forum for any questions…on any of my patients away from the mainstream is sitting together that is the best method; group participation…perhaps a phone call to a different referring physician, on plastic surgery, is reasonable, but they are still not as good”, I present case from my point of view and what concerns are and supplement with objective data (x-ray or pathology slide) then data is looked at and they can ask me questions”, “working together over time…we have a philosophy approach to certain ways of treating patients so we know what we’re talking about, we’ve gone to joint conferences together…. we speak the same language”</td>
<td>“Questions away from mainstream…sitting together is best method…group participation” “working together over time developed philosophy approach for treating patients” “present case from my point of view…. and supplement with objective data” “data is looked at and they can ask me questions” “we speak the same language”</td>
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<td>10</td>
<td>“If communicating with peers I might not ask if they understood; may find insulting” “As a specialist, I have specialized knowledge that some primary care physicians</td>
<td>“I have specialized knowledge… may tell PCP why I am doing it and these are the pathogens we might expect in that particular condition”</td>
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might not possess… rather than just give an answer, I tell them “why” I am doing it…so I say use this antibiotic, this is the reason why, and these are the pathogens we might expect in that particular condition”, when speaking to a nurse, etc. might answer a question if queried, but then ask them if they understood what I meant or what my answer meant… might nod their head and acknowledge, but may have no idea what I’m talking about… language and abbreviation in certain disciplines less familiar to other people on healthcare teams; one has to be careful; one has to be mindful all the time of who they’re speaking to, their language, and the level of knowledge capabilities” “Best teachers are those that don’t use superior knowledge as a lever of power; but as a lever of understanding; “I try to emulate them and make sure that people know what you’re talking about.”

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<tr>
<th>12</th>
<th>“check with the patient either in the office or over the telephone to see if my recommendation went through”, “will check the chart in the electronic record”</th>
<th>“check with patient; in office…over the telephone to see if my recommendation went through” “check chart on electronic record”</th>
<th>Indirect Confirmation</th>
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<tr>
<td>13</td>
<td>“Measures are drawn by the Quality Committee on the measures that we need to meet”, “We can communicate all this but we don’t know that they are being followed”, “Quality Committee installed software in the EMR system for tracking…PCP required to “click” and update all patient information”, “Communicate amongst each other through the electronic system …know the physicians involved with that patient care and we can “click” to see if the tests have been met”, “There is a routine in place…each of us is expected to update the record so we can share information”</td>
<td>“Communicate amongst each other through the electronic system…we “click” to see if the tests have been met” “routine in place…each of us is expected to update the record so we can share information”</td>
<td>Indirect Confirmation Routine</td>
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<td>14</td>
<td>“Part of the electronic medical record; If I have question for another physician about a patient…Its incorporated as part of the electronic record so I have access”, “to make sure it was done, I follow-up with the patient…We have measures in place to close the loop on everything…have referral tracking”</td>
<td>“to make sure it was done, I follow-up with the patient” “we have measures in place…referral tracking”</td>
<td>Indirect Confirmation Electronic Tracking Measures</td>
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### Question 3: Primary Theme: Communication

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<th>Axial Codes</th>
<th>Sub Category</th>
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<tbody>
<tr>
<td>1</td>
<td>“Developed patter about what diarrhea is…. learned it’s an individual subjective term”, “trying to change some of the forms in the computer…so when we have a patient with an infection…this is the way we do”, want to know the number of times they changed sheets, did you have to change because there was one little mark or because the patient was totally incontinent”, “important in clarification to specify what it is that you’re looking for in “literal graphic terms…if not, that person’s meaning may not coincide with yours and you might be working at cross-purposes.”</td>
<td>“subjective term”</td>
<td>Subjective Meaning</td>
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<td>2</td>
<td>“Every specialty has a certain amount of jargon”, one must be aware that commonly used terms among Psychiatrists is not always clear to non-Psychiatrists,” “saving it explicitly in plain English.”</td>
<td>“every specialty has jargon …not always clear to non-psychiatrists”</td>
<td>Jargon</td>
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<td>3</td>
<td>“One abbreviation for one subspecialty physician could have same abbreviation for another subspecialty that means totally something different”, As an example, “MR” to a cardiologist means mucho regurgitation “MR” to a neurologist may mean mental retardation or “MS” to a cardiologist could be mucho stenosis and “MS” to a neurologist is Multiple Sclerosis “just clarifying this is a big issue in medicine, clarifying what abbreviations you are referring to”</td>
<td>“abbreviation for one subspecialty could have same abbreviation for another”</td>
<td>Multiple Meaning</td>
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<td>4</td>
<td>“if somebody doesn’t understand they will just TELL me either by phone or by email”, “if I feel strongly about something and I’ve explained it to another doctor and I’m not sure they got the message, I’ll call back”, “If something needs to be done in a certain time frame…certain order, I deliver message over the phone and call back the provider and then call the nurse taking care of patient to ensure what I wanted was done” – “a lot of redundancy.”</td>
<td>“If I feel strongly about something and I’ve explained it to another doctor and I’m not sure they got the message”</td>
<td>Ambiguous Meaning</td>
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<td>5</td>
<td>“With non physicians right there at the get-go; clarify everything; don’t assume they’re going to know what I’m talking about”, “with other doctors may abbreviate; little shortened-phrases…would never use that with nursing or non-physicians”, “if it’s a non-physician I won’t assume they know what I’m speaking about…won’t use abbreviations won’t use short phrases; I will spell it out”, “you never know if people will understand what you mean.”</td>
<td>“with non-physicians don’t assume they know….would never use abbreviations or short narratives…never know if people will understand what you mean”</td>
<td>Abbreviations</td>
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<td>6</td>
<td>“Happens with accents..can always be a sort of confusion as basic as name of the patient; patient name difficult to pronounce”, “spell it out”…“room number, identify patient number, same for medication use ordinate names…if not generated, use trade names to make sense of the medication”, “as far as jargon, not had issues because it is standard diagnosis.”</td>
<td>“happens with accents….spell it out”</td>
<td>Accents</td>
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<td>7</td>
<td>“People will use words in a colloquial way…can imply a myriad of different things”, “confusion” can mean…many things”, “means you have to clarify and be more specific about what it means.”</td>
<td>“people will use words in a colloquial way”</td>
<td>Multiple Meaning</td>
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<td>8</td>
<td>“Try VERY hard not to use endocrine specific jargon” “if I do use jargon explain what it is”, “say in my notes, this person has …but then in brackets say this consists of…”, “try not to use language that whoever my information is directed at would not readily know that what means”</td>
<td>“in my notes If I do use jargon explain what it is….in brackets say this consists of”</td>
<td>Jargon</td>
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<td>9</td>
<td>“Biggest issue would be misunderstanding about medication”, “try to be succinct”, “if I don’t understand what the person is saying or they don’t understand what I’m saying frequently I just pick up the phone and talk to them directly…don’t have a way to know whether another person can or can’t interpret what I’m saying”, “with a provider I presume they know what I’m talking about”</td>
<td>“misunderstanding about medications”</td>
<td>Misinterpretation</td>
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<td>10</td>
<td>“Sometimes have to repeat with different description”, “Bring up recent study where you can bring in the scientific data; that is what you can rely on the most”, “most difficult when physician isn’t as familiar, doesn’t come to meetings as regularly… so they don’t understand the language; hard to get the message through…hard to get them to change”, “They need to be better educated”, “you</td>
<td>“when physician isn’t as familiar…don’t understand the language…hard to get the message through”</td>
<td>Unfamiliar Language</td>
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<td>1</td>
<td>“some specialty domains are rife with abbreviations that their communications are sometimes not understandable”, “people in some disciplines have desire to communicate succinctly using abbreviations, but they have to remember that the listener may not know those abbreviations”, “use of abbreviations has been an ongoing problem in medicine”</td>
<td>“some specialty domains are rife with abbreviations that their communications are sometimes not understandable”</td>
<td>Abbreviations</td>
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<td>2</td>
<td>“we take care of complicated illness that are not familiar to primary care doctors so I try to be thorough in my notes and explain what I’m looking for and the purpose of the medical plan; express through my electronic notes”</td>
<td>“complicated illnesses that are not familiar to primary care physician”</td>
<td>Unfamiliar Language</td>
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<td>3</td>
<td>“For PCP jargon would mean ….for specialist…that is absolutely not ……..involves a completely different mindset”, “Jargons can get a little bit confusing; semantics: meaning varies from one specialty to another”</td>
<td>“jargon can get a little confusing”</td>
<td>Jargon</td>
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<td>4</td>
<td>“Order entry not clarified properly in electronic medical record…we have to write “other” and then physically enter the order…type in manually the actual description of the order; Does not specify what part of the arm to x-ray, for example…does not have option or checkbox on the drop-down list so we have to manually enter it and provide description of problem and profile of patient indicating what happened”, “this is a situation where we have to clarify for the radiologist to actually see what we are looking for”</td>
<td>“order entry not clarified properly on electronic record…no option on drop-down list …this is a situation where we have to clarify for the radiologist to actually see what we are looking for”</td>
<td>Ambiguous Meaning</td>
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<td>Doctor</td>
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<td>Axial Codes</td>
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<td>1</td>
<td>“the patient is more than the sum of their laboratory values”, “doesn’t mean that I don’t use the labs”</td>
<td>“patient is more than sum of their lab values”</td>
<td>Scope</td>
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<td>2</td>
<td>“lab reports are less common”, “speak directly to the person about the test results and ask if they have questions”</td>
<td>“speaking directly to the person about the test results…ask if they have questions”</td>
<td>Clarification</td>
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<td>3</td>
<td>“Most important that we’re talking about the same lab report; If talking with nurse about sodium level, make sure that we’re talking about same sodium level, same blood test, for the same patient”, “Lot s of confirmation between myself and other healthcare professional…this is the primary measure that I use to ensure that we are on the same page”, “If something appears abnormal I call depending on scenario another physician or nurse involved in the case and go over the results with them”</td>
<td>“most important that we’re talking about the same lab report…same sodium level…blood test…same patient to ensure that we are on the same page”</td>
<td>Corroboration</td>
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<td>4</td>
<td>“there’s a lot of that already…we’ve all gone to medical school and we all share a body of knowledge”, “When it comes to pointing out something in a specialty situation, my findings from a test…I will make sure that’s understood either with a direct conversation or …go over pictures with somebody and ask questions, “did you see this”, “I have to take initiative and call the other person”, “redundancy is important”</td>
<td>“make sure that it is understood…go over pictures …and ask questions”</td>
<td>Awareness</td>
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<td>5</td>
<td>“focus on the abnormal and what it may mean”, “Go through differential with them (team) to establish common understanding to ensure we are looking at the abnormal”, “I say this could be due to several reasons “this is what I think it’s due to”; so we understand the scope of what we’re talking about”</td>
<td>“go through differential to establish common understanding to ensure we are looking at the abnormal”</td>
<td>Understanding</td>
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<td>6</td>
<td>“medical jargon is very common and standard…everybody goes through it at medical school”, “To interpret what a number means is always a relative comparison”, it shows what this was yesterday and what it is today”</td>
<td>“to interpret what a number means is always a relative position”</td>
<td>Scope</td>
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<td>7</td>
<td>“talking about it…if particular concern raises issue”, “sometimes there are norms for like laboratory data … I may have concerns even if they are within the norm that has to be articulated….this is the level of this particular lab test result BUT I’m worried about xyz”</td>
<td>“this is the level of this particular lab test result but I’m worried about xyz”</td>
<td>Insight</td>
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<td>8</td>
<td>“Anything I order, the doctors have access to on electronic record…If something routine or abnormal is expected; I just sign off, I don’t communicate with the other physicians” “If something unexpected and I’m comfortable dealing with it and it’s not urgent I would send a flag to the PCP or specialist through electronic record; If I thought it was REALLY unusual, I would call”, “Usually do routine…tests on my diabetics…if they are unusually high or a change, I send flag to PCP and say, “I got this and it is unusual, wanted to make sure you’re aware”…because this is out of my wheelhouse”</td>
<td>“Anything I order, the doctors have access to on electronic record”</td>
<td>Documentation</td>
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<td>9</td>
<td>“If question about a lab report that another provider ordered, might print out lab report, write question or comment or indicate how I’m going to follow-up that lab report and fax to provider”, “taken the instructions that the other provider has given to patient and changed it… so must keep other provider “in the loop” because he’s the one that ordered the medication; he gets copies on whatever notes I’ve written, but I’m not actually talking to him; faxing it to him… piece of paper is better than talking to people on the phone because you can’t get them on the phone a lot of times”</td>
<td>“if question/comment on lab…indicate how I’m going to follow-up that lab…must keep other provider “in the loop”</td>
<td>Awareness</td>
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<td>10</td>
<td>“don’t do many lab results, but on other tests we work as a team….team approach, especially in cancer, we work together as a team”, “we all agreed as a group what the important things are; descriptive terms; if questions we just call and say, “I just wasn’t sure what you meant about this”</td>
<td>“all agreed as a group what the important things are, descriptive terms”</td>
<td>Scope</td>
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<td>11</td>
<td>“If the x-ray report says pneumonia, blood report says diabetes; I explain to caregiver that the patient has pneumonia and diabetes”, “In a number of cases not every case, I may print out something on the computer and put in the record about”</td>
<td>“explain to the caregiver what patient has pneumonia and diabetes”</td>
<td>Documentation</td>
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<td>12</td>
<td>“I take responsibility for things that I order; enter all tests ordered and all interpretations of the results and my instructions into the electronic record that is shared and can be accessed by other providers”, “something that needs follow-up by primary doctor. I usually flag them in the electronic record.”</td>
<td>“enter all tests...interpretations...instructions into electronic record that is shared.... by other providers” “something that needs follow-up …flag in the electronic record”</td>
<td>Documentation Awareness</td>
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<td>13</td>
<td>“Specialist and radiologist and subsequently the patient must be on the same page” “Need to meet face-to-face and together we look at the mammogram or MRI...say, “I’ve seen the patient this is what I think, I want to know from your radiological standpoint how concerned are you about his lesion”, “Really critical that we meet and look at the same study and we evaluate because abnormal results can fall through the crack...If radiologist reads something that I misinterpret as not concerning and it may be or the radiologist reads something I feel there’s urgency to but there may not be’, “Best way is to interact face-to-face...there are multidisciplinary meetings... Everyone (multidiscipline) sits around the table and review patient cases ...opportunity where we are person to person, can say, “how concerned are you about this image”</td>
<td>“specialist and radiologist.....must be on the same page”, “together we (specialist and radiologist) look at the MRI” “critical that we meet and look at the same study and evaluate because abnormal results can fall through the crack” “say, this is what I think...want to know your radiological standpoint”</td>
<td>Corroboration Corroboration</td>
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<td>14</td>
<td>“Order entry...but it’s unclear on what we are looking for...I’ll have to type it in manually because the lab will not know what to draw if the order is unclear...have to clarify...very explicit; detail exactly what I am looking for...don’t want them to order the wrong test”</td>
<td>“type it manually because lab will not know what to draw if the order is unclear” “have to clarify...exactly what I’m looking for”</td>
<td>Specification Clarification</td>
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<td>Question 5: Primary Theme: Evidence-Based Medicine</td>
<td>Categories: Context, Corroborate, Interpret, Protocol, Clinical Perspective, Scientific Data</td>
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<td><strong>Doctor</strong></td>
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<td><strong>Axial Codes</strong></td>
<td><strong>Sub Category</strong></td>
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<td>1</td>
<td>“lab data is important; you can’t guess what the cultures will grow, cant guess patient’s blood counts so you need all the interpretive tests, as well….but the patient is not just their x-ray”, “Patient got better and we elected to treat the x-ray; not something wise to do…but the chest x-ray still showed it was abnormal”</td>
<td>“lab data important” “can’t guess what cultures will grow…blood counts…you need all the interpretive tests”</td>
<td>Objective Perspective</td>
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<td>2</td>
<td>“sometimes we use scales to assess so there is objective data…sometimes we rely on a patient’s subjective sense of things memory so there is objective data”</td>
<td>“sometimes we use scales to assess so there is objective data” “sometimes we rely on a patient’s subjective sense of things”</td>
<td>Objective Perspective Subjective Perspective</td>
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<td>3</td>
<td>“use clinical data in a variety of ways”, “based on history that patient gives me, findings from my exam, and accompanied laboratory data, I form my clinical expression”</td>
<td>“based on history…findings from exam…and lab data…I form my clinical impression”</td>
<td>Historical Perspective Subjective Perspective Objective Perspective</td>
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<td>4</td>
<td>“look at it, gather it… look at all the pieces of evidence that you think you need and make decision…gather it on blood tests, x-rays, on computer…sometimes pick up the phone and say “I think there’s a mistake”, “I could get x-ray report where I know what I’m looking for and something is clearly mis-worded, misspelled, so I call radiologist, pathologist if I think there’s a mistake” “there’s a lot of back and forth; one-on-one interaction; at least there should be” “have an impression of what I think the problem is… order tests that should conform …If tests don’t conform… pressing my questions with phone call, email, computer. “ I’m used to doing with my own voice but more and more stuff is emailed”</td>
<td>“look at it (data)…gather pieces of evidence…make decision” have impression of problem …order tests that should conform” “if tests don’t conform…pressing my questions”</td>
<td>Objective Perspective Validation</td>
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<td>5</td>
<td>“use frequently; usually refer to numbers as an objective assessment of the patient’s function… use that information to assess if the condition is unchanged or if changed for better or worse”</td>
<td>“refer to numbers as an objective assessment” “use information to assess if condition is unchanged”</td>
<td>Objective Perspective Benchmark</td>
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<td>6</td>
<td>“look at the reading, look at patient, ask do these things match” “is this what I’ve read in the books and this is how will I follow through” “I decide does patient need to see specialist to make final diagnosis, if data is contradictory”</td>
<td>“look at the reading…at patient…..do these things match” “is this what I’ve read in the books” “decide does patient need to see specialist to make final diagnosis if data is contradictory”</td>
<td>Validation Objective Perspective Seek Validation</td>
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<td>7</td>
<td>“Lab data must be put into context of overall assessment and overall formulation of that particular clinical situation”, “rare to look at lab results in narrow or isolated way and then prescribe treatment irrespective of any other factor” “Much more common to have some knowledge about patient formulation, what’s going on, what should be happening, and use lab data to strengthen your formulation, change or refute it”</td>
<td>“lab data must be put into context of overall assessment and overall formulation of particular clinical situation” “use lab data to strengthen your formulation, change or refute it”</td>
<td>Relative Perspective Validation</td>
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<td>8</td>
<td>“new patient review chart…see what primary care’s concern is”, “review medications, review past medical history in the chart, look-up whatever work-up has been done, lab testing, imaging studies?” “if patient is not in the system it is a black hole…interview patient, ask what’s been done; patient’s understanding of their issues”, “have my staff track down lab and test results or consults done somewhere else”</td>
<td>“see what primary care physician’s concern is…review medications…history…look up …lab testing, imaging”</td>
<td>Subjective Perspective Objective Perspective</td>
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<td>9</td>
<td>“Depending on the test results, decide what changes need to be made and write that to the patient”, “Can’t look at patient and tell if their diabetes is in or out of control; use blood test to determine treatment plan”, “treatment depends on a lot of stuff and…on the clinical presentation… if really symptomatic I will use</td>
<td>“depending on the test results, decide what changes need to be made” “use blood test to determine treatment plan” “labs and tests helped me decide not to do anything</td>
<td>Objective Perspective Standards</td>
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certain medication; want to see if I can level-out things "if patient is symptomatic and lab work, x-ray, EKG, comes back normal while patient informs me that they took allergy medication, the labs and tests helped me decide not to do anything since they were normal; had they been abnormal, I might have done something; clinically couldn't quite tell but the labs helped me out.

| 10 | "Through my training and conferences; definitely from seeing patients and taking care of them for many years…use data as a background, but I’ve learned much more day-to-day hand-on seeing patients, talking with them about their experiences, what I can do better; feedback”  
"I train nurse practitioner by constantly talking with her showing her scientific data but also talking about some of my experiences and she internalizes and applies as her knowledge base”  
Each person is an individual so you have the data…but then you always apply it to the individual. | "use data as background”  
"train nurse practitioners by constantly talking with her showing her scientific data and also talking about some of my experiences”  
Each person is an individual so you have the data…but then you always apply it to the individual. | Historical Perspective  
Objective Perspective  
Relative Perspective  
Relative Perspective |
| --- | --- | --- | --- |
| 11 | “I usually get data from patients’ who tell me their symptoms… ascertain and incorporate their symptoms and risk factors in some hierarchical category, and make hypothesis as to what might be causing problem and supplement that finding by looking at patient”” given hypothesis, does the exam support or dispute hypothesis and then might achieve a diagnosis and treatment plan”;  
"sometimes, if you don’t have sufficient precision you resort to lab testing, x-rays, and the like; can get quite exhaustive if disease is unusual”, “just by asking that simple question you change the hypothesis”, “using your knowledge of disease states, you can achieve a fair amount of precision …. based upon simple hypothesis generation”, “the context shapes the data” | “does the exam support or dispute hypothesis”  
“if you don’t have sufficient precision you resort to lab testing, x-rays, and the like”  
“context shapes the data” | Validation  
Objective Perspective  
Relative Perspective |
| 12 | It is supportive evidence from what you hear from patient; use data to “tease-out” diagnosis; helps narrow down the patient’s clinical symptoms” | “use data to “tease-out” diagnosis…narrow done the patient’s clinical symptoms” | Validation  
Provide Explanation |
| 13 | “Data is published…becomes available … via national meetings… this is how I become aware of the latest evidence-based technical data that says…’you should do this with this data’; then I implement into my practice…at Tumor board via EMR or meetings we discuss these findings so that everyone else is aware of a change in practice….new evidence has shown that we treat this way”; ‘data itself plays a big part…data has absolutely an important role and can be easily accessed in the EMR”, “If you think it’s clinically necessary you do it and the data either confirms or declines your hypothesis” | “latest evidence based technical data that says…you should do this with this data”  
“data either confirms or declines your hypothesis” | Standards  
Empirical Findings  
Validation |
<p>| 14 | “When I do order tests, I’m usually looking for something; it usually confirms whether what I’m thinking is actually happening” | “usually confirms whether what I’m thinking is actually happening” | Validation |</p>
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<tr>
<th>Question 6: Primary Theme: Organizational Culture</th>
<th>Categories: Cooperative, Social Environment, Networks, Norms</th>
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<td><strong>In Vivo Quote</strong></td>
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<tr>
<td><strong>Doctor</strong></td>
<td><strong>Emotional Stability</strong></td>
</tr>
<tr>
<td>1</td>
<td>“Social pleasant conversation is a way of maintaining emotional stability for our customers; we are not bringing emotional or social baggage forward with our interactions with our patients”</td>
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<td>2</td>
<td>If you have a comfort level …people feel more comfortable asking about technical things they might not otherwise bother doing; “really important to have that level of comfort”, “I f you don’t have that kind of comfortable level, people would often not bother calling.”</td>
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<td>3</td>
<td>“Good deal of social interaction with nurses and doctors; helps get comfort level with the other person; once there’s a comfort level with the other person data flows between the two parties more easily and If you’re more comfortable to ask questions and query other person it forms level of trust.”, “Establishing a good social interaction is key to good communication.”</td>
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<td>4</td>
<td>“If another healthcare professional knows you, they have more confidence, certainty, and acceptance of what you say”, “If you’re a stranger and call to tell them something there may be some hesitancy or skepticism…if you’ve had a working relationship built up over the years there’s more acceptance because they’ve seen you be accurate again and again and again”. If it’s a total stranger you know you should trust what they’re saying, maybe not!</td>
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<td>5</td>
<td>“Helps a lot; it encourages a teamwork mentality”; “If they’re not used to functioning on a team as equals in a hospital it becomes a top-down hierarchy like the old days; very inhibitory for them, not so much for me”, “when you put the ‘white coats’ down and we’re out in a social it’s more of a level playing field or at least perceived as a level playing field…helpful because barriers are dropped …hopefully when you come into a working environment the barriers STAY dropped! “More effective bilateral communication”, “Going out for a beer or two makes that happen!”</td>
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<td>6</td>
<td>“Very helpful from a personal level”, “if it’s not about patients it’s about baseball…and if you would not know…the openness would not be there”, “If you have a comfort level …people feel more comfortable asking about technical things “To me it makes the day go by easier because eventually your work becomes your community”</td>
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<td>7</td>
<td>“In a minimal way; tend to be private with my social discussions; for the work I do, I think it is minimal”, “ It’s different for different levels, so I’m a medical director and social conversations tend to be very brief and superficial…staff psychiatrists’ tend to have lunch with staff…talking about what they’re doing for the weekend… I tend not to do that”</td>
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<td>8</td>
<td>“Used to have drug lunches fairly often…see other physicians …more often, now don’t have drug lunches …can literally go weeks without seeing any other physician; social conversations are much less frequent now than in the past…it is not routine anymore…drug companies can’t come in and sponsor lunch anymore”, “Benefit of social conversation …makes you more comfortable calling that person for curbside information”</td>
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<td>9</td>
<td>“Over the years, I’ve met many of the providers…. small hospital in the community…feel pretty comfortable just picking up the phone and just talking with somebody or leaving a message”, “Vehicle that every bit as common; doesn’t surprise be for a cardiologist or GI”</td>
</tr>
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</table>
person to call me; never hear from orthopedic doctors, EVER; they don’t have time for you….most medical subspecialties people will pick up the phone; see them at various staff meetings; touch base about their family members all of that sort of lends itself to the facility of just reaching out and talking to the person"

> “I touch base about their family members; all of that sort of lends itself to the facility of just reaching out and talking to the person”

<table>
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<tr>
<th>10</th>
<th>“not much time for socializing”, “some chatting before and after meetings”, “hospital tries to have quarterly medical staff meetings . . . happy-hour beforehand to chat, when you show-up, if you can”, “don’t socialize outside of work, everyone’s pretty busy”, “at my office a fair amount of social conversation; distraction for the patients” “sometimes with employees we talk at lunch; that is very common in my office”</th>
</tr>
</thead>
</table>
| 11 | “Helps working relationships tremendously, “example, nurses who work together and vacation together share their stories with staff which builds rapport . . . joyful as physicians’ to see them energized . . . sharing stories about your own family with the staff builds rapport” 
“in some hierarchical organizations or if a person has a hierarchical personality they will only share those kinds of stories with those they consider equivalents . . . CEO might talk about his family only with other CEO’s . . . and would never talk about that kind of insight into his or her family with a middle manager . . . while middle manager talk with middle managers but wouldn’t talk with housekeeping even though they are a very important part of the healthcare team” 
“People who want to lead by example generally cross socio-economic barriers pretty easily and they will converse with any member of the hospital team on those topics which seem appropriate” “Building social rapport makes people feel like part of a team . . . share vulnerabilities” 
“it can happen through common connection; enables them to work better together . . . especially, if an individual can share experiences across different parts of the healthcare team; enriches one’s own human experience” |
<p>| 12 | “it’s important; as a young physician it allows me to touch base with GI colleagues on certain difficult cases because I do not have as much experience as some of them”, “way of learning people’s approach to things and perspective on things” |
| 13 | “Learn to be a better physician and better colleague to that person If you understand their background, stressors, and different obligations”, “brings humanity to our profession” |
| 14 | “Improves the relationship . . . feel I get to know them outside of the clinical context can see how they relate to one another and how they interact in a different setting . . . get to know them as people and how they interact with one another on a different level”, “See them in meetings and socially in other setting” “It allows me to see how they are as people rather than as clinicians; it improves my relationship with them” |</p>
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<tr>
<th>Question 7: Primary Theme: Collaboration and Coordination</th>
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<tr>
<td>In Vivo Quote</td>
<td>Aspects</td>
<td>Sub Category</td>
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<tr>
<td>1. “Healthcare professionals want to know what it is you are talking about, explain diagnosis …to know what to expect”, “To try bring your experience to their understanding”</td>
<td>“explain diagnosis …bring your experience to their understanding”</td>
<td>Diagnosis</td>
<td></td>
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<tr>
<td>2. “certainly happens all the time”, “One might share past experience with previous patient outcomes, approaches”</td>
<td>“happens all the time…share past experience”</td>
<td>Previous Outcomes</td>
<td></td>
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<tr>
<td>3. “Laboratory value will come back abnormal and you may thing one thing concerning the patient but practically speaking putting that data into context”, “Can’t look at one laboratory value and make complete judgment on a patient…sometimes, a “Triponent protein” blood test is very very sensitive and very frequently can come back as positive…one may look at the result and say the patient is having a heart attack”, “Been doing this long enough; that looking at patient and applying practical knowledge you know that the person is NOT having a heart attack”, “this is how we apply practical knowledge every day with all the data coming in we have to synthesize it and apply our practical knowledge.”</td>
<td>“putting data into context!”</td>
<td>Relative Situation</td>
<td></td>
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<td>4. “Practical means the knowledge I’ve accumulated from experience”, It allows me to feel that I know that I know”, “Make an assessment of how serious …what testing needs to be done because I’ve been through it so many times; I can access and communicate that clearly,”</td>
<td>“make an assessment of how serious …what testing needs to be done”</td>
<td>Diagnosis</td>
<td></td>
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<td>5. “ Lot of professionals kind of closed to receiving other people’s experiences with things, I think in healthcare that’s quite common.” “A lot of people have already made up their mind on what somebody has, how they’re going to treat it or how it should be treated…aren’t really open to other peoples experiences or inputs… very common that people sort of have their own already formed opinion; lots of self-bias”….. People think they know or how they approach things is the right way… “If you bring up anything that veers … a defense mechanism comes up to shut that down”</td>
<td>“experiences with things”; “what somebody has … how they’re going to treat it or how they should treat it”</td>
<td>Diagnosis</td>
<td></td>
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<tr>
<td>6. “If your mind doesn’t know it; you won’t be able to diagnose it; saying from my experience, do your labs point to this, clinically, “I’ve been in this situation where eventual diagnosis is””, “intuition is a big thing in medicine”, “clinical may be something, but it’s your intuition that will tell you it’s NOT happening right; something is wrong”, “it’s all about predicting…prediction takes time to know…that is where I help my colleagues…monitoring patients just to see how they go”</td>
<td>“do your labs point to this clinically?”</td>
<td>Abnormal Behavior</td>
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<td>7. “we do that all the time”, “having taken care of patients in similar situations”, “over the years I’ve done many different things…using those other kinds of work… seeing patient at home visit is something you bring to the discussion when taking care of patients in the hospital…what they were functioning like at home; should they be going home, can they do it on their own”</td>
<td>“we do that all the time”, “having taken care of patients in similar situations…something you bring to the discussion when taking care of patients in hospital”</td>
<td>Previous Outcomes</td>
<td></td>
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<td>8. “My rule of thumb”; comes from experience”, “If changing dose of medicine I generally do it by 20% at a time”, “I don’t go up if someone is on a particular medicine”, “so that primary care or other physician I was talking to could apply that to other patients”</td>
<td>“if changing a dose of medicine”</td>
<td>Change Medication</td>
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<tr>
<td>9. “Been here for so many years there’s a lot that’s happened over the course… all that built in stuff, because you’ve known your patients for a while…feel they are coping pretty well…hard to put a finger on it…piece of that, is that I know this person is really different from what they usually are; If I think that someone needs to see a therapist, I will send a note to the therapist (if patient okays. “Can tell you right now, this patient is really different; this is not the way she or he usually is… I’m worried about this…communicate concern…get on the phone to therapist”, “You can’t tell if someone’s diabetes is up, you can’t intuitively tell that someone’s hypertension is up, BUT you can intuitively know about people’s psyche!”</td>
<td>“if I think someone needs to see therapist”</td>
<td>Abnormal Behavior</td>
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<tr>
<td>10. “Especially with patients who aren’t in the norm…you add in some experience on what can help get the patient through their treatment or diagnosis”, “here’s where the experiential comes</td>
<td>“with patients who are not in the norm”</td>
<td>Abnormal Behavior</td>
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in; “I’ve seen this in the past”, “this is helpful”, these types of people have a hard time”

“Seen a lot of things multiple times”, might quickly come to the conclusion that patient has heart failure…seen a lot of patients with heart failure; I know what they look like….not right 100% of time but…”, “Part of it comes from a sense of having seen lots of old people and you take cues of how they look….for example, there’s a patient whose fever is 103 and is quite ill…incoherent…there’s a person who has temperature of 103 …from flu…having lunch, attentive to hygiene…who’s going to be fine…all those things are clues”, “they don’t teach you that in medical school”

“might quickly come to conclusion that patient has heart failure…know what they look like”, “comes from a sense of having seen lots of old people ….take cues of how they look”

“Comes up a lot …with patients having invasive procedures…that have inherent risk”, Useful to know in practical sense based on my experience if I think someone can tolerate the diagnostic work-up”, “more of a practical cue from experience that you just know”

“with patients having invasive procedures” “more of a practical cue from experience that you just know”

“Adds value to certain things because you can’t just say “the literature states this, so this is what I’m going to do…you’ll say “I’ve always managed these patients in this way and it’s always been successful so practice experience is very valuable”

“I’ve always managed these patients in this way and it’s always been successful”

“Doctor felt he had to tell someone what was happening”

“doctor felt he had to tell someone what was happening”
Doctor

In Vivo Quote

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<th>Question 8: Primary Theme: Reflective Learning</th>
<th>Categories: Hindsight, Past Treatments, Past Outcomes</th>
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<td>1</td>
<td>“Personal individual experience …from the many patients I’ve treated with pneumonia …over a 40 year career”, “common experience, I’ve had pales by comparison with published literature; so, it’s important to know how the hundreds of patients that I’ve treated with pneumonia did, but also how the rest of the medical profession has had experience …with hundreds of thousands of people…with same diagnosis”, “reflect on published experience out of the science of profession of medicine has determined as its experience with that procedure, with that diagnose, with that whatever…” “Educational and informative aspect of knowledge sharing …should go on at all levels”</td>
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<td>2</td>
<td>“maybe from the experience patient getting Lithium; concern about patient’s kidney function which can be adversely effected”, “Lessons-learned …can be adverse effects from Lithium, pass that information.”</td>
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<td>3</td>
<td>“All the cases…over the years kind of add to your medical knowledge base”, “Very very often… in a variety of cases that may have similar set of signs and symptoms…use past experiences all the time to help us kind of form treatment plans for current situations”, “one step further, I also use past faults or mistakes to help teach my students about clinical scenarios and possible pitfalls and how to best avoid them”</td>
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<td>4</td>
<td>“there are lessons-learned every single day”, “I Know that patients with pain …who take non-steroidal medication …has side effects…patient kept taking a lot of medication for pain…started bleeding…became weak…now in the emergency room…I guess that’s a lesson relearned! “It’s not a new lesson, but something we’ve seen again and again; it’s a lesson that you learn over and over” “Physicians also reflect upon various studies to inform on the delivery of patient care; there are controlled and uncontrolled scientific studies, expert opinion studies through Published, and meta-analysis which combines multiples of pooled data provided by The Cochrane Analysis; this data provides the latest scientific evidence as an objective measure.”</td>
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<td>5</td>
<td>“it’s a lesson-learned that I’ve learned from me…put in my note”, “knowing there is some bias on the receiving end, but…give an example of experience to show that someone didn’t act as anticipated”, “drawing on my experience to explain “curve balls”…drawing on my experience for anticipating and explaining “curve balls”…that’s where, really, my experience come in about 90% medicine…pretty straight-forward …it’s the 10% that is not straight-forward …that’s where the specialist comes in, myself included…I’ve seen that 10% act differently”, “use that experience to explain to other physicians who are expecting the usual course of events that these “curve balls” can happen”</td>
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<td>6</td>
<td>“Anytime a patient passes away in which it was not predicted or anticipated there’s a lesson to be learned”, “I talk to the specialist and ask “have you seen this before, what would you do in this situation…describe to them clinically this is what the situation was, this was the lab monitoring, and then the patient did not live…then, consultant will tell you based on their thirty years of experience…could we have used another medication, called the consultant sooner, hindsight, that’s what it is…you learn what could have been done”, “Take to a meeting and tell every provider this was the case and here’s how things went, retrospect, this is how things could have gone…here’s what we’ve learned”, “That’s how it is in medicine; every day we learn new things”</td>
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<td>7</td>
<td>“Mistakes made; things to be done differently”; “keep an eye on things and not jumping to conclusions…not catastrophizing certain situations”</td>
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<td>8</td>
<td>“everything is a lesson-learned”; “Always a little bit gun-shy when I see onset of type one diabetes in an unusual situation, always prone to CT scan to make sure it’s not a pancreatic tumor”</td>
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<td>9</td>
<td>“Patient had a bad stress test and I didn’t get called about it and she had a cardiac arrest 24 hours after…that’s a situation where …wish I was more aggressive, had listened, had sent her to the cardiologist earlier, and wish the person who did the exam had called me”, “that was fifteen to twenty years ago, now we are a bit more aggressive”, “Now, I’ve been here longer …reach; out to people more often…people are much more conscientious; everybody takes responsibility”</td>
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<td>10</td>
<td>“Cases where you thought you could have done better”, something could have gone better, you look back and say well, I’ve tried this before but this seems better or after that experience I just won’t do that anymore”, “listen to patients before and after surgery procedure , most important thing, feedback”, “don’t barrage patients with everything at once, something like that… I have a sense now, especially for older that get so overwhelmed”</td>
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<td>11</td>
<td>“symptom is a key attribute…whether it is sudden onset or chronic; duration of the symptoms and clinically, the exacerbating and ameliorating factors: what makes your symptoms get better …or worse; those are very important attributes of the disease which can be very effective. As a consequence of experience and training …learn quickly by asking few pointing questions to narrow possibilities”, “how to take all that knowledge and apply to this one patient… by asking a few pertinent questions you narrow their universe down pretty dramatically”</td>
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<td>12</td>
<td>“With a lot of common GI complaints, it’s sometimes useful to express…to doctors that what a patient is feeling has been seen multiple times in the past; not seeing something atypical”</td>
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<td>13</td>
<td>“Have to have a sixth sense of when a patient really needs to go to surgery right away…you learn by that experience” “You have to have that experience to look-back that I’ve done several cases and all those cases….were a complete catastrophe… Those stick with you….truly life lessons-learned”, “Every time in the future when you see a patient where they are marginal there’s no question in your mind this patient needs to go to surgery based on the things that I know and seen in the past”</td>
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<td>14</td>
<td>“Situations that I’ve seen in the past help me going forward”</td>
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<td>Question 9: Primary Theme:</td>
<td>Categories:</td>
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<td>Consensus, Justification, Perspective, Explanation</td>
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<th>Sub Category</th>
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<tbody>
<tr>
<td>1</td>
<td>“Physicians’ only wants to know your conclusion; with nurses, communication is about sharing not only of information but sharing of understanding; “discussing issues with nurses …needs to be in depth …if they don’t know what I’m looking for they can’t share it… If they don’t know what my priorities are they don’t know when to call or when I’m to be called immediately, when abnormal findings that I expect they don’t need to call at 3 am …just to report laboratory result has come back of which I expected’, “Part of my job to educate nurses and other health professionals; part of it is self-preservation”,” It’s important to tell them what I’m looking for, what I expect to be called about , and when I expect to be called”, “routinely do this with nurses…I expect that’s the same kind of service I would get”</td>
<td>“communication is about sharing not only information but sharing of understanding”</td>
<td>Mutual</td>
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<td>“happens all the time”, “from my experience this kind of approach….tends not to work”, “Based on clinical experience…what I know of the research literature of such an approach, it wouldn’t be helpful”</td>
<td>“this kind of approach …tends not to work”</td>
<td>Understanding</td>
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<td>2</td>
<td>“happens all the time”, “Very often explain to the other physicians involved in the case and nurses what my impression is, my recommendations, and why I came to those conclusions…so that they can understand better, and so we are on the same page”</td>
<td>“what my impression is, my recommendations, and why I came to those conclusions”</td>
<td>Priorities</td>
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<td>3</td>
<td>“It comes up all the time….why did you do that, why didn’t you do that?”, “many ways that it’s communicated; most immediate way is face-to-face, then there’s telephone and paper, and email with those not directly in front of me.” The referring physician will say “why did you do that”, and then I have to explain my reasons…have to remind them that you have to take a very broad view of things…If you take narrow view of a problem and there’s another problem then you’ll miss it</td>
<td>“referring physician will say “why did you do that”?…have to explain my reasons….remind them that you have to take a very broad view of things… If you take narrow view of a problem and there’s another problem then you’ll miss it”</td>
<td>Expectations</td>
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<td>4</td>
<td>“wish we did it more often than we do; don’t do it enough….when we do have an opportunity to go through what we were thinking and why we did it; it’s usually in a forum like morbidity mortality rounds; it’s usually a negative context” the meeting is not frequently, it’s usually monthly or every other month”, “ask physician why they did what they did , “Wish we took more general cases…go through them and have open discussion about why people did what they did without necessarily a bad ending”, ” “Sharing experiences happens more in an academic setting…than in medicine; should happen more in medicine…encourage in school but not in medicine; it’s more negative outcome oriented discussions”, “You have to have something bad happen to talk about it after the fact”</td>
<td>“go through what we were thinking and why we did it; it is usually in a forum like morbidity mortality rounds….negative context”</td>
<td>Reasoning</td>
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<td>“One way is through education on DVT prophylaxis; what’s the data in US, how many people die from this in a hospital setting, how are we doing, and why should we be doing this; other aspect. . is two physicians talk about patient care; what am I doing, how am I affecting patient care” Some things are very generalized as a group: patient complaint is very individualistic” “It’s about some regulation to be met; other times, it’s about expectation”</td>
<td>“education on DVT prophylaxis, what’s the data in US, how many people die from this”</td>
<td>Disclosure</td>
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<tr>
<td>6</td>
<td>“interdisciplinary team meeting is area that that happens most” “Why I picked a particular medication, why it was given during certain time of day, what were the other options, ups and downs or risk and benefits”</td>
<td>“interdisciplinary team meeting…happens most”</td>
<td>Treatment</td>
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<tr>
<td>7</td>
<td>“Do that in every single one of my notes; end of note saying my impression and plan”, “Rationalize every patient that I see. trying to explain why I’m doing something not just say ”increase”…put in the note so It’s always goes to PCP and other specialist; that note would get routed to both PCP and specialist… I am saying why I’m doing it or asking someone…to</td>
<td>“end of note saying my impression and plan”</td>
<td>Approach</td>
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<td>8</td>
<td>“It’s about some regulation to be met; other times, it’s about expectation”</td>
<td>“rationalize every patient that I see…trying to explain why I’m”</td>
<td>Impression</td>
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Axial Codes
- Hindsight
- Consensus
- Justification
- Perspective
- Explanation
- Retrospect
- Standards
- Reasoning
- Disclosure
- Treatment
- Approach
- Understanding
- Mutual
- Priorities
- Expectations
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<td>9</td>
<td>“Standard of care…says if your thyroid nodule is over one centimeter, one should have a biopsy… so I say to patient… see the endocrinologist for her recommendations; patient comes back to see me… decision that we are going to repeat ultrasound … I speak to endocrinologist who says it sounds reasonable; there was back and forth between me and endocrinologist”</td>
<td>Standards Reasoning</td>
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<td>10</td>
<td>“During surgery, immediate decisions based on your experience, your data”, “sit together as group; why did you do that…try to rationalize and explain it…don’t want to get defensive…want to explain it”</td>
<td>Disclosure Reasoning</td>
<td></td>
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<td>11</td>
<td>“Occurs when you’ve made the wrong decision”, “When you make an error you want to share that fact with other physicians”, “We have exercises in medicine, long –standing, called morbidity and mortality conferences where we bring up mistakes…well established tradition in medicine, medical school and residency; every month we have a morbidity reported saying some patient had a bad outcome, what did we do wrong, why didn’t it work out right, diagnostic error, error in skill, x-ray read wrong, lab read wrong”, “many times I tell team what we expected to happen didn’t happen; let’s figure out how to do it correctly next time; we do this when we make mistakes or make diagnostic errors”, “Environments that are transparent and supportive are good; If not, there’s no improvement; everyone is afraid; we have a pretty “open” environment”</td>
<td>Disclosure Standards Disclosure Approach Retrospect</td>
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<td>12</td>
<td>“Bad outcome with a patient; sometimes, go over with other doctors why you did certain things”</td>
<td>Disclosure</td>
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<td>13</td>
<td>“Fairly done at Tumor Board”, “When there is three or four ways of managing this exact case…same type of patient…that’s when I justify to the multidisciplinary board this is the way I would like to proceed with this patient’s surgery…taking into consideration risk to the patient and overall health”, “that this is the best decision”, “important to justify before the event…documentation that I have discussed this at Tumor Board and everyone was in agreement”, “when things are discussed after the surgery it’s usually done at Mortality and Morbidity sessions…now that I know things went wrong what have I learned from this and what could I have done differently”, “These sessions are very productive and learning for everyone…just because it’s my mistake everyone can learn from it”</td>
<td>Disclosure Reasoning Approach Mutual Understanding Retrospect</td>
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<td>14</td>
<td>“Emergency room physician ….compelled to share a situation with me….Doctor felt he had to tell someone what was happening.”</td>
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<td><strong>Doctor In Vivo Quote</strong></td>
<td><strong>Axial Codes</strong></td>
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<td>1</td>
<td>“Don’t expect the nurse to know as much as I know about my selected field”, “my job to teach the nurse”</td>
<td>“don’t expect the nurse to know as much as I know”</td>
<td>Role Perception</td>
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<td>“sometimes I’ll be prescribing care without the full picture because of the patient’s preference”</td>
<td>“patient’s preference”</td>
<td>Regulations</td>
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<td>3</td>
<td>“In the critical acute care setting: that’s the most likely”, “Life or death decision have to be made in a matter of seconds or minutes…. don’t have time to consult with other individuals for their input”</td>
<td>“in the critical care setting: that’s the most likely”</td>
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<td>4</td>
<td>“Seeing patient as a repeat where you have pretty good fundamental knowledge already”</td>
<td>“seeing patient as a repeat”</td>
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<td>5</td>
<td>“You’ve done a lot of testing….comfortable with what information you have and not seek other informational viewpoints”</td>
<td>“comfortable with what information you have”</td>
<td>Routine Situation</td>
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<td>6</td>
<td>“In the critical acute care setting: that’s the most likely”, “Life or death decision have to be made in a matter of seconds or minutes…. don’t have time to consult with other individuals for their input”</td>
<td>“in the critical care setting: that’s the most likely”</td>
<td>Urgent Care</td>
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<td>7</td>
<td>“Cut and dry issues”, “clear to see…easy to diagnose…treatments are fairly straightforward”, “an immediate or urgent crisis…. the question isn’t about taking a consensus…. when you must take action immediately”</td>
<td>“cut and dry issues”, “easy to diagnose”, “treatments are fairly straightforward”</td>
<td>Routine Situation</td>
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<td>8</td>
<td>“Always inform PCP on what I’m doing but generally do not involve them in the decision… I’m a specialist; PCP has sent them to me to find out what to do”</td>
<td>“PCP has sent them (patient) to me to find out what to do”</td>
<td>Role Perception</td>
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<td>9</td>
<td>“Nine out of ten times I’m not seeking anybody’s input or 99 out of 100!”, “If someone has a simple problem…give them antibiotic and tell them to come back and see me”, “don’t necessarily send people to the specialist….there’s a push-back not to use the specialist; it’s costly…specialist say…get this MRI…get this test done…. costs start to escalate”</td>
<td>“if someone has a simple problem”</td>
<td>Routine Situation</td>
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<td>10</td>
<td>“if problem was simple…benign…some mild high-risk factors”, “if it’s a smaller problem, simpler I would just manage it myself”</td>
<td>“if problem was simple”</td>
<td>Routine Situation</td>
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<td>11</td>
<td>“when you’re rushed”, “when patient isn’t particularly likeable…your cordial but …you would not see out other viewpoints because it takes time and effort”, “you’re called at 10pm….patient of Dr. X wants a call back…has bloody nose…..what they need is first-aid….in a circumstance like…you’re not going to say “let me call a nose specialist and call you back”…give the best advice that seems appropriate for the circumstance.”</td>
<td>“when you’re rushed”</td>
<td>Urgent Care</td>
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<td>12</td>
<td>“when things are typical straightforward presentations…don’t usually feel the need to discuss”</td>
<td>“when things are typical straightforward presentations”</td>
<td>Routine Situation</td>
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<td>13</td>
<td>“straightforward; general surgery cases…like gallbladders and hernias…very clear-cut diagnosis”, “very clear management of the pathology; pathology doesn’t involve other specialties”, “things you can do yourself”, “clinically the patient meets the criteria for that diagnosis: pretty straightforward”</td>
<td>“straightforward; general surgery cases”, “very clear-cut diagnosis”, “pretty straightforward”</td>
<td>Routine Situation</td>
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<td>14</td>
<td>“See patient and I treat him; usually do not consult”, “Make decision based on their symptoms: do what is appropriate”</td>
<td>“see patient and treat him”, “make decision based on their symptoms”</td>
<td>Routine Situation</td>
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<td>Categories: Direct Communication Context, Clinical Perspective, Clinical Evaluation</td>
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<tr>
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<td>Doctor</td>
<td>In Vivo Quote</td>
<td>Axial Codes</td>
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<td></td>
<td>1</td>
<td>“I’m old-fashioned; I pick up the phone”</td>
<td>“I pick up the phone”</td>
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<td>“In general, will call physician or explain to the nurse to explain to the physician … what the priority is… my obligation to call … what it is and why I’m concerned. …not to direct their answer but to let them know why I’m concerned,”, “Lesson I’ve known …frequently, the priorities of the physician requesting the consult and the priorities of the physician performing the consult are very different”</td>
<td>“explain to nurse to explain to the physician what the priority is and why I’m concerned”</td>
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<td>2</td>
<td>“Try to be as thorough as possible; including getting collateral information from …medical record, and other health professionals.”</td>
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<td>3</td>
<td>“Communicate directly with the other physician immediately…whether communication takes place face-to-face …over the phone, immediate direct communication…to manage a very critically acute case”, “If …critically ill patients …trying to come up with a plan…its usually physician to physician”</td>
<td>“communicate directly with other physician”, “critically ill patients… trying to come up with a plan…its usually physician to physician”</td>
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<td>4</td>
<td>“A critical consult could be in the intensive care unit…speak with people who called me; the emergency room doctor and nurse…took a look at the record to get an idea of what the patient had suffered from in the past; medical history…speak with the patient and ask some questions …and how they are feeling”</td>
<td>“speak with people who called me…emergency room doctor and nurse”</td>
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<td>5</td>
<td>“Coming up with problem list and …prioritizing those problems…getting the test results to help stratify the severity of those problems”, “usually, if it’s a critical difficulty, bringing in specialists, tertiary care, to bring in more sub-specialists to get more data to determine the best way to handle the situation ”, “when critical sick patient , try to get as much data as I can at the “get-go….look for lab result, echo results, test results, bio, as much status about the patient… before I make decision”, “avoid off-the-cuff pathways based on what someone else says”</td>
<td>“Coming up with problem list…prioritizing problems”</td>
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<td>“getting test results to stratify severity of problems”</td>
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<td>“bringing in specialists, tertiary care…sub-specialists to get more data”</td>
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<td>6</td>
<td>“Tell nurse what I think of the situation…find out who to call and call that person directly myself, and saying, “I need your help”, “If nothing works, tell secretary it’s a code three and everyone comes right away!”</td>
<td>“tell nurse what I think of the situation”</td>
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<td>7</td>
<td>“Depending on situation…one can use the phone…ability in our system to request consultation in the computer”, “Depends on level of urgency; curbside consult…can sometimes be useful …run into local cardiologist …and say, without identifying any information or without requesting formal consult, “this is what’s going on what do you think”… “I get curb-sided all the time by other colleagues”</td>
<td>“one can use the phone”</td>
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<td>8</td>
<td>“Depends on who it is…If it’s the cardiologists upstairs…have secretary call and say “this is urgent and generally they get the patients in right away…if an outside physician, call …and personally speak to the surgeon to explain why …this had to be done urgently” “Depends upon the relationship; if in my experience secretary to secretary will get it done quickly or if physician to physician”</td>
<td>“call if it’s the cardiologists upstairs…say this is urgent…get the patient in right away”, “if an outside physician, call…personally speak to the surgeon to explain why this had to be done urgently”</td>
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<td>“May do initial laboratory work and EKG depending on problem; decide how acutely the person needs to be seen”, “If patient has fluid in lungs…may be affecting her breathing… I say pulmonary or thoracic doctor needs to see this patient…and have my secretary or nurse get them in…I may write an office note…fix…to doctor with my thoughts or referral”, “make sure patient has an appointment before they leave here…sometimes, they will take note with “do initial lab work and EKG depending on problem; decide how acutely the person needs to be seen”</td>
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In Vivo Quote - Faced-to-Face Communication - Direct Communication - Context, Clinical Perspective, Clinical Evaluation - Medical Record - Clinical Data - Telephone - Communication - Face-to-Face Communication - Clinical Data - Telephone Communication - Retrieve Historical Medical Record - Define Priority - Define Scope - Clinical Data - Informal Communication - Telephone Communication - Electronic Communication - Communication - Order Testing - Define Scope - Facsimile Communication - Communication
<p>|   | Telephone Communication | 10 | “Pick up the phone”; if doctor is on the line and want to speak with you, you stop what you’re doing because we don’t do it that much so if they’re doing it there’s a reason” |
|---|--------------------------|----| “Pick up phone” |
|   | Electronic Communication | 11 | “My contention, if number three consult (critical) there ought to be phone calls directly from the doctor who’s ordering to the doctor on the other end. Frequently doesn’t happen, unfortunately…really don’t have the time to spend to tell you why they think its urgent”, “Usually the best doctors find time to do it to tell the other doctor what questions they have, observations…what might not be in the record”, “If you’re asking a colleague to do a critical consult at 9pm there had better be a good reason”, “Only way to convey that is through conversation” |
|   | Telephone Communication | 12 | “Usually a Phone call; depends on what you need; If you need a radiographic test it’s to a radiologist” |
|   | Telephone Communication | 13 | “Call…if it is critical” |
|   | Telephone Communication | 14 | “Call other specialists and tell them what patient has and that they need to be seen right away” |</p>
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<td>Social Capital, Knowledge Management, Best Practices, Norms, Social Environment</td>
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<td>1</td>
<td>“People functionally co-existing together not simply co-existing but functioning together…those that you know better you function better with”</td>
<td>“people functionally co-existing together not simply co-existing but functioning together”, “those that you know better you function better with”</td>
<td>Cooperative</td>
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<td>“familiarity can foster better understanding”</td>
<td>“foster better understanding”</td>
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<td>“if others have seen the same presentation or complications…how to approach or manage that issue the next time”</td>
<td>“how to approach…that issue next time”</td>
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<td>2</td>
<td>“If you have a relationship before with another health professional…much more likely to impart information …helpful to the patient…and I’ll be more comfortable contacting them; goes in both directions”</td>
<td>“more likely to impart information”</td>
<td>Knowledge</td>
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<td>Sharing</td>
<td>Comfort Zone</td>
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<td>“Main benefit is always the care of the patient; as a byproduct of that …communicating with other healthcare professionals provides spirit of teamwork; collegiality”, “Different points of view and recommendations eventually molded together form the right treatment plan”, “Benefit between the doctors is kind of a mutual understanding”, “Develop mutual respect between healthcare professionals knowing that you’re working together on the same team for the benefit of the patient”</td>
<td>“provides spirit of teamwork; collegiality”</td>
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<td>“different points of view”</td>
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<td>“benefit between the doctors is kind of a mutual understanding”, “develop mutual respect between healthcare professionals”</td>
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<td>“Builds trust; has to be trust for this communication to go back and forth…if there’s no trust…we’re not doing any communicating!”</td>
<td>“builds trust”, “has to be trust for this communication to go back and forth”</td>
<td>Trust</td>
</tr>
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<td>5</td>
<td>Very important; ‘being social with non-professionals; it’s a teamwork thing’, “Once you’ve established communication with a group of physicians you feel part of the same team”</td>
<td>“feel part of the same team”</td>
<td>Cooperative</td>
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<td>6</td>
<td>“Very important…integral to patient care delivery is the collaborative and collegial relationships between different specialists…how your day goes in the hospital…depends on how your relationships are”</td>
<td>“integral to patient care delivery is the collaboration and collegial relationships between different specialists…so we can get desired results”</td>
<td>Cooperative</td>
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<td>“Has more to do with how comfortable …two providers are; very important to establish relationship with all of the consultants and the nurses…so we can get desired result”</td>
<td>“Has more to do with how comfortable….two providers are…so we can get desired results”</td>
<td>Comfort Zone</td>
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<td>7</td>
<td>“It’s an important one…having direct lines of communication with colleagues in different areas of practice is very important in taking care of patients”, “way a doctor can become immediately smart than they would be otherwise”, “through the electronic healthcare record, physicians have the ability to message other physicians about questions and issues”</td>
<td>“it’s an important one…having direct lines of communication with colleagues in different areas …very important in taking care of patients”</td>
<td>Inter-professional</td>
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<td>“way a doctor can become immediately smart…have the ability to message other physicians about questions and issues”</td>
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<td>Acquisition</td>
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<td>8</td>
<td>“Lot of stuff can be accomplished through the electronic medical record”</td>
<td>“I could send her a flag and she gets back to me immediately; we can communicate that way…have pretty good relationship electronically”</td>
<td>Social Rapport</td>
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<td>“Another surgeon …who’s on the electronic medical record …I could just send her a flag and she gets back to me immediately; we can communicate that way…spoken to her in person…maybe five times…but we have pretty good working relationship electronically; whereas if another surgeon who I use is not at this facility...we speak…by phone more often because I can’t communicate with her electronically…but that facilitates things being done”</td>
<td>“by having working relationship, prone to sending those doctor’s patients”, “she’s (doctor) by far the persons I refer more patients to because I know she will be responsive….can see her notes, she can see my notes if there’s a question we can flag each other….ends up being better care…more efficient; things…done faster”</td>
<td>Trust</td>
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<td>“By having working relationship…prone to sending those doctors’ patients…like the surgeon who’s on the electronic medical record…she’s by far the persons I refer more patients to because I know she will be responsive….can see her notes, she can see my notes if there’s a question we can flag each other”</td>
<td>“can see her notes, she can see my notes if there’s a question we can flag each other”</td>
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<td>9</td>
<td>Enables... much better care... know enough about the specialists here... I could say I this is what I think is going on... what I've done, any other thought&quot; If I have patient I follow mutually with cardiology... and think there's an issue... I'll call and say patient... needs to be seen sooner; I'm very comfortable doing that. Sometimes I'll speak to the physician directly... use electronic mail as a vehicle... I'll flag the doctor Flagged two providers in that group... trust group... send curbside note, asking &quot;what do you think&quot;, so I follow-up on that, I know who they are, don't know them socially, but met them at meetings; trust them... they see a lot of &quot;bread and butter&quot; gynecology... beyond my scope of expertise; should just check in... make sure it gets treated appropriately&quot;</td>
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<td>&quot;enables... much better care... know enough about the specialists&quot; &quot;if I have patient I follow mutually with cardiology... think there's an issue... I'll call... very comfortable doing that&quot; &quot;I know who they are... met them at meetings; trust them&quot;</td>
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<td>10</td>
<td>Email occasionally text especially now that everyone has smart phones... pretty good way to keep in touch; we can just email someone or ask them a quick question using text... the simpler things&quot;, &quot;meeting with these people weekly, core group, has made it just so easy... usually multidisciplinary... benefit patient... get the best standard of care&quot; Some outliers... that don’t come as often... &quot;so, I build rapport with those that come; who to go to, what their thoughts are, so everyone is flexible&quot; meeting weekly really is great; without that... silo over there, silo over here, they don’t really talk so there is no communication... nowadays, hospitalists do the in-hospital so you don’t get to mix with the primary care as much &quot;Moved my office with a group at another location with all the other doctors... stop by and say hello so we have a little bit of that&quot; My group we have... weekly meeting... made some efforts to unify different sites into one Meet once a week but some people still don’t want to attend</td>
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<td>&quot;we can just email someone a question using text... the simpler things&quot; &quot;meeting with core group weekly... multidisciplinary... benefit the patient... get the best standard of care&quot; &quot;meeting weekly... build rapport with those that come&quot; &quot;who to go to, what their thoughts are, so everyone is flexible&quot;</td>
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<td>Social Rapport Standard of Care Social Rapport</td>
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<td>11</td>
<td>&quot;Those are very important... many tools to do that; communication can be through text, emails, personal phone calls&quot; Plan to call patient... before that I spoke to GI specialist to explain situation so he could explain to patient what we are going to do... so I send an email saying &quot;I’m going to call you (GI) to explain the situation... GI appreciated it&quot;; &quot;all that takes work, phone calls, emails; personal communication channels... because of the personal communication channel with specialist... able to facilitate the plan... patient feels like they are being taken care of... By adding personal touch I think you are in a much stronger place&quot;</td>
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<td>12</td>
<td>&quot;If you communicate well with the referring physician... timely and good about communication... People become more trusting... more likely to send you more patients&quot;</td>
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<td>13</td>
<td>&quot;very important&quot;, whether I’m talking to the nurse, physician’s assistant, secretary; they are part of a team 'working nicely with them; having respect for one another builds trust... subsequently, it has been really successful for me in the hospital setting where I trust the nurse to do what I ask... she likes me... willing to work hard for me; she respects me... need to earn that not just granted&quot;</td>
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<td>14</td>
<td>&quot;It’s a huge asset because if I can send somebody a flag, email or text it’s tremendous... communication happens right away... people know you and will send you a flag right back&quot;, &quot;You know who to go to and you know who does what... simple things like that make it very easy&quot; &quot;I know the doctor and can quickly ask him the results otherwise, it would take time and delay the process&quot;</td>
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