

LEADERSHIP, COMMUNICATION, AND TEAMWORK:
DIFFERENCES BETWEEN HIGH AND LOW PERFORMING NURSING HOMES

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By

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The undersigned, appointed by the Dean of the Graduate School, have examined the dissertation entitled

LEADERSHIP, COMMUNICATION, AND TEAMWORK:
DIFFERENCES BETWEEN HIGH AND LOW PERFORMING
NURSING HOMES

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A candidate for the Degree of Doctor of Philosophy

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DEDICATION

First of all to my husband Jay, thank you for your love and ongoing support over the past 24 years. Your faith in me gave me the confidence to pursue this lifelong endeavor of education.

To my daughter, Jennifer, and my son, Matthew, thank you for understanding the time commitment for this incredible journey and your willingness to always offer support and encouragement when I needed it most.

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Leadership, Communication, and Teamwork:
Differences between High and Low Performing Nursing Homes

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ABSTRACT

This comparative case study explored how the interplay among leadership, communication, and teamwork differed between a highest and lowest performing nursing home (NH). Secondary data were used from a previous AHRQ intervention study to explore the impact of technology and focused quality improvement teams on medication safety practices in five Midwestern NHs. Study findings suggest nursing leadership played a critical role in influencing communication and teamwork among members of the team. Nursing leadership in the highest performing NH encouraged open communication at the formation of the team which led team members to share their diverse perspectives. An understanding of diverse perspectives, in turn, led to a cohesive, goal directed team environment where effective problem solving occurred. As the team evolved, nursing leadership engaged all members of the team by seeking team member input and feedback to identify and solve problems, and as a result, team members became empowered to influence change. Additionally, the introduction of accurate and timely feedback data further supported team efforts to facilitate improvement. In contrast, nursing leadership in the lowest performing NH discouraged open communication at the formation of the team, and as a result, team members were unable to establish a cohesive relationship which impeded

an effective problem solving team environment. Nursing leadership did not engage all members of the team, but rather only valued input and feedback from select members of the team. As a result, team members disengaged from the team process, subsequently impeding team efforts to achieve improvement. As suggested by this study, nursing leadership was an influencing factor in NH performance and should be further explored as a key variable to organizational improvement across healthcare settings.

CHAPTER ONE

Introduction

Background

The number of persons age 65 and over has reached 35 million and is expected to double by the year 2030. Persons 85 and older are the fastest growing segment of this aging population, with over twenty-one percent residing in nursing homes (Wan, Sengupta, Velkoff, & DeBarros, 2005). There are approximately 1.5 million Americans residing in U.S. nursing homes (NH) (U. S Center for Health Statistics, 2004); thus, as the population of elderly increases, so will the need for NH care. Importantly, as the number of persons needing NH care increases, the concern for NH quality becomes paramount.

National efforts to improve NH care have spanned more than thirty years, and have primarily focused on regulatory oversight (IOM, 2001; Winzelman, 2003). While marginal improvements have been made, serious concerns about the quality of resident care remain (General Accounting Office [GAO], 2007; Harrington, Mullan, & Carrillo, 2004). Even though survey deficiency rates have dropped (GAO, 2007), state survey agencies suggest serious quality of care violations are occurring (Harrington et al., 2004). Moreover, in spite of national efforts to improve NH care, inappropriate drug use (Briesacher, Limcango, Simoni-Wastila, Doshi, & Gurwitz, 2005) and pressure ulcer rates (Coleman, Martau, Lin & Kramer, 2002) remain problematic.

In response to the IOM report (2001), improvement in nursing home care is a national priority. The Centers for Medicare & Medicaid Services (CMS) launched a nationwide NH quality project in 2002. The Nursing Home Quality Initiative (NHQI), based on a six-state pilot project, focused on improving ten NH quality measures, including pain, pressure ulcers, delirium, activities of daily living, infections, and restraint use. Managed through each state's quality improvement organization (QIO), NHs implemented methods aimed at improving the ten measures. After nearly two years of intensive focus, findings suggest only 2,500 of the nation's NHs (14%) actively pursued QI efforts with the help of the QIO, and improvements were only seen in three of the ten measures. Sadly, pressure ulcer rates worsened nationwide (CMS, 2004).

Despite the NHQI project and other national efforts, many NHs lack the capacity to create and sustain improvement (Abel et al., 2005; Baier et al., 2004; Berlowitz et al., 2003; Lucas et al., 2005; Rosen et al., 2005). Rosen and colleagues (2005) conducted a three-year longitudinal study implementing QI efforts to reduce pressure ulcer incidence. Staff feedback of improvement strategies resulted in initial improvement; however, improved outcomes were not sustained, as limited management follow-up and staff turnover were cited as barriers. Abel and colleagues (2005) implemented QI teams in collaboration with a state QIO to improve pressure ulcer incidence and found improvements occurred with process measures, such as skin assessments and protocol use, but no improvement in pressure ulcer incidence occurred. In another study, Baier and colleagues (2004) found that pain prevalence was reduced with the

implementation of a multifaceted QIO NH collaborative project (n=21); however, with leadership focused on regulatory compliance and clinical staff limited in problem solving, the authors suggest sustainability of the improved outcome may not occur.

As a means to further understand challenges to QI in the NH, Adams-Wendling and Lee (2005) interviewed nurse leaders (n=51) and found QI efforts were lacking. Only 25% of respondents reported using QI reports to identify quality concerns, while other respondents used survey results (17.6%) and intuition (16.7%) as a means to identify quality concerns. However, despite troublesome methods of identification, the bigger issue still remained that limited resources impeded ongoing QI efforts. The majority (58.8%) reported staff were trained in QI, but most (56.9%) did not include staff in QI activities. Implementation barriers included director of nursing (DON) turnover, limited DON training in quality management, and limited organizational resources for QI efforts (Adams-Wendling & Lee, 2005).

Recognizing organizational leaders as important contributors to successful organizational improvement, Lucas and colleagues (2005) surveyed NH administrators (NHA) (n=159) to identify early adopters of continuous quality improvement (CQI) processes. Formal CQI adoption was defined using five criteria: (a) written statement of philosophy, (b) use of data for problem solving and improvement monitoring, (c) use of multidisciplinary employee teams, (d) systematic assessment of satisfaction data from residents and families, and (e) empowerment of employees to identify and act on quality issues. Based on self-

report, only 42% (n=66) met the criteria as CQI adopters. These NHA desired to meet standards, had structural strategies that included information systems, allowed flexible use of key personnel, and provided support for team processes (Lucas et al., 2005). Scott-Cawiezell et al (in press) supported these principles of QI, finding organizational commitment to improvement, multidisciplinary teams, and data driven decision making resulted in improved medication safety practices.

In a review of the NH safety literature, Scott-Cawiezell and Vogelsmeier (2006) found organizational elements of leadership, communication, and teamwork contributed to NH improvement. Open communication and longer DON tenure were found to reduce staff turnover (Anderson, Corazzini, & McDaniel, 2004), management practices facilitating registered nurse (RN) participation in decision-making and open communication were found to positively impact resident outcomes, such as reduced restraint use, reduced resident behaviors, and fewer complications of immobility (Anderson, Issel, & McDaniel, 2003). Furthermore, NHs with consistent leadership, active teams, and ongoing QI were strong in providing the basics of care (Rantz et al., 2004; Rantz, Grando, et al., 2003).

The essential elements of sustainable QI have been demonstrated in the Wellspring model. The Wellspring model incorporates the multiple dimensions of QI across their organizations. Components of the Wellspring model include leadership commitment to quality, open staff communication, team level involvement, and data use for decision making. Successful outcomes from the

Wellspring model include increased staff stability and reduced quality of care deficiencies (Stone et al., 2002).

Problem Statement

The improvement of NH care is a national priority (CMS, 2004; IOM, 2001; GAO, 2007). While research has provided important evidence to improve NH care (Anderson & McDaniel, 1999; Anderson et al., 2003; Anderson et al., 2004; Lucas et al., 2005; Rantz et al. 2004; Rantz, Grando, et al., 2003; Scott-Cawiezell et al., in review; Stone et al., 2002), the ability for NHs to create and sustain improvement is arguably the greater concern (Abel et al., 2005; Baier et al., 2004; CMS, 2004; Berlowitz et al., 2003; Rosen et al., 2005). Moreover, the study of effective QI across health care settings is lacking (LeMeaux-Charles & McGuire, 2006; Ferlie & Shortell, 2001; Feldman & Kane, 2003; Shortell, 2004; Shortell, Bennett, & Byck, 1998). Ferlie and Shortell (2001) suggest successful improvement results when multi-level change is the focus rather than single-level change. In a dynamic system, there is interplay among levels across an organization, where organization-wide change cannot occur without individual and team level support, and individual and team level change cannot occur without organizational support.

Organizational elements of leadership, communication, and teamwork have been recognized as important contributors to improved NH outcomes (Anderson et al., 2003; Anderson et al., 2004; Castle, 2003; Rantz et al., 2004; Rantz, Grando, et al., 2003; Sikorsa-Simmons, 2006; Scott-Cawiezell, Main, et al., 2005; Scott-Cawiezell et al., in review). Recent research suggests

understanding the interplay of these organizational elements may be the key to understanding what could impact sustained improvement in the NH (Forbes-Thompson et al., 2006; Scott-Cawiezell et al., 2004; Scott-Cawiezell, Main, et al., 2005; Scott, Vojir, et al., 2005).

Study Purpose

This study is based on a larger AHRQ intervention study exploring the impact of technology and focused QI to impact medication safety practices in the NH (Scott-Cawiezell, PI). As part of the larger AHRQ intervention study, five NHs across three states implemented a fully integrated electronic health record (EHR) and an electronic medication administration record (eMAR). Multidisciplinary medication safety teams (MST) were established in each NH prior to the implementation of technology and continued to meet monthly throughout the AHRQ intervention study with the goal of maximizing technology to impact medication safety. Results of the AHRQ intervention study identified the highest and lowest performing NHs based on medication error rates obtained through naïve observation procedures (Scott-Cawiezell, Rantz, Hicks, Madsen, Petroski et al., 2007)

Based on the earlier AHRQ intervention study, two NH, the highest and lowest performer, were selected for further study to determine if leadership, communication, and teamwork, key elements of organizational capacity to create and sustain improvement, differed between the two NHs. The exploratory study proposed used secondary data from the AHRQ intervention study to perform a

comparative case study comparing and contrasting the highest and lowest performing NH.

The highest and lowest performance was determined based on non-time medication error improvement noted over four observation points: pre-implementation, 3 months, 6 months, and 9 months post implementation of an eMAR system. The highest performer, designated for this study as NH1, demonstrated significantly improved non-time medication error rates. The lowest performer, designated as NH2, demonstrated worsening non-time error rates (experienced more error) (Scott-Cawiezell et al., 2007). Non-time medication error was defined as all medication errors (wrong drug, wrong dose, wrong route, omitted dose) excluding wrong time errors (Scott-Cawiezell et al., in press).

The comparative case study compared NH1 and NH2 initially during the MST formation prior to implementation of the eMAR system and again as the MST evolved throughout the study. Case study has been used in NH research to understand the complexity of the NH environment (Anderson, Ammarell, et al., 2005; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al., 2006; Forbes-Thompson & Gessert, 2005; Scott-Cawiezell, Vogelsmeier, et al., 2006).

The purpose of this comparative case study is to explore how the interplay among organizational elements of leadership, communication, and teamwork initially present during the formation of the MST, and then as the MST evolves over time. A comparison of NH1 and NH2 occurred to determine if the interplay among leadership, communication, and teamwork can account for differences in

NH performance in the improvement of medication safety practices. Qualitative data were used to explore the interplay among leadership, communication, and teamwork by identifying patterns of communication between the nurse leader and medication safety team members and to identify evidence of teamwork.

Specific Study Aims

Aim 1: To explore how the interplay among leadership, communication, and teamwork present at the formation of the medication safety team.

Research Question 1: How do the nurse leader and medication safety team members communicate during the initial formation of the medication safety team?

Research Question 2: What evidence of teamwork is present during the initial formation of the medication safety team?

Research Question 3: What (if any) are the differences between the highest and lowest performing nursing homes during the initial formation of the medication safety team?

Aim 2: To explore how the interplay among leadership, communication and teamwork evolve over time.

Research Question 1: How do the leader and the team co-evolve to improve communication during the study?

Research Question 2: How do the nurse leader and medication safety team members co-evolve to improve teamwork during the study?

Research Question 3: What (if any) are the differences in the co-evolution of the highest and lowest performing nursing homes?

CHAPTER TWO

Literature Review

Theoretical Underpinning-Complexity Science

The interplay of leadership, communication, and teamwork is best understood through the lens of complexity science (CS) (McDaniel & Driebe, 2001). Complexity science suggests interconnections among staff, facilitated by leadership and communication (Anderson & McDaniel, 2000), are essential for NH improvement to occur (Anderson et al., 2003; Anderson et al., 2004; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al. 2006).

Complexity science theory was developed in the 1980s as self-organization was explored to explain phenomena in the universe. These phenomena included such diverse systems as the ecosystem, the stock market, and the human body (Waldrop, 1992). Waldrop described antecedents to CS theory as limits within the well recognized and universally accepted theory of chaos. Researchers desired to explain complex phenomenon beyond chaos theory, where chaos eludes explanations of structure, coherence, and self-organizing cohesiveness of complex systems (Gleick, 1997).

Complexity science recognizes systems as complex adaptive systems (CAS) that are non linear and comprised of a number of independent agents in constant interaction (Waldrop, 1992; Zimmerman, Lindberg, & Plsek, 2001). However, the essence of CAS is the relationship among the agents rather than the agents themselves (Waldrop, 1992). Agents have the capacity to share

information among themselves and their environment and to change their behavior as a result of the information received. Key characteristics of a CAS include agents, interconnections, self organization, emergence, and co-evolution (Zimmerman et al., 2001).

Complex adaptive systems are made up of diverse agents that process information (Zimmerman et al., 2001). Agents in a health care system include people, units, whole organizations, and even dynamic processes, such as the nursing process. All agents interact with one another by sharing information about the environment that only they might know. This information sharing results in changed behaviors as interconnections among the agents lead to more complex behaviors as more is understood about the environment as a whole (McDaniel & Driebe, 2001).

Interconnections results as agents interact with one another and exchange information. These interactions are local where information is shared, yet patterns emerge globally as the system increases in complexity (McDaniel & Driebe, 2001). Interactions among agents are non-linear, meaning small change may have large effect and large change may have little effect (Zimmerman et al., 2001).

Agents within a CAS exhibit self-organization, triggering adaptation and emergence. Self-organization is the spontaneous generation of new structures and patterns over time (Waldrop, 1992) and occurs as control is distributed internally within the CAS rather than through a central command that directs others (Zimmerman et al., 2001).

Emergence is the arising of new, unexpected structures, patterns, and processes that exist on a higher level from which they were generated. The emergence of an outcome or product of the CAS results from interconnections among the agents, rather than the individual agents themselves. The belief is that the sum of the whole is greater than the sum of the parts (Zimmerman et al., 2001).

Co-evolution is the coordinated and interdependent evolution of two or more systems within a larger system. Co-evolution refers to the way two or more agents within a complex adaptive system must continually respond to changes in their environment; in responding to those changes, the agents actually change the environment by emerging to a higher level (Zimmerman, Lindberg, & Plsek, 2001).

Complex adaptive systems are open and interact with other agents in their environment, extending beyond the system's boundaries. Interaction with other agents results in co-evolution, as agents recall past behaviors and emerge to a higher level phenomenon (Waldrop, 1992). Therefore, as the agents change, so does the environment around it (McDaniel & Driebe, 2001).

Healthcare organizations are complex. Complexity science offers new ways to think about these complex organizations (McDaniel & Driebe, 2001). Historically, Newtonian principles have guided thinking in health care (Zimmerman et al., 2001), where understanding the whole required breaking down the parts (McDaniel, 1997). However, McDaniel & Driebe (2001) propose that health care organizations are better understood as CAS made up of diverse

agents who, through interconnections and relationships, emerge and co-evolve (Zimmerman et al., 2001).

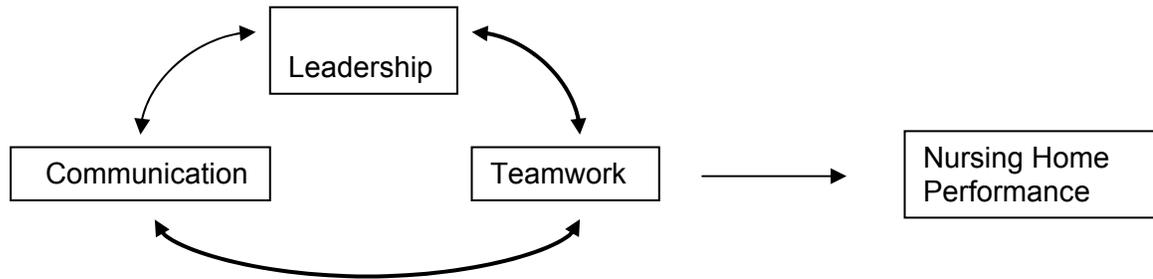
The philosophical underpinning of complexity science (CS) involves studying patterns of relationships among agents and exploring how the relationships are sustained over time through self-organization and emergence of outcomes (Waldrop, 1992). Complexity science has particular relevance for NH research, as patterns of relationships are a key to understanding NH care (Anderson et al., 2003; Anderson et al., 2004; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al. 2006).

Anderson, Crabtree, Steele, & McDaniel (2005) describe CS as a framework for studying and understanding complex organizations. Complexity science suggests that studying relationships among elements within a complex organization will provide critical insight into understanding the system as a whole (McDaniel & Driebe, 2001). Research using the CS framework has provided an important understanding of the interconnections of essential elements, such as leadership and communication (Anderson et al., 2003; 2004; Piven et al., 2006) and relationships among staff (Anderson, Ammarell, et al., 2005; Colon-Emeric, Ammarell, et al., Colon-Emeric, Lekan-Rutledge 2006) as an influence in NH care.

Conceptual Model

The conceptual model shown in Figure 1, "The interplay of leadership, communication and teamwork," depicts the interactive and reciprocal relationship among the concepts of leadership, communication, and teamwork.

Figure 1: The interplay of leadership, communication, and teamwork.



Organizational elements of leadership, communication, and teamwork have been recognized as important contributors to improved NH outcomes (Anderson et al., 2003; Anderson et al., 2004; Castle, 2003; Rantz et al., 2004; Rantz, Grando, et al., 2003; Sikorsa-Simmons, 2006; Scott-Cawiezell, Main, et al., 2005; Scott-Cawiezell et al., in press). The essential elements of leadership, communication, and teamwork are clearly interrelated. Leadership is foundational and provides the framework for organizational capacity by supporting the culture, management infrastructure, and communication systems needed to achieve organizational improvement (Ferlie & Shortell, 2001; Shortell et al., 1998).

Communication fostered by leadership that is open and supports relationships among staff further supports information sharing that impacts care delivery (Anderson et al., 2003; Scott-Cawiezell, Main et al., 2005; Swagerty et al., 2005). Relationships that result from an environment supporting staff cohesion and teamwork and communication can evolve to build effective teams, thus emerging to high performing organizations (Nelson, et al., 2002; Scott-Cawiezell, Main, et al., 2005; Stone et al., 2002). Recent research suggests understanding the interplay of these organizational elements may be the key to understanding what could impact sustained improvement in the NH (Forbes-

Thompson et al., 2006; Scott-Cawiezell et al., 2004; Scott-Cawiezell, Main, et al., 2005; Scott, Vojir, et al., 2005).

Interplay

Interplay is defined as a reciprocal action and reaction, reciprocal reaction, relationship, or influence between two or more entities (American Heritage Dictionary, 2006). Synonyms for the term interplay include interaction, exchange, transaction (Roget's New Millennium, 2007). Zimmerman, Lindberg, & Plsek (2001) describe interaction (also termed interplay) as the mutual effect of components, sub-systems, or systems on each other:

The interaction can be thought of as feedback among the components as there is a reciprocal influence between the components. The action of one component, sub-system, or system is influenced by the reaction of another component, sub-system, or system. In contrast, the effect of a pool cue on a cue ball is NOT interactive since the cue ball's movement does not significantly effect the pool cue itself (pg. 268).

Kitson, Harvey, & McCormack (1998) propose effective implementation of evidence into practice is influenced by the interplay among three core elements: (a) the level and nature of the research evidence to be implemented, (b) the context or environment into which research is to be placed, and (c) the method by which the process of implementation is to be facilitated. Successful implementation was found to most often occur when evidence was high, when the environment was receptive to change, and when facilitation of change was

appropriate. Moreover, high evidence and appropriate facilitation could positively influence an environment not conducive to change. Implementation was least likely to succeed when both the environment and facilitation of change were low or inadequate and the evidence was perceived as weak, regardless of the actual strength of evidence. Facilitation of change was most influenced by organizational leaders and was felt to be the strongest variable in the equation.

Pepler et al (2006) explored the interplay between research utilization and unit culture. Master's prepared nurses were successful in influencing research utilization when a unit culture existed that supported evidence-based practice. However, when a unit culture did not exist to support research utilization, advanced nurses first had to influence unit culture through strategies to promote successful research utilization. Thus, successful research utilization was influenced by unit culture and unit culture was influenced by successful research utilization.

Avolio (2007) discussed the dynamic interplay between leaders and followers when reviewing leadership theories. The interplay between a leader and follower was considered a reciprocal relationship, whereas the follower's reaction to the leader's behaviors is thought to influence future leader's behavior, which subsequently influences future follower's behavior.

Leadership

Leadership is considered an essential element to create and sustain organizational improvement, because leadership is considered foundational to organizational systems (Scott-Cawiezell, 2005). Leadership is the process by

which an individual attempts to intentionally influence human systems in order to accomplish a goal (Pointer, 2006), and is considered a critical indicator of organizational success (Hart & Bogan, 1992; Shortell & Kaluzny, 2006). While leadership styles vary, James McGregor Burns (1978) provides a contrast between two leadership styles: transactional and transformational. Burns describes transactional leadership as an attempt to maintain and work within the status quo; whereas, transformational leadership attempts to upset and replace it. Transactional leadership is driven by individual goals and primary modal values of fairness, honesty, and commitment. Without rules, transactional leaders cannot work. In contrast, transformational leaders are more concerned with end values and doing the greater good. Transformational leaders strive to raise their followers up and emerge to extraordinary performance (Burns, 1978).

The lens through which organizations are viewed significantly influences the way members communicate, perceive relationships, and solve problems (Anderson & McDaniel, 2000). As health care organizations have traditionally been viewed through the lens of Newtonian principles, traditionally fixing problems within the organization simply meant breaking apart pieces to see what requires repair (Anderson & McDaniel, 2000; Ashmos & Huber, 1987; McDaniel, 1997; Zimmerman et al., 2001). The role of leadership was viewed as more transactional in nature, to command and control and make decisions based on what rules were not being followed (McDaniel, 1997). Importantly, the view of health care organizations is changing, albeit slowly, and traditional views of mechanistic systems are being abandoned and replaced with the view that

organizations are living, dynamic systems (Ashmos & Huber, 1987; McDaniel, 1997; McDaniel & Driebe, 2001). As organizations are viewed as living systems, leaders must change their approach (Ashmos & Huber, 1987; McDaniel & Driebe, 1997; Shortell & Kaluzny, 2006), now becoming transformational in nature (Pointer, 2006).

Nursing home leaders, traditionally, fit within the paradigm of transactional leadership, where following rules and maintaining status quo are motivating factors. Many NH leaders focus on regulatory compliance (Adams-Wendling & Lee, 2005; Baier et al., 2004; Lucas et al., 2005) and command and control approaches to management (Scott-Cawiezell, Jones et al, 2005; Rosen et al., 2005), which is counter to the desired management approach fostering communication, relationships, and teamwork. Therefore, for NH improvement to occur, NH leadership and management must first change.

Whereas leadership is responsible for establishing common goals, management functions to achieve those goals (Shortell & Kaluzny, 2006). Goal achievement occurs through the development and maintenance of a quality oriented organizational design. Organizational design is the infrastructure within which authority, responsibility, accountability, information, and rewards are arranged to improve effectiveness and organizational capacity. Management's primary responsibility is to maintain and improve performance through an effective organizational design (Leatt et al., 2006).

Evidence suggests that management influences NH outcomes. Anderson, Issel, and McDaniel (2003) explored the relationship between management

practices of RNs (n=215) and resident outcomes, and found management practices facilitating open communication, shared decision making, and relationship-oriented leadership were associated with lower restraint use, fewer aggressive resident behaviors, fewer complications of mobility, and fewer incidence of fractures. Castle (2001; 2005) found management tenure significantly impacted both resident and staff outcomes, and Rantz and colleagues found NHA and DON tenure, as well as leadership systems supporting teams and ongoing QI efforts, positively influenced the basics of care (Rantz, 2004; Rantz, Grando, et al., 2003).

Management and the organizational infrastructure established by leadership are critical to support effective QI efforts in the NH. Leadership must support a culture conducive to open communication and information sharing, and leadership must support access, assimilation, and use of information for effective and timely information sharing to occur (Ferlie & Shortell, 2001).

Communication

Communication is a central feature of life within any organization and is considered another essential element to create and sustain improvement in NHs (Scott-Cawiezell, 2005). Communication is defined as the creation of shared meaning between two or more people (Daniels & Spiker, 1987), and includes any method by which shared meaning can be established including formal and informal, verbal and non-verbal (Daniels & Spiker, 1987; Longest & Young, 2006). Communication is more than merely sharing information. Communication

occurs when information is placed within a context, thus creating meaning of the information that is shared (Daniels & Spiker, 1987).

Shortell and colleagues (1991; 1994) propose communication is measured along five dimensions, including openness, accuracy, timeliness, understanding, and satisfaction. Openness involves the extent to which staff members can talk openly and share information without fear of repercussion. Accuracy is the degree to which staff members feel information relayed to them is true and reliable. Timeliness is the degree to which information about care is relayed promptly. Understanding involves the extent to which staff believe the information relayed is comprehensive. And, satisfaction is the degree with which staff are satisfied with communication between each other and with patients and families. These dimensions of communication influence the establishment of shared meaning among staff.

In a study exploring NH staff perceptions (n=995) of communication and leadership, Scott-Cawiezell and colleagues (2004) found respondents were least positive about the accuracy (34%) and effectiveness (35.4%) of communication, and had differing perceptions among roles ($p < .0001$). LPN staff perceived less openness of communication than RNs and were less satisfied, and CNAs perceived less timeliness of communication than RNs.

Differences in perceptions can result in divergence of meaning among NH staff. Colon-Emeric, Ammarell, et al (2006) explored communication in two contrasting NHs and found differences in patterns of staff involvement. The first demonstrated a chain of command approach with little evidence of two-way

communication. The rate of information exchange between nurse supervisors and physicians was frequent; however, little information exchange occurred between front line staff and supervisors. This raised a critical concern that staff input was missing from clinical conversations (Boockvar, Brodie, & Lachs, 2000). The second NH displayed open-communication, where information flowed freely between direct care staff (LPNs and CNA) and physicians, yet supervisors and nurse managers were isolated from critical conversations about resident care (Colon-Emeric, Ammarell, et al; 2006).

The serious result of ineffective communication among staff is the impact on resident outcomes. Longo, Young, Mehr, Lindbloom, & Salerno (2004) found failure of communication and communication of inaccurate and inappropriate information impeded timely care for acutely ill NH residents. Vogelsmeier, Scott-Cawiezell, & Zellmer (2007) explored NH staff (n=76) concerns and found ineffective communication impeded medication safety. Ineffective communication can also impede individualized resident care (Curry, Porter, Michalski, & Gruman, 2000) and result in poor resident outcomes (Forbes-Thomson & Gessert, 2005).

Communication can enhance relationships between leaders and staff. Apker (2001) found supportive communication by nurse supervisors resulted in enhanced role development of staff nurses in response to managed care changes. Anderson and colleagues (2004) found higher levels of communication openness led to lower staff turnover. Curry et al (2000) suggest individualized care was influenced by supervisors open to CNA suggestions about resident

needs, and Piven et al (2006) found MDS coordinators who were connected to staff, and facilitated communication among staff, had a positive influence on care planning of resident care needs.

In the world of dynamic and interrelated systems, relationships are key (Wheatley, 1999). Relationships are the interconnections of how people communicate (Anderson, Ammarell, 2005; McDaniel & Driebe, 2001). Positive relationships fostered by leadership result in feelings of empowerment (Campbell, 2003), workplace retention (Anderson et al., 2004), and importantly organizational connectedness (Piven et al., 2006). Organizational leadership plays a critical role in supporting an environment conducive to effective communication and relationship building among staff (Anderson et al., 2003; Apker, 2001; Hall et al., 2005).

The communication of valid, reliable, and timely information is a key element to influence improved organizational performance (Ferlie & Shortell, 2001; Hart & Bogan, 1992; IOM, 2000, IOM, 2001; Shortell et al., 1998). Ferlie and Shortell (2001) propose information is necessary to improve care, as accurate and timely information is made available at the point of care. This includes access to scientific evidence for the delivery of care, as well as timely feedback of the results of care. Importantly, improvements to information access have been made in the past several years.

While access to information is undoubtedly necessary, it is through interpretation and creation of shared meaning of information that promotes improvement. Castle (2003) found reductions in physical restraint use and

psychotropic drug use occurred when QI outcome (feedback) reports were provided to NH staff; yet admittedly, little was known about how the reports were used to impact improvement. In a three-group randomized controlled trial in 113 NH, Rantz and colleagues (2001) tested the benefit of data feedback in a QI model and found comparative data feedback and education alone did not improve outcomes. The intervention of providing expert consultation of an advanced practice nurse (APN) combined with feedback and education resulted in the greatest improvements. Data alone were perceived as overwhelming, whereas clinical support through the APN provided necessary guidance to interpret (create meaning) and sort out issues that could be impacted by practice change (Grando, Rantz, & Maas, 2007). Expert nurses have been found to impact improvement by facilitating problem solving and integrating best practices into care delivery (Krichbaum, Pearson, Hanscom, 2000; Krichbaum, Pearson, Savik, & Mueller, 2005; Rantz et al., 2001; Rantz, Vogelsmeier, et al., 2003; Ryden, et al., 2000).

The use of data feedback as information to influence decision making can effectively impact QI when it is valid, credible, timely, non-punitive, consistently accessible, and meaningful (Bradley, et al., 2006). Therefore, data feedback, coupled with effective communication, is necessary for NH staff to work together to interpret and use information for problem solving (Grando et al., 2007).

Teams and Teamwork

Teams are also considered an essential part of the process for NHs to create and sustain improvement (Scott-Cawiezell, 2005). Teams serve as the

leverage point for organizational improvement, whereas teams operationalize QI efforts supported by the organization (Fergie & Shortell, 2001; Shortell, 2004).

The concept of teams varies widely (Lemieux-Charles & McGuire, 2006). Cohen and Bailey (1997) define teams as a group interdependent in tasks who share responsibility for outcomes, view themselves as an intact social group embedded in a larger group, and manage their relationship across boundaries. Katzenbach and Smith (1993) define teams as a small group with complimentary skills, committed to common goals, which hold themselves mutually accountable for the outcomes of their work. Teams can be more simply defined as a group of diverse stakeholders who come together in an attempt to engage in problem solving (Avolio, Jung, Murry, & Sivasubramaniam, 1996). Cohen and Bailey (1997) identified four team types, including work teams, parallel teams, project teams, and management teams. Lemieux-Charles and McGuire (2006) modified these team types to encompass those commonly found in health care. Health care teams include quality improvement teams, management teams, and care delivery teams, either focused on patient populations or disease management.

Lucas and colleagues (2005) found NH team processes contributed to the adoption of formal CQI. Teams have been found to improve falls (Eakman et al., 2002), medication safety (Scott-Cawiezell, et al., in press), and basic care delivery, such as ambulation, nutrition and hydration, toileting, skin care, and pain management (Baier, et al., 2004; Rantz et al., 2004; Rantz, Grando, et al, 2003). Studies also suggest teams influence staff satisfaction (Sirorska-

Simmons, 2006) inter-personal relationships, communication, and coordination of care (Yeatts, Cready, Ray, DeWitt, & Queen, 2004).

While teams have been found to contribute to improved outcomes, specific elements of team effectiveness are not clearly understood (LeMieux-Charles & McGuire, 2006). Team effectiveness is thought to be influenced by four primary factors, including team processes, team characteristics, nature of the task, and environmental context (Fried, Topping, & Edmondson, 2006). Team processes involve the actions and interactions by which decisions are made, problems are solved, and work is accomplished (Doran et al., 2002). Team characteristics are more than merely a collection of individuals, but rather a cohesive group that possesses diversity and expertise in the work to be accomplished (Doran et al., 2002; Fried et al., 2006; Temkin-Greener, Gross, Kunitz, & Mukamel, 2004). The nature of the task to be performed includes identifying well-defined team goals that are supported by the organizational culture. An organizational culture that values and emphasizes teamwork and participation has been found to support team effectiveness (Ferlie & Shortell, 2001).

High functioning teams have been characterized as having positive communication patterns, high levels of collaboration, coordination, and participation among team members, and low levels of conflict (Shortell, Marsteller, 2004; Temkin-Greener et al., 2004). Recent research has focused on team effectiveness as a result of being embedded in larger efforts to improve organizational performance (LeMieux-Charles & McGuire, 2006). This may

provide important evidence to identify high performing teams as an essential element of high performing organizations.

High Performing Health Care Organizations

As essential elements of high performing teams are recognized and contrasted to low performing teams, valuable insight can be gained to understand high performing organizations. Nelson and colleagues (2002) studied twenty diverse clinical units recognized for high performance, and found nine core characteristics were shared among each of the clinical units: (a) leadership focused on collective goals, (b) culture supportive of trust and collaboration, (c) organizational support of connectedness, (d) focus on patient centeredness, (e) focus on staff as a valued asset, (f) team interdependence to provide care, (g) access to accurate information, (h) process improvement essential to care, and (j) outcomes measured with data feedback to staff. The characteristics of successful front-line clinical units were similarly cited by Ferlie and Shortell (2001), who suggest an organization's capacity to improve relies on leadership at all levels, a culture that supports ongoing learning, an emphasis on teams, and the use of information systems for decision making.

Shortell and colleagues (1994) studied performance of intensive care units (ICU) and found care giver interaction (comprised of culture, leadership, coordination, communication, and conflict management) were significantly associated with lower lengths of stay, lower turnover, higher technical quality of care, and greater family satisfaction. Scott-Cawiezell, Main and colleagues (2005) studied high and low performing NHs (n=32), and found characteristics in

high performing NH included an emphasis on leadership, communication, and teamwork. Leadership in high performing NH emphasized staff as an asset, whereby staff perceived themselves to be valued, involved, and empowered. High performing NHs had systems for good communication, an emphasis on teamwork, and an internal focus on standards and expectations. In contrast, low performing NHs did not have a positive view of staff, whereby staff voiced feeling unappreciated and unheard. Low performing NHs had poor systems for communication, where staff voiced not having a clear understanding of roles or expectations. Staff also voiced a lack of cohesion and perceived there to be a sense of division. Low performing NHs emphasized census and financial bottom line, whereas high performing NHs emphasized quality of care (Scott-Cawiezell, Main et al., 2005).

Forbes-Thompson and Gessert (2005) contrasted two NH in a qualitative case study designed to explore experiences of dying residents (n=56), and found substantive differences between the two NH. The first centered on compliance and had fragmented communication. Outcomes of care were adversely affected by poor communication, as resident preferences were ignored. Residents complained of unmanaged pain, and many expressed a sense of helplessness, anger, and hopelessness. In stark contrast, the second NH was centered on the client, with care specifically designed for the dying resident. Communication was systematic and ongoing, subsequently resulting in positive pain management outcomes (Forbes-Thompson & Gessert, 2005).

Similar findings were supported in an evaluation of the Wellspring model. This model emphasized key elements of management commitment to quality, clinical experts, team processes, shared decision making, and feedback of performance data. Emphasis on these organizational elements resulted in positive staff and resident outcomes (Stone et al., 2002).

Essential Elements of Leadership, Communication, and Teamwork

The evidence is clear; leadership, communication, and teamwork contribute to high performing organizations (Forbes-Thomson & Gessert, 2005; Nelson et al., 2002; Stone et al., 2002; Scott-Cawiezell, Main et al., 2005; Shortell et al., 1994). The opportunity to explore the interplay of leadership, communication, and teamwork will provide valuable insight into the essential elements that underlie organizational improvement.

Significance to Nursing Practice

Research to understand the interplay among leadership, communication, and teamwork is significant to nursing practice (Forbes-Thompson et al., 2006; Scott-Cawiezell et al., 2004; Scott-Cawiezell, Main, et al., 2005; Scott, Vojir, et al., 2005), as nursing leadership plays a critical role influencing NH outcomes (Anderson et al., 2003; Anderson et al., 2004; Anderson & McDaniel, 1999; Castle, 2005; Rantz et al., 2004; Rantz, Grando, et al., 2003; Scott-Cawiezell et al., 2006; Swagerty, Lee, Smith, & Tauton, 2005). In a review of the NH safety literature, Scott-Cawiezell and Vogelsmeier (2006) identified future research is needed to explicate the role of nursing leadership in creating an environment supporting communication and teamwork as a means to improve resident care.

CHAPTER THREE Methods

AHRQ Intervention Study Overview

This study is based on a larger AHRQ intervention study exploring the impact of technology and focused QI to impact medication safety practices in NHs (Scott-Cawiezell, PI). As part of the larger AHRQ study, NHs (n=5) across three states implemented a fully integrated electronic health record (EHR) and an electronic medication administration record (eMAR). Multidisciplinary medication safety teams were established in each NH prior to the implementation of technology and continued to meet monthly throughout the study with the overall goal of maximizing technology to impact medication safety. Results of this study identified the highest and lowest performing NHs based on medication error rates obtained through naïve observation procedures (Scott-Cawiezell, Rantz, Hicks, Madsen, Petroski et al., 2007).

This exploratory study utilized a comparative case study method contrasting two NHs, the highest performer and the lowest performer. Case study research is recognized as an accepted method for exploratory research to understand complex social phenomena within the context of real life events. Case study can involve single cases or multiple cases. However, multiple cases provide more robust evidence, as findings can be compared and contrasted across sites (Yin, 2003). Case study research can occur with individuals, families, or whole organizations, such as NHs (Crabtree & Miller, 1992; Stake, 1995; Yin, 2003), and has been used extensively in NH research to understand

the complexity of the NH environment (Anderson, Ammarell, et al., 2005; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al., 2006; Forbes-Thompson & Gessert, 2005; Scott-Cawiezell, Vogelsmeier, et al., 2006).

Recruitment/Sampling

The sample for this study has been established as the highest and lowest performing NHs from the previously mentioned AHRQ intervention study (Scott-Cawiezell et al., 2007). The highest and lowest performing NHs were determined based on non-time medication error improvement noted over four observation points: (a) pre-implementation of eMAR, (b) 3 months, (c) 6 months, and (d) 9 months post implementation of an eMAR system. The highest performer, designated for this study as NH1, demonstrated significant improvement of non-time medication errors between pre-eMAR and 9 months post-eMAR implementation ($p = .048$). The lowest performer, designated as NH2, demonstrated worsening non-time error rates (experienced more error) between pre-eMAR and 3 months post implementation and pre-eMAR and 6 months post implementation ($p = .034$; $p = .013$, respectively) with 9 month post implementation non-time medication error rates remaining higher than at pre-eMAR implementation (Scott-Cawiezell et al., 2007). Non-time medication error is defined as all medication errors (wrong drug, wrong dose, wrong route, omitted dose) excluding wrong time errors (Scott-Cawiezell et al., press).

Table 1: Percentage of Non-Time Medication Errors among the Study Nursing Homes

| NH | Pre-eMAR | 3 month post-eMAR | 6 month post-eMAR | 9 month post-eMAR |
|------------------|----------------------------|-------------------|-------------------|-------------------|
| NH1 | 4.75% *0-9 mo | 4.21% | 5.50% *6-9 mo | 2.02% |
| NH2 | 3.63% *Pre-3/ *pre-6 mo | 6.99% *3-9 mo | 9.36% *6-9 mo | 4.27% |
| *p<.05, **p <.01 | | | | |

Data Collection

Secondary data from the AHRQ intervention study were used as the data source for this study. Secondary data are data provided through another primary study, either qualitative or quantitative, and are often used to explore rich data sets that could benefit from additional inquiry (Polit & Beck, 2004). Data collected by Scott-Cawiezell (P.I.) for use in this study included: (a) staff survey results conducted prior to the implementation of eMAR to identify staff perception of communication, teamwork, and leadership, (b) key informant interviews of nursing leaders conducted both pre- and post-eMAR implementation, (c) focus group interviews conducted prior to the implementation of eMAR, and (d) medication safety team field notes conducted approximately monthly throughout the study. Specific identifiers for individual NH and staff participants were removed from the data prior to distribution for this study.

Staff Survey

The modified Shortell Organization and Management survey was used to quantitatively identify staff perceptions of communication, teamwork, and leadership in the NH. Use of the survey method provides insight into the group

under study through self report. Sample surveys are most often and most appropriately used as part of a larger scale investigation (Polit & Beck, 2004).

Nursing home staff (n=105) from the highest and lowest performing NHs completed the modified Shortell Organization and Management Survey prior to the implementation of eMAR. Staff from NH1 (n=67) were composed of RNs (n=6), LPNs (n=13), CNAs (n=39), and other NH staff including department managers and other professionals (n=9). Staff from NH2 (n=38) were composed of RNs (n=4), LPNs (n=2), CNAs (n=28), and other NH staff including department managers and other professionals (n=3).

Survey selection. Staff perception of communication, teamwork, and leadership were measured using an adaptation of the Shortell Organization and Management Survey (Scott-Cawiezell et al., 2004; Scott, Vojir, Jones, & Moore, 2005; Shortell, Rousseau, Gillies, Devers, & Simons, 1991). Shortell's original survey, developed for hospital intensive care units (ICU), included measurements along seven constructs, including leadership, culture, coordination, communication, conflict management, team cohesiveness, and perceived unit effectiveness. Shortell's Organization and Management survey is composed of statements where respondents are asked to assess the degree to which they agree or disagree with each statement by circling a number between 1 and 5 on a Likert scale (1- strongly disagree to 5-strongly agree). The scale scores are additive (Shortell et al., 1991) and must have at least 50% of items completed to be considered part of the survey sample.

Scott-Cawiezell and colleagues (2004) modified two sections of Shortell's Organization and Management survey pertaining to communication, teamwork and leadership. The survey was modified, with permission, to reflect the language of the NH setting. Shortell's Organization and Management survey measured leadership along four dimensions, including the extent unit leaders: (a) emphasized standards of excellence, (b) communicated goals and expectations, (c) responded to changing needs and situations, and (d) were in touch with staff views and concerns. Communication and relationships (teamwork) was measured along five dimensions, including: (a) openness, (b) accuracy, (c) timeliness, (d) understanding, and (e) satisfaction as discussed in chapter 2 (Scott-Cawiezell et al., 2004; Scott, Vojir, et al, 2005; Shortell et al., 1991; 1994).

Validity and reliability. Shortell and colleagues (1991) conducted psychometric testing of the original survey in a study of over 42 intensive care units involving over 1,700 respondents. Convergent and discriminant validity was established using a factor analysis to examine correlations between and among the relevant scales (Shortell et al., 1991). Convergent validity, evidence that different methods of measuring a construct yield similar results, and discriminant validity, the ability to differentiate a single construct from different constructs, are considered significant measurements necessary for valid instrument development (Polit & Beck, 2004).

Reliability coefficients of the original Shortell Organization and Management Survey ranged among the subscales ($r=.61$ to $r=.88$), including timeliness of communication ($r=.64$), team cohesion ($r=.79$), and nursing

leadership ($r=.87$). (Shortell et al., 1991). Reliability, the consistency with which an instrument measures a target attribute, is considered satisfactory with correlation coefficients between .70 to .80 (Ferketich, 1990).

The modified Shortell Organization and Management Survey underwent additional psychometric testing in the NH setting (Scott-Cawiezell et al., 2004; Scott, Vojir et al., 2005). Scott-Cawiezell and colleagues (2004) conducted initial psychometric testing of NH staff ($n=995$) from four states. The sample was comprised of 36% certified nursing assistants (CNA), 15% registered nurses (RN), 15% licensed practical nurses (LPN), 22% clinical and organizational staff, and 12% not categorized. The Cronbach's alpha, a widely used method to determine internal consistency (Polit & Beck, 2004), was calculated along the dimensions of communication and leadership. Cronbach's alpha for the overall communication scale was .93, with communication subscales among roles ranging between .70 to .85. Cronbach's alpha across all five dimensions varied by role, and ranged from .61 (CNA, timeliness) to .9 (DON, understanding). Cronbach's alpha for the overall leadership scale was .88, with each role ranging between .60 to .87; however, leadership subscales were somewhat problematic and ranged from .34 (CNA, support) to .89 (other clinical roles, high standards) (Scott, Vojir, et al., 2005).

Scott and colleagues (2005) conducted a follow-up study for additional psychometric testing to determine if a revised scale structure should be considered based on the low internal consistency scores noted above. This study included a sample of 32 NH with a total of 1,763 staff members including 540

CNAs, 215 RNs, 218 LPNs, 153 department heads and other professionals, 449 other workers, and 188 not categorized by job title. Results from the factor analysis consolidated the five original communication subscales (openness, accuracy, timeliness, understanding and satisfaction) into two new subscales labeled “Connectedness” and “Timeliness and Understanding.” The four original leadership subscales (high standards, expectations, initiative, and support) were combined into one new subscale labeled “Clinical Leadership.” Additional selected communication and leadership items loaded into a new subscale labeled, “Organizational Harmony.” Cronbach’s alpha for the overall instrument was .89.

Validity testing was achieved using methods to establish content, criterion, and construct validity (Scott, Vojir, et al., 2005). Content validity was established by working with NH staff and experts to assure appropriate revision to the instrument had occurred. Criterion validity was established through a comparison of observations and interviews to the modified Shortell survey scores for each NH. Construct validity was assessed by exploring the relationship between subscales from another established tool, the Competing Values Framework Organizational Cultural Assessment (Quinn & Spreitzer, 1991). Measures of validity including content, criterion, and construct validity are critical to instrument development. Content validity is the degree to which an instrument has an appropriate sampling of items to measure a construct. Criterion-related validity is the establishment of a relationship between the instrument and an external criterion. Construct validity is much more challenging and involves the degree to

which an instrument measures the constructs under study (Polit & Beck, 2004). These measures of both reliability and validity established the modified Shortell survey as an important instrument for measuring communication and leadership in the NH setting (Forbes-Thompson, Gajewski, Scott-Cawiezell, & Dunton, 2006).

Key Informant Interviews

Key informants are individuals who provide unique insight into the subject under study (Polit & Beck, 2004) and differ from other informants by the nature of their position (Gilchrist, 1992). Interviews are methods to identify what people think and believe through self-report and are best done through an open-ended question technique (Wood & Ross-Kerr, 2006). Key informant interviews were completed with both nurse leaders and project coordinators for all five NHs at the beginning of the AHRQ intervention study and again at the end of the AHRQ intervention study. Key informants from NH1 included two different RNs in the role of project coordinator. One RN served as project coordinator at the beginning of the AHRQ intervention study and subsequently resigned the position prior to technology implementation. The second project coordinator remained in place throughout the remainder of the study and was subsequently interviewed as the key informant at the end of the AHRQ intervention study. The key informant from NH2 was the director of nursing who served as the project coordinator throughout the AHRQ intervention study. A sample of the pre-eMAR implementation key informant interview questions are included in the following list:

1. What is the biggest challenge you face as a clinical leader in this nursing home to insure that residents are provided the safest medication administration possible?
2. Do these challenges vary by role and/or by shift?
3. Do you have any approaches to these challenges that you consider innovative?
4. Tell me about your relationship with the pharmacy...how does that work?
5. Does the pharmacy insure that residents receive what they need in a timely fashion?
6. Is the pharmacy part of your QA/QI team?
7. Do you have a limited formulary? Do you provide residents with generic, brand name, or both types of products?
8. Tell me about how medication administration safety practices relate to your QI initiatives.
9. Do you get good information to improve practices from your event reporting system?
10. Do you think the implementation of technology will help medication safety?
11. Is there anything I have not asked you about medication safety that you think I should know regarding your nursing home?

Additionally, a sample of the post-eMAR implementation key informant questions included the following:

1. Considering the challenges with medication safety prior to eMAR, how has the implementation of eMAR made an impact? How has the team process made an impact?
2. What do you consider the most innovative change that has been implemented since this project began?
3. Tell me how medication administration safety practices relate now to your QI initiatives. How has this changed?
4. How has your error reporting system changed? How are medication errors disseminated/shared with staff?
5. Tell me about your relationship with pharmacy since the implementation of teams; eMAR. How has that changed?
6. What do you consider the greatest obstacle during this implementation phase?
7. What did you do to overcome that obstacle?
8. Is there anything I have not asked you about medication safety and the impact of team process and eMAR that you think I should know about your facility?

Focus Groups

The recognition of staff concerns was viewed as an important step in improving the NH medication use process. To better understand staff perceptions, focus groups were conducted on-site in each of the five nursing

homes prior to the implementation of technology. Two specific focus groups, the medication management group and the medication administration group, were held with staff members. Staff from NH1 participating in the medication management focus group included RNs and unit managers (n=4) and a pharmacy consultant (n=1). Staff from NH1 participating in the medication administration group included LPNs (n=1) and certified medication technicians (CMT) (n=4) staff. Staff from NH2 participating in the medication management focus group included the administrator (n=1), RNs and unit managers (n=2), a pharmacy consultant (n=1), off-site pharmacy representative (n=2). Staff from NH2 participating in the medication administration group included LPNs (n=1) and certified medication aides (CMA) (n=3) staff. Questions for each focus group included the following:

1. What are your current concerns related to medication administration?
2. Recall a situation during the past year that you were concerned about your being able to administer medications.
3. What happened?
4. What steps might have happened to enable that?
5. What steps might have prevented the situation?
6. Do you see medication safety as a part of your current QI efforts?

Focus groups are often conducted at the beginning of a study to provide important information about the subject under study. This is particularly beneficial when little is known about the subject (Stewart & Shamdasani, 1990). Focus groups provide an opportunity for the researcher to meet directly with a group to

gain insight and to provide an opportunity to observe synergy within a specific group. Focus group selection often involves a range of participants between 6 to 12 members, where fewer than 6 participants may result in dull conversation and more than 12 may generate difficult to manage conversation (Stewart & Shamdasani, 1990). Focus group interviews were conducted by the P.I. All focus group interviews were audio-taped and transcribed.

Medication Safety Team Field Notes

Medication safety team meetings were conducted approximately monthly on site in each of the five NHs throughout the duration of the study. The medication safety teams were made up of nurse leaders, pharmacy representatives, and medication administration staff. The purpose of the medication safety teams was to facilitate implementation of the eMAR technology. The research staff served as on-site facilitators to the team process.

Field notes were recorded for each of the team meetings to reflect team activities and insight into communication and problem solving. Field notes are used as an account of participant observation and can provide valuable insight into the behaviors, interactions, and patterns that emerge through qualitative research (Crabtree and Miller, 1992). Field notes were handwritten onsite then typed into a standardized computerized format to assure consistency of approach. All field notes were reviewed and validated by the P.I. prior to the next on-site visit.

Analysis

Stake (1995) suggests the search for meaning is often a search for patterns where significant events appear over and over again. Dougherty and Smythe (2004) identified significant events in their case study research through the use of sensemaking theory, where sensemaking was used to explore the relationship between organizational culture and response to sexual harassment. A similar approach was used for this study, as the conceptual model of the “interplay of leadership, communication, and teamwork” guided the identification of significant events found in the data (Stake, 1995).

The search for patterns of significant events in this case study was guided by the conceptual model shown in Figure 1, “Interplay of leadership, communication, and teamwork.” This model depicts the reciprocal relationship between essential organizational elements of leadership, communication, and teamwork considered necessary for sustained improvements (Scott-Cawiezell, 2005). Complexity science provides the theoretical underpinning as a means to explain the relationships found within the model and guides the interpretation of findings within the comparative case study (Anderson, Crabtree, Steele & McDaniel, 2005).

Analytical approaches used in qualitative research must assure findings are credible, dependable, and confirmable (Crabtree & Miller, 1992). Credibility assures the data are truthful, dependability refers to stability of the data over time, and confirmability refers to the objectivity of the data (Polit & Beck, 2004). Verification of credibility, dependability, and confirmability occurs through the

analysis process using methods of triangulation, reflexivity, and independent audits (Crabtree & Miller, 1992).

Triangulation is an important concept in case study research, where multiple methods are used to collect and interpret data about a phenomenon, so the investigator can converge on an accurate representation of the data (Stake, 1995; Stake, 2003). Triangulation occurred as multiple sources of data were used for analysis in this study. Data sources included key informant interviews, focus group interviews, field notes from medication safety team meeting observations, and participant survey scores. Additionally, findings were triangulated to the conceptual model proposed in this study (Polit & Beck, 2004).

Reflexivity, another consideration for qualitative research discussed by Polit and Beck (2004), involves critical self reflection about the investigator's own biases in an attempt to reduce subjectivity. While maximizing objectivity is considered an important element in quantitative research, it is argued that qualitative research is ideologically driven; therefore, it cannot be bias-free. The qualitative researchers articulate their ideological perspective by the conceptual model they choose and the research questions they design. Importantly, the researchers must acknowledge their biases, carefully considering the ideology that shaped their study (Janesick, 2003).

Finally, independent audit involves maintaining an audit trail of evidence that could be independently reviewed to assure consistent findings are reported (Polit & Beck, 2004). As part of this study, a clear documentation trail was maintained, with review solicited from the AHRQ P.I. to assure findings were

consistent with experiences conducted in the initial field research (Hinds, Vogel, & Clarke-Steffen, 1997).

Case Study Time Frame

A case is a bounded system where boundaries are often defined by time (Stake, 1995). The boundary for this case study is created by two distinct and critical periods of medication safety team (MST) formation and performance. The initial time frame considered MST formation prior to the implementation of eMAR (a minimum of six months) and continued through the point of the MST's first feedback from naïve observation (three months post eMAR implementation). The MST's performance from the first round of medication error feedback post eMAR implementation to the end of the study was considered the second bounded period for analysis.

Achievement of Specific Aims

Analysis for this study was based on each research aim:

Aim 1: To explore how the interplay among leadership, communication, and teamwork present at the formation of the MST.

Research Question 1: How do the nurse leader and medication safety team members communicate during the initial formation of the medication safety team?

Research Question 2: What evidence of teamwork is present during the initial formation of the medication safety team?

Research Question 3: What (if any) are the differences between the highest and lowest performing nursing homes during the initial formation of the medication safety team?

Analysis of aim 1 included triangulation of data to explore significant events related to the interplay of leadership, communication, and teamwork of each NH (NH1 and NH2) as the MST initially formed prior to the implementation of eMAR. Data included all available data collected prior to and during the initial formation of the team, including the key informant interview, focus group interviews, MST field notes, and findings from the modified Shortell Organization and Management survey. Once findings for each NH were analyzed, a comparative case analysis of NH1 and NH2 was completed to explore what (if any) differences exist between the two NHs. Comparative case analysis provides valuable opportunity to compare findings across sites, as each site is first studied separately then converged on one another to identify differences and similarities (Creswell, 1998).

Aim 2: To explore how the interplay among leadership, communication and teamwork evolve over time:

Research Question 1: How do the leader and the medication safety team co-evolve to improve communication during the study?

Research Question 2: How do the nurse leader and medication safety team members co-evolve to improve teamwork during the study?

Research Question 3: What (if any) are the differences in the co-evolution of the highest and lowest performing nursing homes?

Analysis of aim 2 included triangulation of data to explore significant events related to the interplay of leadership, communication, and teamwork as the MST evolved during the implementation of eMAR. Data included MST field notes and key informant interviews collected as the MST continued to meet throughout the implementation of eMAR. As with the analysis of aim 1, once findings for each NH were analyzed, a cross-case analysis of NH1 and NH2 occurred to explore what (if any) differences exist between the two NH.

Strengths and Limitations

Strengths of this study are many. The opportunity to explore the interplay of leadership, communication, and teamwork using a comparative case study approach provided valuable insight into the relationships that developed over time (Stake, 1995; Stake, 2003; Yin, 2003). Additionally, the benefit of comparing two cases is substantially greater than that of a single case, where comparisons provide additional strength of evidence (Yin, 2003). Finally, case study research is considered a valuable tool for understanding complex relationships within NHs (Anderson, Crabtree, Steele, & McDaniel 2005), and has been used by many noted NH researchers (Anderson, Ammarell, et al., 2005; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al., 2006; Forbes-Thompson & Gessert, 2005; Scott-Cawiezell, Vogelsmeier, et al., 2006).

Limitations of this study include the use of secondary data, where validation of findings were somewhat limited to the investigator. Often, validation in qualitative research occurs iteratively, through participant feedback to validate investigator interpretation and to identify areas for additional consideration (Yin,

2003). To manage this limitation, triangulation occurred in the data analysis to support validation of findings, which included the use of multiple data sources, as well as P.I. feedback and insight into the findings (Crabtree & Miller, 1992). Additional limitations include the two site case study approach. While two cases are stronger than one, multiple cases would provide additional strength. This limitation is minimized by using case extremes (i.e., highest and lowest performers) (Yin, 2003).

Protection of Human Subjects

The study proposal was approved by the University of Missouri Health Sciences Institutional Review Board for research involving research subjects. The investigator obtained an expedited review with exempt status as this study involved secondary analysis of an existing data source. Data from the AHRQ study implementing technology and focused quality improvement to improve medication safety in the NH were used. These data included key informant interviews, focus group notes, medication safety team field notes, and survey results from the modified Shortell Organization and Management Survey. Prior to data being provided for this study, AHRQ research staff removed any identifying information. Data were maintained in a locked file on site with the investigator of this study.

CHAPTER FOUR

Results

Nursing Home One Case Study

Organizational Overview

Nursing Home One (NH1), designated as the highest performing NH, was a large, corporate faith-based, not-for-profit NH located in a Midwestern urban area. Corporate oversight was provided for both NH management and pharmacy services. Pharmacy services included distribution of medications and clinical pharmacy oversight. Additionally, quality improvement was managed through a corporate continuous quality improvement (CQI) committee, which set enforcement policies (punitive action for errors), monitored critical indicators and opportunities for improvement, and provided quality improvement recommendations.

Nursing leadership included a Director of Nursing (DON), Assistant Director of Nursing (ADON), and unit managers. Early in the study, the DON resigned, leaving the ADON to serve as the interim DON. Due to changes in nursing leadership, the nurse leader (NL) assigned to facilitate eMAR implementation and the medication safety team (MST) process was also responsible for daily operations of the NH.

Findings from the organizational survey suggest NH1 staff were most positive in their responses about their nursing home team, *“I take pride in being part of this team,”* and their ability to communicate with each other, *“I find it easy*

to talk openly with staff.” In contrast, staff were least positive about communication of clinical information, *“There are needless delays in relaying information regarding care of the residents,”* and the opportunity to have a voice into decisions made by nursing leadership, *“Nursing leadership often makes decisions without input from the staff.”*

The MST formation occurred prior to the implementation of technology and continued to meet monthly throughout the study. The MST was comprised of the NL, medication managers (RNs and a pharmacist), and medication administrators (LPNs and CMTs).

The Interplay among Leadership, Communication, and Teamwork during Formation of the Medication Safety Team

Nurse leader and MST communication. Early observations of the MST and focus group findings suggest communication among nursing leadership and MST members was complicated by differing perceptions and priorities related to medication administration and what constituted medication safety. The NL focused on larger system structures and processes to assure medication safety, such as dispensing systems, medication administration structures, medication error reporting processes, and corporate CQI committee oversight. The NL focused briefly on barriers to medication safety, such as the impact of the volume of medications to be administered and interruptions to the medication administration process. While the NL spoke about the “big picture” of systems and processes to assure medication safety, the medication managers spoke about the day-to-day challenges and barriers to medication administration. The

RN team members specifically cited concerns about receiving physician orders and obtaining medications from pharmacy, as noted by the following RN quote, *“We are missing medications and sometimes the medications are given wrong.”* The medication administrators had yet another set of concerns even more proximal to the bed side, with LPN team members addressing barriers related to order entry and CMT team members feeling more pressured by timely medication administration.

Communication during the initial team formation was further complicated, because team members were fearful of sharing their perceptions about medication safety. Fear was directly related to their fear of repercussions for error, since punitive action was enforced through the corporate CQI policy. Fear among the team was reflected by this RN quote, *“It makes me nervous knowing this system of reporting. It does diminish our desire to report error.”*

Evidence of teamwork. During the MST formation, the assigned NL did not perceive the MST process a priority. The NL was overwhelmed with day-to-day operations and technology implementation, as conveyed in this quote:

I’m totally excited about eMAR, then I realized the work involved and it got real scary, my administrator is the lead person, but I’m the real lead person by default and there is a lot of work to do...I know the system is going to be wonderful when it is all up, but for now it’s a lot of work.

Daily challenges from the NH and frustrations of implementing eMAR led to the NL only attending one meeting. The NL considered the MST, *“one more*

thing to do” sending the message to the team, the MST was a task and not a priority.

In the absence of a NL, RN team members emerged to the leadership role and guided discussions about barriers to medication safety practices, which evolved to discussions about process change priorities. While MST members were committed to improving medication safety practices, they shared feelings of frustration and disempowerment when attempts to influence change were unsuccessful without the influence and cooperation of the NL. Evidence of frustration and disempowerment were expressed when team members asked how other NHs in the study were making progress in their teams, *“We are not really solving any problems right now.”*

Despite feelings of frustration and disempowerment, RN team members were successful in facilitating communication among MST members. In spite of the punitive reporting policy, RNs successfully encouraged team members to openly share their concerns about medication safety practices and to share stories about medication error occurrences. For example, team members shared personal experiences, such as “order entry errors” that went undetected for several days and “short cuts” to get medications passed on time. Open communication resulted in a cohesive relationship among the MST, as noted by this team member quote, *“We have to work together (as a team)...we always need to think about the potential for error.”*

As MST members began to communicate, it became more evident they had differing perceptions about medication safety barriers. These differing

perceptions were exemplified by an exchange between an RN Unit Manager and a CMT. The CMT indicated, *“I feel like medication sheets are accurate...we have the medications we need and we get them pretty fast.”* The RN offered a different perception, *“I’m concerned about the whole process...pharmacy doesn’t always get the right information...orders are not processed right.”* While divergent perceptions were evident, the team did develop an ease in communicating with each other, which led to the development of a collective understanding of barriers to medication safety practices and an effective foundation for ongoing problem solving.

The shared understanding of barriers provided a common ground for the team to begin to work cooperatively to consider solutions. For example, because team members recognized the value of sharing information about medication errors to improve medication safety practices, they discussed the need to change the organization-wide policy for punitive error reporting. Additionally, because team members openly discussed their concerns with missing medications, they considered systems for tracking missing medications to identify and influence underlying causes.

The absence of the NL remained an ongoing issue, as the team continued to be frustrated with the perceived authority member absent. These frustrations are summarized by an LPN team member’s statement, *“How can decisions be made...how can any change happen?”*

Initial interplay among leadership, communication, and teamwork. The interplay among leadership, communication, and teamwork suggests nursing

leadership influenced communication and teamwork among MST members in both positive and negative ways. First, RN team members emerged as leaders to facilitate the team process in the absence of the NL, and in doing so, facilitated open communication and problem solving. However, because the NL was perceived the authority by the team, her absence impeded the team's ability to implement organization wide process improvement.

The Interplay among Leadership, Communication and Teamwork as the Medication Safety Team Evolved

Co-evolution of the nurse leader and MST's communication. As the MST continued to meet, NH1 hired a new DON and a clinical information specialist (CIS) to coordinate technology implementation throughout the large NH. The CIS, assigned as the new NL for the study, immediately engaged with the MST, recognizing the importance of the MST's ability to provide expert feedback and problem solving during the implementation process. The NL began attending the team meetings and supported open communication in the monthly discussion about new medication errors. The NL support for open communication was evident when the MST discussed an incident where multiple order entry errors occurred when a complex resident was admitted. In the presence of the NL, a team member talked openly of how she "got confused about the admission process," resulting in the omission of several medications from order entry. Not only did the NL engage in dialogue among the team, she took recommendations from the team to the organization for implementation. Because of the team's suggestions about how to improve the admission order entry process, the NL

was able to facilitate implementation of an organization-wide process change to assure accuracy and safety for resident admissions.

Communication was also influenced by the introduction of feedback reports that provided detailed information about medication errors. Because medication error data were now shared, MST members engaged in rich conversations to understand underlying root causes. For example, based on medication error feedback, the team identified issues with omitted doses of medications. MST members began tracking missing medications and discovered the system of routinely reordering medications was problematic. Effective communication and critical information set the stage for a high performing team, as evidenced by this NL quote:

...it (team) has created collaboration and teamwork because they are all in this together at the same time and it's like I don't necessarily feel stupid asking the question because you probably have the same question I do. So it (team) helps a lot in that and our CQI process has definitely (improved), I mean we get so much more data and so much better data...before we just used to report med errors in general and pharmacy variances. It has gotten a lot more in-depth and a lot more detailed.

Co-evolution of the nurse leader and MST as a team. With communication and feedback now effectively in place, the team became very effective in systematically solving problems. For example, due to identifying the underlying

cause of missing medications, the MST recommended and implemented basic strategies to improve the medication reorder process. Other challenges were also undertaken by the team, such as the punitive error reporting system. Although the team was unsuccessful in impacting corporate policy, they did influence local implementation of the policy, as evidenced in this NL quote:

It is not necessarily a punitive system (now), but rather a point system...which helps us actually guide somebody...if you are really struggling in this area, then let's re-inservice or maybe there is a process problem that we need to work out.

The NL and MST worked collaboratively to effectively integrate eMAR into all aspects of workflow. For example, team members talked about frustration with “slow computers.” Because of MST feedback, the NL worked with administrative staff to make necessary changes to the hardware and networking systems. The success of the team was pervasive, as evidenced when a pilot project recommended by the team was quickly taken facility wide. At the suggestion of the MST, an RN Unit Manager began a daily review of new physician orders to prevent the propagation of medication errors. Because other unit managers saw the benefit, they began implementing the same daily review process. The MST saw their worth to the facility and felt positive about their problem-solving skills as stated by one team member, *“We have really become better problem solvers.”*

Interplay among leadership, communication, and teamwork as the team evolved. The interplay among leadership, communication, and teamwork suggests the NL and MST achieved organization-wide improvement through

open communication and effective teamwork. The newly assigned NL valued the input and feedback of MST members, which was a missing element during team formation. Because the NL valued the voice of the team, team members became empowered to share important information. Subsequently, because members sought information to share with the team, they, in turn, sought input and feedback from their NH1 co-workers to assure information was accurate and timely. As a result, input and feedback from across the organization was integrated to influence improvement of medication safety practices.

Additionally, because this diverse group of team members worked collaboratively toward their common goal, they were able to effectively coordinate improvement efforts across the organization. While the MST had established a goal to improve medication safety practices when the team formed, the new NL integrated their goal and stretched the MST to also focus their problem solving skills on maximizing the impact of eMAR to create safe medication practices. Since the team shared an understanding of this new goal, the NL and MST positively influenced eMAR implementation while assuring medication administration practices were safe. The goal for NH1 became, "Doing the job right."

Nursing Home Two Case Study

Organizational Overview

Nursing Home Two (NH2), designated as the lowest performing NH; was a medium size, corporate owned for-profit NH located in a rural Midwestern area. The NH was owned and operated by an administrator and his wife, the director of

nursing (DON). Pharmacy services were provided through a contractual relationship with two community-based distributing pharmacies and an independent consulting pharmacist. Quality improvement was managed through quarterly quality assurance (QA) committee meetings. Meetings were led by the administrator, DON, and medical record staff. Medication error tracking and trending had been recently added to the QA committee agenda prior to the start of the study.

The nursing leadership team was comprised of a DON and two unit managers. The DON had more than five years in her current position.

Findings from the organizational survey suggest NH2 staff were most positive about their team, “I take pride in being part of this team” and their ability to communicate with each other, “I find it easy to talk openly with staff.” In contrast, staff were least positive about communication of clinical information, “It is often necessary for me to go back and check the accuracy of information I have received from other staff,” and the opportunity to have a voice into decisions made by nursing leadership, “Nursing leadership often makes decisions without input from the staff.”

The MST formation occurred prior to the implementation of technology and continued to meet monthly throughout the study. The team was comprised of the NL, medication managers (two distributing pharmacists and a consulting pharmacist), and medication administrators (LPN and CMAs).

The Interplay among Leadership, Communication, and Teamwork at the Formation of the Medication Safety Team

Nurse leader and MST communication. Divergent perceptions and differing priorities between the NL and MST complicated communication among MST members. The NL spoke primarily of medication administration efficiencies, citing specific concerns about “the volume of medications to be passed” and “meeting the regulatory timeframes of when they are due.” The medication administrators (CMA) shared the NL’s concern speaking to the pressures of getting medications administered on time, “It’s overwhelming, we can’t always get everything done on time.” While the NL and CMA team members shared concerns about efficiency; the medication managers spoke more about medication safety, specifically citing concerns about “communication among staff.”

As the team initially shared their diverse perspectives, the NL’s priority of medication efficiency resulted in her disregarding the concerns of those who did not share her priority. For example, when the pharmacists discussed concerns about ineffective nursing and pharmacy communication, the NL countered their concerns by saying, “The nurses don’t always communicate to pharmacy...if it is something they (nursing) can take care of, they will.” Another example occurred when the NL quickly changed subjects because the pharmacists raised concerns about nursing staff changing medication labels without pharmacy oversight. The NL’s disregard of diverse perspectives

resulted in limited information sharing among the team throughout the study.

Communication was further complicated when the NL discouraged open communication. During formation of the MST, medication error disclosure was raised as an opportunity to uncover underlying system's problems. As the topic of medication error disclosure was initially discussed, team members looked to the NL, waiting for her response, rather than speaking about personal medication error encounters. The NL responded "I deal with staff to take care of things," implying medication error is the fault of people rather than systems or processes. Subsequently, no team members shared personal experiences about medication error encounters throughout the remainder of the study.

Evidence of teamwork. During formation of the MST, the NL quickly established a goal of medication efficiency. The NL's goal of efficiency was shared by the CMA team member who perceived her role as "generally running the medication administration system." The CMA's perception was supported by this NL quote, "CMA staff are really responsible for the medication administration process."

Since the NL perceived CMA staff responsible for medication administration, she most valued input from the CMA team member. The NL sought the input from the CMA when proposing solutions to eliminate barriers to medication efficiency. For example, when the NL suggested expediting the medication reorder processes, she referred only to the CMA for problem resolution and did not seek input from other team members.

While the relationship between the NL and CMA was strong, relationships among remaining team members were weak. For example, while the NL and CMA engaged in problem solving discussions during team meetings, other team member sat quietly no longer discussing their concerns or offering input. Lack of team member input was evident when the consulting pharmacist offered this comment in private:

I don't offer anything clinical (to the team)...I rather spend my time doing chart audits to find holes in the documentation...they could pay someone \$6.00 an hour for what they pay me \$50.00 an hour to do...but, oh well, I'm not going there (with the DON).

Initial interplay among leadership, communication, and teamwork. The interplay among leadership, communication, and teamwork suggests nursing leadership influenced communication and teamwork among MST members in a negative way. The NL's focus on regulatory compliance and efficiency stifled communication. While the CMA team member shared the NL's perspective, other members of the team did not. Moreover, the NL's resistance to open communication negatively influenced the team's ability to create a shared understanding subsequently impeding their ability to establish a common goal. An inability to establish a common goal impeded the team's ability to work effectively as a team.

The Interplay among Leadership, Communication, and Teamwork As the Medication Safety Team Evolved

Co-evolution of the nurse leader and MST's communication. As the MST continued to meet, the NL attended each meeting and remained focused on the goal of maximizing technology to improve efficiency. Because of this focus on efficiency, the role of the CMA in the team remained singled out and elevated. For example, when medication error feedback data was introduced to the team, wrong-time error became meaningful to the NL and CMA to influence change. As feedback data was reviewed, CMA staff from across the NH were invited to the team meeting to problem solve because they were considered by the NL to be “responsible for medication administration.”

CMA staff attending the team meeting openly shared challenges to workflow efficiency with examples of “messy medication carts” that impeded their ability to “pass their meds on time.” However, CMA staff did not openly share challenges or barriers that might have contributed to other medication error. For example, while disorganized medication carts were perceived as a barrier to efficiency, there was no discussion about how disorganized medication carts might have contributed to other types of medication errors such as wrong medications or omitted doses. The NL’s focus on efficiency remained the focus on problem solving for the team.

Co-evolution of the nurse leader and MST as a team. The NL and CMA staff worked to strategically improve efficiency through the eMAR system and through standardization of medication carts. However, because the NL and CMA

staff worked to achieve their individual goal, cooperative teamwork involving all members of the MST remained impeded by the team's inability to establish a shared goal. For example, when medication error feedback identified issues of omitted doses, the pharmacists attempted to discuss underlying cause while the NL and CMA quickly discarded the validity of the error data suggesting medication doses were not actually missed. Once again, the NL disregarded the input of the team when their input differed from her goal of efficiency.

The NL summed up her evaluation of team effectiveness by stating, "I think the (MST) was able to identify some issues, but I don't know if those necessarily got resolved or not." The CMA team member commented, "This probably won't work for us to continue a medication safety team...after all, we are pretty good at problem solving without these team meetings." Other members of the team did not comment regarding team effectiveness, once again electing to remain silent.

Interplay among leadership, communication, and teamwork as the team evolved. The interplay among leadership, communication, and teamwork suggests the NL and MST were unable to achieve organization wide improvement despite the NL and CMA's isolated attempts to influence change. The NL's goal of efficiency and regulatory compliance remained unchanged throughout the study. Because the goal of efficiency motivated the NL, the NL valued input from individual team members she thought could help meet that goal. In isolating communication with the CMA, the NL disregarded the input of other team members. Additionally, the NL and CMA communication was not

based on open and honest communication because team members only shared information sought by the NL that would impact the overall goal of efficiency.

The NL and CMA team members individually worked toward their goal of efficiency because they were set on “getting the job done.” As a result, other team members disengaged from the team ultimately influencing the team’s inability to work as a team toward organization wide improvement.

Case Comparison of the

Highest and Lowest Performing Nursing Homes

Comparing the Interplay among Leadership, Communication and Teamwork during Team Formation

Nursing leadership influenced communication and teamwork at both NH1 and NH2. At NH1, RN team members emerged to the leadership role and positively facilitated open communication and relationships among the team by encouraging the sharing of personal experiences. As a result, team members quickly established a common goal to improve medication safety practices. In contrast, the NL at NH2 hindered open communication and discouraged dialogue about medication safety with her singular focus on medication administration efficiency.

Neither NH1 nor NH2 had access to medication error data during formation. However, NH1 shared anecdotal stories about medication error encounters and used these stories to engage in discussion about possible solutions. NH2 team members avoided anecdotal stories about medication error encounters, because they feared repercussions from the NL.

Communication between the NL and MST influenced elements of team effectiveness at both NH1 and NH2. At NH1, the RN leaders and MST quickly established a common goal of medication safety practices, whereas, the NL and MST at NH2 were unable to establish a common goal, because various members were in conflict about the goal.

Team-level conflict was present at both NH1 and NH2. At NH1, the absence of the NL impeded the team's perceived ability to actively work toward improvement in medication safety practices, because the team felt disempowered. At NH2, team-level conflict existed among team members, because some members of the team became engaged in the team process while other members conceded their concerns and became disengaged from the team process.

Comparing the Interplay among Leadership, Communication and Teamwork as the Team Evolved

The organization-wide survey findings suggested staff from NH1 and NH2 were both positive about their relationships with their NH staff coworkers and negative about communication and relationships with NH leadership. However, while NH1 and NH2 had similar staff perceptions of communication, teamwork, and leadership, NH1 nursing leadership and MST members achieved improvement in medication safety practices while NH2 did not.

As changes in nursing leadership occurred at NH1, the NL and MST co-evolved to improve medication safety practices by working together as a team rather than the NL simply avoiding the team. The NL immediately recognized

diverse team member contributions and sought their input for problem solving and decision-making. Because MST members perceived their input was valuable, their relationship with the NL was enhanced. Team members desired to provide meaningful information so accurate and timely decisions could be made. Team member input, coupled with medication error feedback reports, facilitated efforts to influence real time change. Moreover, the NL empowered team members to creatively work within existing organizational policies to facilitate open communication among all staff. Because open communication and input into decision making occurred across the organization, the NL and MST co-evolved to effectively facilitate change that had a positive organization wide effect.

In contrast, the NH2 NL attempted to control the team by influencing communication and teamwork among the team. As a result, communication and relationships among the team were minimal. The NL remained committed to efficient medication administration processes and guided communication to influence MST members to share her goal of medication administration efficiency. As individual goals were set, only select staff (CMA) became involved to influence process change. As a result, the MST lacked diversity and cooperation among members with no shared goal, ultimately resulting in a negative organization-wide effect.

CHAPTER FIVE

Discussion

The Interplay among Leadership, Communication, and Teamwork as Viewed through Complexity Science

The interplay among leadership, communication, and teamwork can best be viewed through the lens of complexity science (CS) (McDaniel & Driebe, 2001), as NHs are considered complex adaptive systems (CAS). Key characteristics of a CAS include agents, interconnections, self organization, emergence, and co-evolution (Zimmerman et al., 2001), whereas through interconnections (relationships) among agents (team members), agents self-organize to create new structures, emerging, and ultimately co-evolving to create changes in their environment (Waldrop, 1992; Zimmerman, Lindberg, & Plsek, 2001).

“Doing the Job Right” or “Getting the Job Done”

This comparative case study provides rich accounts of the differences between two NHs, the highest performer (NH1) and lowest performer (NH2), as the interplay among leadership, communication, and teamwork is explored through the formation and evolution of a MST. While the NL and MST members from NH1 worked cooperatively toward a common goal of improving medication safety practices and “doing the job right,” the NL and MST members from NH2 worked toward an individual goal established by the NL focused on “getting the job done.” The interconnections (relationships) among members of the team,

influenced by the NL, provide important evidence to identify differing elements between the highest and lowest performing NHs.

Interconnections among Members of the Team

As suggested by CS, interconnections among staff facilitated by leadership and communication (Anderson & McDaniel, 2000) are essential for NH improvement to occur (Anderson et al., 2003; Anderson et al., 2004; Colon-Emeric, Ammarell, et al., 2006; Colon-Emeric, Lekan-Rutledge, et al. 2006). At NH1, RN team members, and later the new NL, facilitated interconnections and relationship building among the MST through open communication (Piven et al., 2006). Conversely at NH2, nursing leadership discouraged open communication, negatively impacting interconnections and relationships among the team.

Through open communication encouraged by nursing leadership, NH1 team members shared personal experiences and, as such, their divergent perceptions converged to a common understanding of medication safety as collectively perceived by the various roles (Dougherty, Kramer, Hamlett, & Kurth, 2006). Communication to create a common understanding, in turn, facilitated relationship building within the team because members engaged in positive communication and collaboration, resulting in participation among all members (Shortell, Marsteller et al., 2004; Temkin-Greener et al., 2004). In contrast, the NH2 NL did not facilitate open communication among the MST; rather, the NL limited communication among team members and, as a result, divergent perceptions persisted, resulting in conflict among the team, ultimately hindering their performance as a team. Relationships that result from an environment

supporting communication, cohesion, and teamwork can evolve to build effective teams, thus emerging to high performing organizations (Nelson, et al., 2002; Scott-Caweizell, Main, et al., 2005; Stone et al., 2002).

Self-Organization as an Element of Team Effectiveness

Self-organization is an element of team effectiveness because team members adapt to changes in their environment in order to meet the demands of the relationships they have with each other (McDaniel & Driebe, 2001). Elements of effective teamwork evolved at NH1 when self-organization began to occur during the formation of the team. Initially, RN team members emerged as leaders to guide the team in the absence of the assigned NL. When RN team members recognized the NL's absence was hindering the team process, they assumed the role of nursing leadership and facilitated team member communication and problem solving.

Communication among the NH1 team represents dimensions of communication proposed by Shortell and colleagues (1991; 1994), who suggested openness, accuracy, timeliness, understanding, and satisfaction are all critical dimensions of communication (Shortell et al., 1991; 1994). These dimensions of communication were clearly missing from NH2, where the NL discouraged open communication, impeding accurate, timely, and satisfying information sharing from other team members.

Evidence of self-organization occurred at NH2, when team members disengaged from the process after realizing their input was not valued. Because the pharmacists were in a contractual relationship with the NL, they continued to

attend the meetings; however, they offered little input, as their perspective was counter to the NL's goal of efficiency. Zimmerman and colleagues (2001) suggest self organization is facilitated when control is distributed internally within the system rather than through a central command (Zimmerman et al., 2001). Importantly, CS recognizes self-organization is necessary for systems to emerge to higher performance (McDaniel & Driebe, 2001).

Emergence and Co-Evolution to Higher Performance

Emergence occurs through the interaction among agents (team members) in a non-linear way as agents self-organize and cause systems to change (McDaniel & Driebe, 2001). Non-linearity, when small change has large effect, is considered evidence of emergence (Zimmerman et al., 2001) and was illustrated as NH1 team members shared information and sought feedback from staff outside the team. While the intent for communication outside the team was to inform problem solving and decision making within the team, the larger effect resulted when NH1 staff sought involvement in the quality improvement process. Subsequently, NH1 achieved their goal of "doing the job right," as organization wide improvements to medication safety practices occurred.

Despite efforts from the NH2 NL and CMA to work together to solve barriers to medication administration efficiency and achieve their goal of "getting the job done," no organization wide improvement occurred. The NL guided the CMA to consider specific strategies, excluding the input of other members of the team. As a result, only changes occurred within the CMA role and did not influence organization wide improvement. The influence of the NH2 NL

negatively impacted the team's ability to effectively solve medication safety challenges, thus impacting the organizations ability to change.

Importantly, NH1 and NH2 had similar staff perceptions of communication, teamwork, and leadership, as noted in the organizational survey completed prior to the team formation. These survey findings suggest staff from NH1 and NH2 were both positive about their relationships with their NH staff coworkers and negative about communication and relationships with NH leadership (Scott-Cawiezell et al., 2005). However, NH1 nursing leadership and team achieved improvement in medication safety practices while NH2 did not. Because one of the primary differences between NH1 and NH2 was the behaviors of nursing leadership, this suggests nursing leadership was an influencing factor to team effectiveness and organizational improvement.

Nursing Leadership Is Foundational to Communication and Teamwork

Nursing leadership is foundational to influencing change (Kitson, Harvey, & McCormack), since an environment conducive to improvement is facilitated through open communication and relationship building (Anderson et al., 2003; Hall et al., 2005). As communication is the creation of shared meaning (Daniels & Spiker, 1987), NH1 nursing leadership supported the creation of shared meaning by creating an environment conducive to open communication through team member empowerment to share personal experiences. Because personal experiences were shared, the NL and MST members created a shared understanding about medication safety, thus resulting in a common goal of "doing the job right." In contrast, NH2 nursing leadership did not support an

environment conducive to open communication; instead, the NL guided team members to only share experiences about barriers to medication administration efficiency. As a result of the NL's control of information sharing, the goal for NH2 was, in reality, the NL's goal of "getting the job done."

According to Scott-Cawiezell, Main, and colleagues (2005), leadership in high performing NHs seek out the voice of staff and, as a result, staff perceive themselves to be valued, involved, and empowered. The NH1 NL clearly valued the voice of the team, and in doing so, empowered team members to seek out important information to share. Conversely, the NH2 NL did not value the voice of the team; rather, the NL only valued the input of select team members (CMA), resulting in disengagement of other members from the team process.

Importantly, NH1 nursing leadership guided team members as they interdependently resolved barriers to medication safety practices, challenged existing rules that impeded open communication, and collectively worked toward improved processes to achieve extraordinary performance. These characteristics suggest NH1 leadership was transformational, where leadership and staff work together toward the greater good of the organization (Burns, 1978). NH2 nursing leadership, however, exhibited characteristics of transactional leadership, where a command and control approach to management (Scott-Cawiezell, Jones et al, 2005; Rosen et al., 2005) was focused on regulatory compliance (Adams-Wendling & Lee, 2005; Baier et al., 2004; Lucas et al., 2005) Because open communication was hindered and relationships among the team were not fostered, team effectiveness did not occur.

Management Support for Organizational Improvement

Recent research has focused on team effectiveness, as a result of being embedded in larger efforts to improve organizational performance (LeMieux-Charles & McGuire, 2006). While not considered within the boundaries of this case study (Anderson et al., 2005), the management infrastructure of each NH provides important insight into each organization's capacity for quality improvement (Scott-Cawiezell, 2005).

The management infrastructure of NH1 was focused on internal standards, supporting the team's goal of "doing the job right." The internal focus on standards was evident as the organization approved additional resources at the request of nursing leadership to integrate eMAR implementation and quality improvement efforts. And importantly, nursing leadership successfully negotiated interpretation of the corporate wide policy for punitive medication error reporting to facilitate open communication and error disclosure to improve medication safety practices.

Conversely, the management infrastructure of NH2 was focused on regulatory standards supporting the NL's goal of "getting the job done." This internal focus on regulation was evident, because the organization assured regulatory compliance through documentation audits and medication administration efficiencies. Overall, differences between NH1 and NH2 include key elements of leadership and management commitment to quality, communication, team processes, and shared decision making, which are

considered key indicators to influence nursing home performance (Stone et al., 2002).

Conclusion

The characteristic differences between NH1 and NH2 are supported across many studies exploring high and low performing organizations. Commonly, high performing organizations have leaders who effectively support open communication, facilitate teamwork among staff, and focus on high quality care (Forbes-Thomson & Gessert, 2005; Nelson et al., 2002; Scott-Cawiezell, Main et al., 2005; Shortell et al., 1994 Stone et al., 2002). Conversely, low performing organizations lack good systems for communication, view staff as a burden, and focus on regulatory compliance (Forbes-Thomson & Gessert, 2005; Scott-Cawiezell, Main et al., 2005). While these studies provide important characteristics of high and low performing organizations, exploring the interplay among leadership, communication, and teamwork within these organizations provides important insight into how organizations may actually achieve high performance.

This study sought to explore the interplay among leadership, communication, and teamwork as a nurse leader and medication safety team worked together to improve medication safety practices in the NH. Study aim one explored the interplay among leadership, communication, and teamwork at the formation of the team process and study aim two explored the interplay among leadership, communication, and teamwork as the team evolved over time. Findings for study aim one suggest nursing leadership played a critical role in

initially influencing communication and teamwork among the team. Because nursing leadership encouraged open communication at the formation of the team, team members shared their diverse perspectives leading to a cohesive, goal-directed team environment where effective problem solving could begin to occur. In contrast, when nursing leadership discouraged open communication, team members were unable to establish a cohesive relationship and an effective problem-solving team environment was impeded.

Findings for study aim two suggest because nursing leadership continued to engage with all members of the team, seeking their input and feedback to identify and solve problems, team members became empowered to influence change. The introduction of accurate and timely feedback data further supported efforts of the team, as they embraced information to facilitate improvement. In contrast, because nursing leadership did not engage all members of the team, but rather only valued input and feedback from select members of the team, team members disengaged from the team, subsequently impeding team efforts to achieve improvement.

Implications for Theory

Findings from this study contribute to our understanding of how the interplay among leadership, communication, and teamwork influences organizational performance. Based on these findings, nursing leadership influences the environment in which open communication and relationship building could occur. Open communication and relationships among team members influenced the presence of teamwork within the team. The presence of

teamwork among team members, in turn, influenced team effectiveness, which subsequently influenced organizational performance. As suggested by this study nursing leadership is an influencing factor in the facilitation of change (Kitson, Harvey, & McCormack, 1998; Pepler et al., 2006). Future studies should explore nursing leadership as a key variable to improved organizational performance.

Implications for Future Research

Importantly, this study has explored the interplay among leadership, communication, and teamwork as it influences nursing home quality improvement. Specifically, when nursing leadership created an environment supporting open communication and relationship building among members of the team, team members became cohesive, established a common goal, and subsequently achieved improvement. Future research should further explore nursing leadership styles, specifically behaviors carried out by nurse leaders that influence open communication and teamwork among staff. Secondly, as nursing leadership behaviors are identified, these behaviors should be tested in quality improvement teams to link nursing leadership's influence of communication and teamwork to improved organizational performance within the nursing home, as well as other healthcare settings. As effective leadership behaviors are linked to improved organizational improvement, organizational performance should be followed, over time, to identify improvement that is sustainable.

Implications for Practice

As this study suggests, nursing leadership played a critical role in facilitating open communication and teamwork to achieve high performance.

Nursing leadership that supports an environment conducive to open communication and relationship building by encouraging team members to share their diverse perspectives is effective in creating improvement strategies. As noted in this study, the sharing of diverse perspectives was accomplished when staff were encouraged to share their personal experiences and encounters in their work. Because team members shared their diverse perspectives, they created a shared understanding, which led to the establishment of common goals. Because common goals were established, the team worked cooperatively and achieved their patient safety goals. Moreover, nursing leadership facilitated teamwork and goal achievement, not by controlling the team, but rather empowering the team through seeking ongoing team member input and feedback for problem solving. Additionally, nursing leadership provided accurate and timely feedback to assure decision making and problem solving were appropriately focused on improvement. As team member input and feedback occurred, quality improvement in the NH occurred.

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