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PHYSICIAN AND NURSE DYAD PARTNERSHIP AND ITS VALUE: THE ANTECEDENTS AND CONSEQUENCES OF LEADER-LEADER EXCHANGE AND LEADER-MEMBER EXCHANGE IN HEALTHCARE

presented by Ralph D. Turner

a candidate for the degree of Doctor of Business Administration

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PHYSICIAN AND NURSE DYAD PARTNERSHIP AND ITS VALUE: THE ANTECEDENTS AND CONSEQUENCES OF LEADER-LEADER EXCHANGE AND LEADER-MEMBER EXCHANGE IN HEALTHCARE

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By
RALPH D. TURNER

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PHYSICIAN AND NURSE DYAD PARTNERSHIP AND ITS VALUE: THE ANTECEDENTS AND CONSEQUENCES OF LEADER-LEADER EXCHANGE AND LEADER-MEMBER EXCHANGE IN HEALTHCARE

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ABSTRACT

In an effort to decrease the cost of healthcare, the United States federal government has challenged healthcare organizations to decrease their operating expenses by changing the reimbursement structure of the Center for Medicare and Medicaid Services (CMS) from volume to value. This dissertation explored how healthcare organizations changed their leadership structure to align with the shift from volume to value by introducing a model of governance that focused on improving the quality of care versus treating the masses. The change in inpatient unit leadership introduced the dyad partnership between a physician and nurse leader. This model of leadership roots resides in the vertical-dyad linkage (VDL) theory, which evolved to the leader-member exchange (LMX) theory. The physician-nurse dyad partnership (PNDP) theoretical principles stemmed from LMX, where high quality relationships were founded on mutual respect, trust, and obligation between the physician and nurse—the leader-leader exchange (LLX). This research examined the post effect of implementing the LLX-PNDP and LMX through employees' perception of their leadership. We posited that the theoretical underpinnings

of LLX and LMX strengthen the social capital of the four dimensions—care coordination, communication, teamwork, and trust—on inpatient units at a Midwestern healthcare organization. We also predicted that the enhancement of these factors positively impacted patient safety and job satisfaction. The methodology utilized secondary data collections from an employee engagement survey, inclusive of the employee perceptions of leadership's ability to improve patient safety and job satisfaction. Second, a time series analysis was performed with historical data, consisting of quality safety indicators, to determine if these indicators improved over time. Lastly, we completed a qualitative case study, which reviewed the antecedents that led to why and how the senior leaders of the case organization decided to implement the PNDP model of governance. Findings from this dissertation have academic and practitioner implications as healthcare organizations strive to reduce costs while improving patient care.

Keywords: Leader-member Exchange; Leader-leader Exchange; Social-Technical Systems; Physician-Nurse Dyad Partnership; Catheter Associated Urinary Tract Infection; Central Line Associated Bloodstream Infection; Clostridium Difficile Infection

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VITA

Ralph D. Turner was born January 15, 1968, in Hahira, Georgia. He completed his undergraduate work at the University of Maryland, University College, where he received his B.S. in Business Administration (1995). His Master of Public Administration was awarded by Troy University, Troy, Alabama (2001). He completed his Master of Science in Healthcare Administration at the University of Maryland, University College in 2011. Ralph completed his bachelors and first masters while service our country in the United States Army, health services command. He retired in 2008 at the rank of Chief Warrant Officer Four. His military service and civilian employment have always been in healthcare, accumulating over 32 years of experience.

CHAPTER 1: PHYSICIAN AND NURSE DYAD PARTNERSHIP AND ITS VALUE: THE ANTECEDENTS AND CONSEQUENCES OF LEADER-LEADER EXCHANGE AND LEADER-MEMBER EXCHANGE IN HEALTHCARE

The U.S. healthcare system is undergoing a riptide of change. It bears the label as failing, partly due to factors highlighted in a 2001 study by Kohn, which identified 98,000 deaths due to medical errors. In 2001, medical errors were the fourth leading cause of death behind motor vehicle accidents, breast cancer, and acquired immunodeficiency syndrome (AIDS) (Kohn, 2001). Fifteen years later, this U.S. statistic is still in perils. McMains (2016) reported a study from Johns Hopkins University suggesting that 250,000 deaths are due to medical errors, now the third leading cause of death behind heart disease and cancer. Further issues that lead to a failing U.S. healthcare system have been reported by the Commonwealth Fund, which found that the median per capita expenditure for hospital services and drugs is 2.7 times greater than 11 other industrialized nations in the Organization for Economic Cooperation and Development (Davis, Stremikis, Squires, & Schoen, 2014). The same report highlighted the U.S. healthcare system is last among the 11 other industrial nations in terms of quality, access, efficiency, equity, and outcomes (Davis, Karen et al., 2014). These are gripping statistics for a superpower nation such as the United States of America, which leads to the question: How can the United States spend 2.7 times more on healthcare than 11 industrial nations and rank last in healthcare quality?

Research Question

The federal government has been implementing innovative measures to improve the quality of healthcare organizations while simultaneously decreasing costs by incentivizing the best performers and penalizing those organizations that do not meet the quality initiatives. The federal government is the largest purchaser of healthcare in the United States, through the Center

for Medicaid and Medicare Services (CMS), spending $3.207 trillion in 2016 (Munro, 2015). The high cost and poor quality of healthcare in the United States has caused the government to change their CMS reimbursement structure from one of quantity to quality, from a volume base, fee for service model to a value based, capitation (fee for total procedure, not individual services) payment model (Frist, 2016). This change has led to innovative methods of incenting organizations to improve quality by supporting the decrease in mortality and readmission rates. Healthcare organizations across the nation have been implementing new management structures, leadership models, and patient safety practices to improve quality and decrease their operating expenses, which should support lowering healthcare cost to the consumer. The question becomes: Do the changes implemented by healthcare organizations increase patient safety, quality, and job satisfaction?

Research Gap

The impetus for this study was to research leadership structure changes implemented by a large, 600+ beds AMC to determine if their new inpatient unit leadership structure supports their goals of improving the quality of care by increasing the effectiveness of the organization's patient safety measures. Healthcare organizations introduce initiatives to improve quality and efficiency, such as implementing new payment models, merging with competitors, improving their information technology (IT) platform, and changing their leadership structure, which subsequently improves Medicare and Medicaid reimbursements from CMS. The healthcare organization in this research focused on improving their patient safety by changing their inpatient unit leadership structure from the socio-technical systems (STS) model of governance to a derivative form of the leader-leader exchange (LLX) theory, physician-nurse dyad partnership (PNDP), and the leader-member exchange (LMX) theory on inpatient units. The

dyads consist of a lead physician and nurse director or manager (LLX), which forms the unit based clinical leaders (UBCL). The UBCL provides leadership to the inpatient unit staff, or the unit based clinical team (UBCT), in which the LMX nurse supervisor to subordinate relationship exists. The gap resides in understanding the actual effect this leadership structure will have on patient safety and job satisfaction, as well as understanding the obstacles to implementation the organization overcomes.

Research Hypothesis

To address the research gap, the explanatory case study utilized two essays to triangulate the finding of three methodological parameters (see Figure 1.1). The first essay, "Leader-leader Exchange and Leader-member Exchange in Healthcare: Dyad Partnerships on Inpatient Units; Sustainable Results in Patient Safety and Job Satisfaction," consists of two research methods in which two different types of secondary data were analyzed to determine the effectiveness of the dyad partnership. The first research method in essay 1 utilized secondary data from the most recent employee engagement survey to comprehend the employees' perception of their leadership. The employees consisted of members from the UBCTs who had firsthand knowledge of the effectiveness of the LLX-PNDP and LMX implementation on patient safety. We hypothesized that high quality LLX-PNDP and LMX strengthens the social capital of the dimensions care coordination, communication, teamwork, and trust. The dimensions are important characteristics of an effective UBCT in healthcare, and it was hypothesized that the social capital of these dimensions will positively impact patient safety. The second research method in Essay 1 utilized secondary data of historical quality safety indicators from 2012 through 2018. We conducted a time series analysis that analyzed the change in quality safety indicators over time.

The second essay, the third study in the triangulation, "Antecedents of the Physician-Nurse Dyad Partnerships in Healthcare: An Empirical Study," sought to gain an understanding of why and how the senior leaders of the case organization chose to implement the PNDP on inpatient units. The exploratory case study methodology utilized semi-structured interviews to investigate the research question, document the underlying factors that led to the decision to implement PNDP, and the structural change requirements for implementation.

The following section will discuss Essay 1 then Essay 2. We follow with the literature review, theoretical framework, research methods, and analysis of the findings of each essay, closing with a discussion and conclusion.

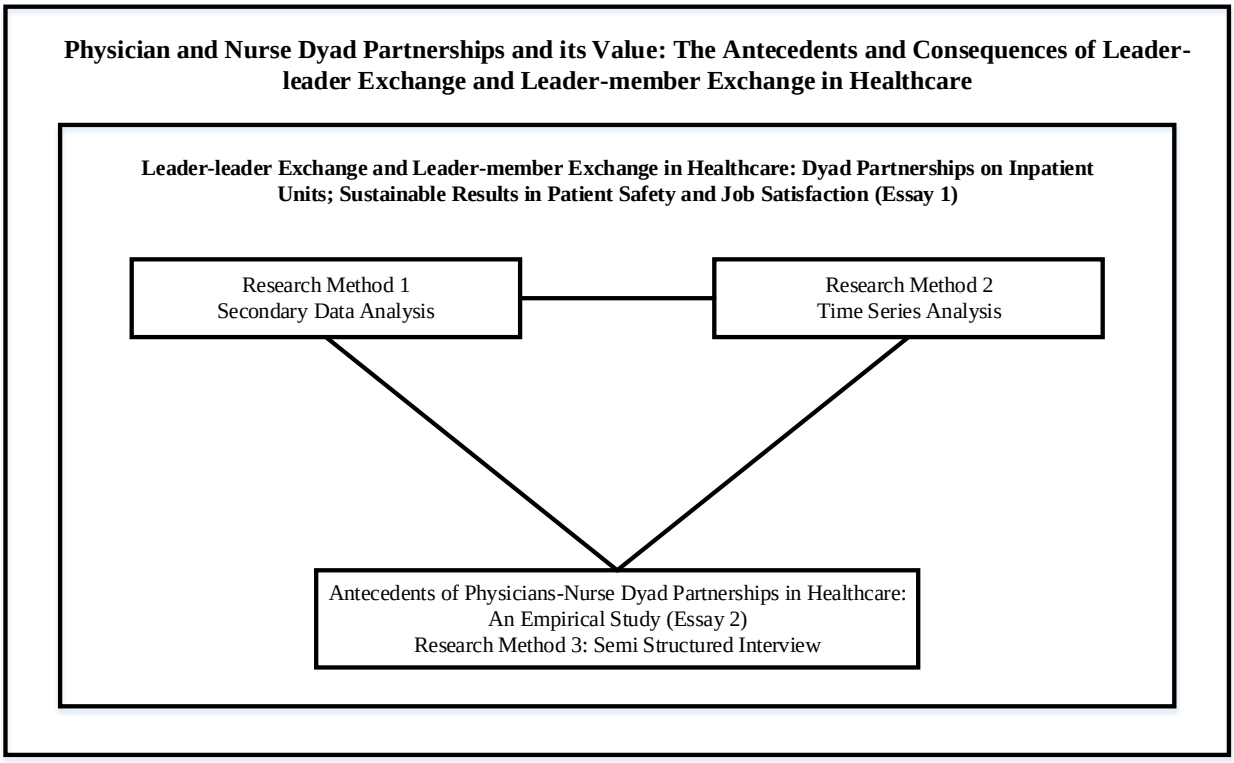


Figure 1.1. Model of triangulation.

CHAPTER 2: LEADER-LEADER EXCHANGE AND LEADER-MEMBER EXCHANGE IN HEALTHCARE: DYAD PARTNERSHIPS ON INPATIENT UNITS, SUSTAINABLE RESULTS IN PATIENT SAFETY AND JOB SATISFACTION

ABSTRACT

The plight of deaths from medical errors in the United States healthcare system continues to capture the attention of the nation. Healthcare organizations are reorganizing their leadership structures to ensure a team approach to fight healthcare acquired infections. The purpose of this research was to contribute to the leader-leader exchange (LLX), physician-nurse dyad partnership (PNDP), and the leader member exchange (LMX) theory of governance utilization in healthcare. The study also identified practical applications for the field of healthcare administration that supports their efforts to improve patient quality and safety. Congruent with the LLX and LMX theories, this study reviewed an AMCs implementation of the PNDP structure and its post effect on patient safety and job satisfaction. This research utilized secondary data from an employee engagement survey (534 data points). The survey controlled for physician, nurse, and administrator input from employees of the associated healthcare organization. The doctors were members of the organization, not contracted physicians, nor were they affiliated physicians with admitting privileges. Through the employees' perception of leadership, this study reviewed what post effect the LLX-PNDP and LMX implementation has on the social capital of the dimensions care coordination, communication, teamwork, and trust. Furthermore, the study reviewed the enhancement of the following quality indicators: catheter associated urinary tract infections (CAUTI), central line associated bloodstream infections (CLABSI), clostridium difficile (CDI), and the prevention measure of hand hygiene (HH). We

conducted a time series analysis of five years of historical data of the quality indicators, consisting of 40 to 92 data markers, to determine if the indicators improve over time, which is in direct correlation with improvements in patient safety.

Keywords: Leader-leader exchange, LLX, leader-member exchange, LMX, sociotechnical systems, STS, unit-based clinical leadership, UBCL, unit-based clinical team, UBCT, coordination, communication, teamwork, trust, senior leadership support, organizational support, employee perception of leadership, patient safety, job satisfaction

In 2000, the Institute of Medicine published the study "To Err is Human," which publicized the plight of deaths caused by medical errors. The research found that adverse events, to include death, occurred in 2.9% and 3.7% of hospitalizations, respectively (Kohn, 2001). Davis, Stremikis, Squires, and Schoen, (2014) noted in The Commonwealth Fund report that the median per capita expenditure for hospital services and drugs in the United States cost 2.7 times more than the 11 other [comparable] industrialized nations in the Organization for Economic Cooperation and Development. Furthermore, the report highlighted the U.S. healthcare system was last among the 12 industrialized nations in terms of quality, access, efficiency, equity, and outcomes (Davis et al., 2014). How can the United States spend 2.7 times more in healthcare than 11 other industrialized nations and rank last in healthcare quality measures?

The Center for Medicaid and Medicare Services (CMS) challenged healthcare organizations to improve patient care quality by changing the Medicare and Medicaid reimbursement structure from volume to value-based economics (Prestia, 2014), placing the emphasis on the organization's ability to achieve patient safety benchmarks. The new payment structure was established to improve care and lower cost by providing the right care at the right time, thus reducing over-treatment and under-treatment, hospital admissions, and readmissions (Leonard, 2015). Healthcare organizations across the nation have retooled their safety and quality departments to effectively manage the quality initiatives from the CMS. Not only have they retooled their quality departments, they have also changed their leadership structures to support the quality initiatives.

Healthcare organizations leadership has been traditionally structured in the hierarchical sociotechnical systems (STS) theory of governance at the inpatient unit level. The STS theory of governance recognizes the importance of autonomy; STS aims to minimize the number of

intergroup relations by decoupling the production process into independent units; this practice relates to the desirability in STS that people who perform closely-related tasks are on same team so that the team is responsible for the whole task (Niepce & Molleman, 1998). In a healthcare system, the autonomous environment of STS establishes boundaries for communication vertically and horizontally, among internal organizations and across departments. This leadership model creates organizational imperialism by fostering cultural domination, cultural imposition, and cultural fragmentation (Grubbs, 2000).

Souba, (2004, p. 177), Vice President for Health Affairs at Dartmouth College and Dean of Dartmouth Medical School since 2010, stated,

> "Many of the challenges and problems that confront our hospitals today are so complex and unpredictable that it is practically impossible for one person to accomplish the work of leadership alone. More than ever, leadership will need to permeate all levels of the organization to include those people who have, in the past, viewed their job as having nothing to do with leadership."

Souba identified the need for collective leadership to support the nature of complex healthcare organizations and a governance structure in which communication is not optional. Sociotechnical Systems supports groupthink where the group is the lowest element in the organization and each group is autonomous.

Multiple autonomous groups reside in healthcare organizations. They form in surgical specialties (orthopedics, neurology, cardiology); ancillary services (radiology, laboratory, pharmacy); support services (clinical engineering, environmental services, culinary and nutrition services); professions (doctors, nurses, administrators); and across professional specializations

(radiologist, cardiologist, nurse practitioners, specialty care nurses, general care nurses). The gap resides in the inability of healthcare leaders to create a unit-based leadership structure that permeates a culture and removes the barriers of communication across the autonomous groupings. This gap prohibits the co-creation of synergy to collaborate among medical professionals and implement a sustainable, safe, patient care environment. Care coordination amongst the autonomous units will support the healthcare organizations' efforts to create a safe patient environment. The question then becomes: What governance structure will support a collaborative environment where physician leaders and clinical staff facilitate two-way communication? The leader-leader exchange (LLX) theory of governance and the leader-member exchange (LMX) theory, which evolves from the vertical-dyad linkage (Dansereau, Graen, & Haga, 1975), are rooted in the social exchange theory (Blau, 1964). They represent a departure from the average leadership theories by proposing that leaders do not treat all followers identically; rather, they develop different quality relationships, high or low-quality, with followers (Boies & Howell, 2006). Leader-leader Exchange relates to the leader (senior leader)-leader (supervisor) relationship, whereas LMX relates to the supervisor-subordinate relationship. In this study, we reviewed the LLX relationship as the physician leader and nurse leader, peer partnership, forming the dyad leadership team on an inpatient unit. There has been no research that reviews the peer to peer leader dyads (LLX) and LMX post-implementation effect on a hospital's quality safety indicator correlating with patient safety.

The effect of the LMX on work group, team, and supervisor-subordinate relationships has been well documented (Ashkanasy & O'Connor, 1997; Graen & Uhl-Bien, 1995; Harris, Li, & Kirkman, 2014; Schyns & Croon, 2006). As for LLX, there has not been an abundance of research that reviews how the LLX relationships strengthen the effects of LMX quality on

employee individual outcomes (Tangirala, Green, & Ramanujam, 2007; Zhou, Wang, Chen, & Shi, 2012).

Therefore, this study focused on a AMCs employees' perceptions of the inpatient unit's leadership structure change from the STS to the LLX–PNDP, creating the unit based clinical leaders (UBCL), and the leader-subordinate, LMX governance creating unit based clinical teams (UBCT). This research, through the employees' perceptions, reviewed how the perceived change in structure has an impact on the social capital of the mediating variables of care coordination, communication, teamwork, and trust. We further posited the employees will perceive that the enhancement of the mediating variables' social capital will have a positive impact on patient safety and job satisfaction. This research also predicted that senior leadership and organizational support will serve as an antecedent to the employees' perceptions of their leadership. Next, we conducted a time series analysis that reviewed more than five years of historical quality safety indicator data for catheter associated urinary tract infections (CAUTI), central line associate bloodstream infections (CLABSI), clostridium difficile infections (CDI), and hand hygiene (HH) compliance, which consisted of a range of 40 to 92 data points for each specific indicator. The research showed that over time, as the LLX-PNDP and LMX matures, the healthcare organization's quality safety indicators improve, resulting in fewer injuries to patients.

The next section consists of the literature review, followed by the theoretical framework and hypothesis. The methodology section highlights results of the survey and the healthcare organization's efforts to improve on the national patient safety goals, closing with an analysis, discussion, and conclusion.

Literature Review

Physician-Nurse Dyad Partnership

The PNDP evolves from the vertical dyad linkage (VDL) theory (Dansereau, Graen, & Haga, 1975). Dansereau et al. (1975) determined the goodwill the leader extends to the subordinate by offering the outcomes of job latitude or autonomy, influence in decision making, open and honest communications, support for the member's actions, and confidence for the member generates a reciprocal response from the member with the willingness to expend extra time and energy, the assumption of greater responsibility, and commitment to the success of the entire unit or organization. This theory was later extended to the LMX theory (Graen & Schiemann, 1978) which states that agreement between a leader and a member regarding the meaning of certain mutually experienced events and situations vary as a positive function of quality and their dyadic exchanges. Further development of the LMX theory by Graen and Uhl-Bien (1995) indicated that the quality of the leader–member relationship is one of high or low quality, based on the level of respect, trust, and obligation between the leader and subordinate.

Development of the PNDP as LLX is discussed in the following section by exploring the impact of this relationship as a high-quality exchange between two leaders in the healthcare organization. There is a scarcity of theoretical literature that has reviewed the PNDP on an inpatient setting. Clausen et al. (2017) performed an ethnographic study in a Canadian hospital that researched the effectiveness of the PNDP in a surgical department and found that when physicians and nurses can collaborate effectively, they can improve quality and safety of the healthcare system. The study established the theory of intentional partnering which explains how nurse and physician managers align their professional agendas to reap the benefits of partnering (Clausen et al., 2017). Käppeli (1995) identified existing research on physician–nurse

clinical relationships, which indicated that effective collaboration and communication between the two types of professionals (nurse and physician) is critical to improving patient and provider outcomes and a healthy workplace. Individuals in dyads demonstrate greater unity, co-responsibility, interdependence, and mutual obligation, as well as preservation of the individuality of partners (Simmel & Hughes, 1949). The theoretical underpinnings of the partnership tie to the LLX and LMX, which states high-quality relationships exist when the members have mutual respect, trust, and obligation. Also, by utilizing intentional partnering positions through the processes of accepting mutual necessity, daring to risk together, and constructing a shared responsibility, physician and nurse managers can work effectively together and address patients' interests (Clausen et al., 2017). This establishes the LLX–PNDP, which is indicative of a high-quality PNDP based on mutual respect, trust, and obligation, built out of mutual necessity, daring to risk together, and constructing a shared responsibility (Clausen et al., 2017; Graen & Uhl-Bien, 1995).

The Leader–Leader Exchange and Leader–Member Exchange Theories

Social exchange theory, which states that "social communication furnishes clues about the chances of achieving superior status in a group, and it provides opportunities for reaching agreements that maximize joint advantage" (Blau, 1964, p. 46), forms LLX and LMX. It theorizes that relationships between two individuals, or a group of individuals, form using a subjective cost-benefit analysis and the comparison of alternatives. They are relationship approaches to leadership that focuses on the two-way, VDL relationship between leaders and followers (G. B. Graen & Uhl-Bien, 1995); specifically, LMX reveals the leader–subordinate relationship and LLX the leader–leader relationship. An example of the leader–leader

relationship consists of senior leader and supervisor, that is, a chief operating officer and subordinate reporting relationship with a vice president in an organization.

Researchers have suggested that leaders develop an exchange with each of their subordinates, and the quality (high or low) of these LMX and LLX relationships influences subordinates' responsibility, decisions, access to resources, and performance (Deluga, 1998; Herdman, Yang, & Arthur, 2014; Zhou et al., 2012). Graen and Schiemann, (1978) researched that professionals who report, high-quality exchange characteristics are a high degree of mutual trust, respect and obligation; while at the other extreme, professionals who report, low-quality exchange characteristics are the exact opposite, a low degree of mutual trust, respect and obligation. Zhou et al. (2012) identified the characteristics of a LLX relationship of high quality are a high degree of mutual trust, respect, and obligation, with an identical residual effect for the low-quality relationships as well. Relationships that form based on trust and respect are often emotional relationships that extend beyond the scope of employment (Bauer & Erdogan, 2016).

Leader–leader exchange theory. The relationship between a supervisor and the supervisor's boss is the focus of LLX (Tangirala et al., 2007; Zhou et al., 2012). It leads to the conclusion that the LLX relationship is built on the same principles as LMX: trust, respect, and obligation. However, there has not been an abundance of independent research on LLX. Tangirala et al. (2007) found that the LMX has stronger positive effect on employees' attitudes toward the organization and its customers when LLX is higher. Bedell-Avers, Hunter, Angie, Eubanks, and Mumford (2009) took a qualitative and quantitative hybrid approach to assess the responses of Fredrick Douglas, W. E. B. Dubois, and Booker T. Washington to the same crisis during the same time period to gain an understanding of LLX relationship differentiation between charismatic, ideological, and pragmatic leaders. Zhou et al. (2012) found that LMX

mediates the positive relationship of LLX on subordinates' individual empowerment; the authors also noted that team empowerment and individual empowerment sequentially mediate the positive relationship between LLX and subordinates' job satisfaction and job performance. Zhou et al. (2012) also found the indirect relationships of LMX with job satisfaction and job performance, through individual empowerment, is stronger when LLX is higher.

Herdman et al. (2014) researched how an LLX relationship moderates the mediating relationship between LMX differentiation, group-level teamwork, and team effectiveness. Both LLX and LMX theorize that subordinates in the high-quality relationships tend to have access to more resources than those in the low-quality relationships (Graen & Uhl-Bien, 1995; Maslyn & Uhl-Bien, 2001; Zhou et al., 2012). Herdman et al. (2014) utilized relative deprivation theory to rationalize the affective reactions of employees when confronted with the denial of resources available to themselves or others in their environment. The theory states when individuals lack resources available to others, they experience a sense of deprivation that manifests in negative emotional and affective reactions (Crosby, 1976; Folger, Rosenfield, & Robinson, 1983). Crosby (1976), explored the relative deprivation and determined, during the experience of deprivation, and consequent emotional reaction, it is most pronounced when the denied resource is made more salient because it is possessed by others in their proximate environment. Folger et al. (1983) noted that within a group, when a valued resource is withheld from some individuals of the group with a weak or nonexistence justification, these individuals will experience negative emotions and attitudes and a sense of detachment.

Herdman et al. (2014) revealed the moderation of LLX on LMX group and team dynamics through relative deprivation theory by identifying the following: the diminished value associated with a high-quality LMX relationship and a low-LLX boss results in consistent

findings with relative deprivation, which states there will be a weaker adverse response to LMX differentiation within work groups under a low-LLX condition, and there will be a shift in orientation of employees under this condition away from developing a high-quality relationship with the leader and more towards developing a high-quality relationship with coworkers. Herdman et al. (2014) demonstrated that LLX is an important contextual variable as higher levels of LLX strengthens the main effects of LMX on individual outcomes (Tangirala et al., 2007; Zhou et al., 2012), and they demonstrated that LLX plays an important contextual variable in shaping the group-level dynamics and outcomes.

Leader–member exchange theory. The two-way relationship between leaders and followers is the focus of LMX (Dansereau et al., 1975). Research has demonstrated the value of high-quality leader–member relationships in organizations (Dienesch & Liden, 1986; Graen & Uhl-Bien, 1995; Henderson, Wayne, Shore, Bommer, & Tetrick, 2008). Leaders and followers in these high-quality LMX relationships often report enhanced levels of satisfaction and effectiveness as well as mutual influence, more open and honest communication, greater access to resources, and more extraoral behaviors (Maslyn & Uhl-Bien, 2001). The potential for more high-quality relationship development (partnerships) would increase the potential for more effective leadership and expanded organizational capability (Graen & Uhl-Bien, 1995). Utilizing the principles of LMX theory, the healthcare industry is implementing the LMX unit based clinical team structure (inpatient units) to support the coordination of care, collaboration, teamwork, and trust.

However, as stated by Herdman et al. (2014, p. 1499), “The ability to reconcile the proposed structural and efficiency benefits of LMX differentiation with the deleterious effects of social comparison process on team dynamics represents an important challenge in LMX theory

development beyond the leader-member dyad." Implementation of LMX in the team environment will create animosity, resentment, and low organizational citizenship behaviors between team members in the high-quality relationships with their supervisors versus those in the low-quality relationships. Gerstner and Day (1997) and Graen and Uhl-Bien (1995) suggested high-quality LMX relationships are positively related to employee job satisfaction, organizational commitment, access to information, better work assignments, career advancement, and salary progression. At the other end of the spectrum, low-quality exchanges are less satisfied, are given more mundane assignments, receive less support, have fewer advancement opportunities, and have a greater tendency to leave the organization (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012; Gerstner & Day, 1997; . Graen & Uhl-Bien, 1995; Maslyn & Uhl-Bien, 2001; Vecchio, 1985). Implementing the PNDP as UBCL creates the leader–leader peer structure, which moderates LMX differentiation in work group and team dynamics (Herdman et al., 2014).

This research predicted that the employees' perception of their leadership, which forms on the theoretical governance of high-quality LLX and LMX, structure, and relationships, strengthens the social capital of the mediating variables care coordination, communication, teamwork, and trust, which will have a positive impact on patient safety and job satisfaction (see Figure 1.2). Hospitals have been establishing integrated teams to focus on improving patient safety. Those teams are led by LLX–PNDP as UBCLs, a practice implemented by the University of Pennsylvania Health System (Pintar, 2011). The UBCLs provides guidance to the LMX; the unit base clinical team (UCBT); the in-group, which consists of the physician and nurse leader dyad team; the clinical nurse specialist (CNS), nursing shift supervisor, or unit manager (LMX leaders); hospital unit coordinator; and the nursing team (LMX subordinates).

The strong ties which the high-quality dyad partnership creates strengthens the social capital created by the mediating variables, which has a positive impact on the organization's patient safety and job satisfaction. Other notable healthcare organizations to implement this model of physician-nurse dyads are the Hospital of the University of Pennsylvania, Northwestern Memorial Hospital, and Emory University (Kim et al., 2014). The AMCs experienced improvements in mortality rates, decreased infections and length of stay, and improvements in the patient experience (Rees, 2015).

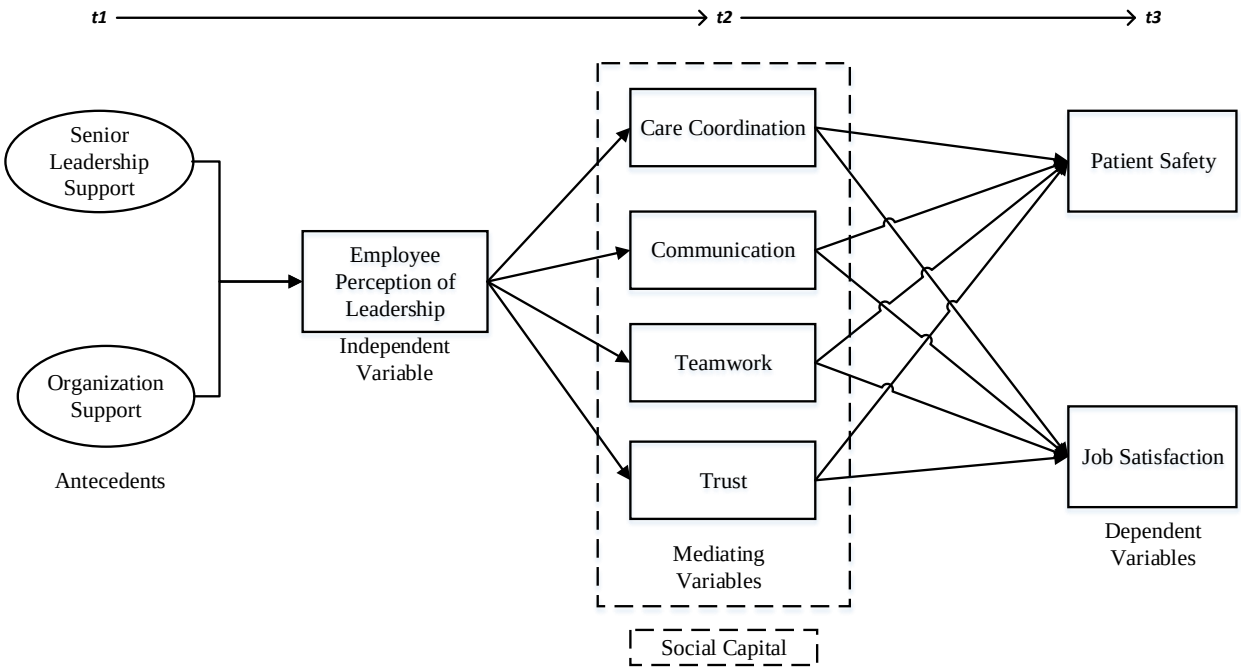


Figure 1.2. Employee perception of leadership: Post leader–leader exchange–physician nurse dyad partnership and leader–member exchange effect. T1, T2 and T3 are phases of translation from one point in the hypothetical model to the next.

Research Model and Hypotheses Development

The research model for the study is shown in Figure 1.1. We theorized that the employees will perceive that the post implementation of LLX-PNDP and LMX leadership structure on inpatient units strengthens the social capital of the mediating variables care coordination, communication, teamwork, and trust. They will also perceive that the mediating variables have a positive impact on the independent variables of patient safety and job satisfaction. Furthermore, we posited the employees will perceive that senior leadership and organizational support serve as antecedents to their perception.

Dependent Variables: Patient Safety and Job Satisfaction

Patient safety. Patient safety measures evolve from the national effort to prevent further harm to patients by healthcare organizations, decreasing hospital length of stay, and inpatient readmissions. Carayon et al. (2011, p. 2) stated, "In a safe healthcare system, injuries to patients are avoided, i.e. mitigated or prevented." In efforts to mitigate or prevent harm to patients, professional organizations such as the Agency for Healthcare Research and Quality (AHRQ), the Center for Disease Control (CDC), and the CMS have identified patient safety measures associated with healthcare acquired infections (HAI), such as surgical site infections (SSI) and infections associated with indwelling devices, which account for a large portion of patient safety errors or problems (AHRQ, 2015). The CDC (2011) identified infections from indwelling devices, such as CAUTI, CLABSI, and ventilator-associated pneumonia (VAP), account for approximately half of HAI's. Clostridium difficile infections have become more common in hospitals, now responsible for more than 12% of HAI's (AHRQ, 2015). The CDC (2011) highlighted the patient safety measure of proper HH in the clinical setting as the number one deterrent against CDI and other common area transmitted diseases, such as Methicillin-resistant

Staphylococcus aureus (MRSA). Healthcare organizations have been implementing patient safety initiatives to positively impact the nationally recognized patient safety measures.

Job satisfaction. Job satisfaction refers to the state of positive emotion resulting from individuals' appraisal of their job experiences (Locke, 1969). There have been multiple studies that have identified LMX to have a positive effect on job satisfaction (Farr-Wharton & Brunetto, 2007; Graen, Novak, & Sommerkamp, 1982; Laschinger, Finegan, & Wilk, 2011). Gerstner and Day (1997) found LMX of high-quality is likely to have a direct effect on the employee's job satisfaction because having a high-quality relationship with one's leader or follower influences the entire work experience in a positive manner, such as affirmative performance and effective outcomes. Bang (2011) reviewed the effect of LMX on job satisfaction in relation to Herzberg's (1968) two-factor theory, referencing intrinsic and extrinsic factors. Bang (2011) drew from Mardanov, Heischmidt, and Henson (2008), because job satisfaction depends on the extent of the match between intrinsic and extrinsic motivational factors and the quality of LMX is an important factor that affects individuals' commitment or satisfaction with respect to their jobs. Job satisfaction is one of the precursors to voluntary employee turnover (Gibson & Petrosko, 2014). Employee turnover is costly for organizations as it erodes the foundation of the business practice. Turnover makes it hard for an organization to establish organizational pride, a loyal core of associates with foundational historical roots, and a core of internal employees with the technical competency to train newcomers. High turnover in healthcare jeopardizes patient safety due to a lack of tenure and practice experience. This study's theoretical model predicted that the employee's perception of leadership will lead to a positive impact on job satisfaction, which is an outcome variable of this study.

Independent Variable: Employee Perceptions of Leadership

The independent variable, employee perceptions of leadership, consists of the post effect of LLX–PNDP and LMX implementation, which establish the UBCL and UBCT governance structure on inpatient units. Graen an Schiemann, (1978) reviewed the quality of the LMX relationship as one of high- or low-quality. Tangirala et al. (2007) noted identical aspects for the quality of an LLX relationship, either high- or low-quality. G. B. Graen and Uhl-Bien (1995) related this leadership model as a progression from the VDL and a prescription for generating more effective leadership through the development and maintenance of mature, high-quality relationships. There is no difference for the LLX, as the VDL exist for the leader–leader relationship.

This study focused on the two-way dyadic relationship between the physician and nurse leader since there is no formal hierarchical relationship between the two leaders. Each has their independent chain of responsibility. Trandel (2015) identified the dyadic relationship in healthcare as a partnership where an administrative or nurse leader pairs with a physician leader, bringing together ‘the best of both worlds’ of skills and expertise. We exploited this relationship on the inpatient units to examine how the post effect of the PNDP implementation supports removing the artificial barriers to communication that the STS leadership structure establishes through the independent decision-making process within each autonomous professional group.

Tangirala et al. (2007) and Zhou et al. (2012) identified the moderating effect LLX has on LMX. Zhou et al. (2012) and Herdman et al. (2017) solidified the moderating effect LLX has on teamwork, group dynamics, and team effectiveness. The high-quality LLX partnership relies on the trust, respect, and obligation the partners develop over time and demonstrate openly to

each other during team sessions. The lack of formal reporting in a leader–subordinate relationship places trust at the forefront of success for the partnership and the team. The organizational goals for patient safety measures serve as the performance metrics of success for the UBCLs and UBCTs. Senior leaders determine the success of the partnership on the basis of their ability to meet organizational goals. The Mayo Clinic, an academic medical center (AMC) in Rochester, MI, introduced the dyad leadership structure to their organization more than 20 years ago with great success (Schwartz, 2016). Other healthcare organizations are now adopting this style of leadership to transform their patient safety practices and reduce HAI's, thereby improving quality safety indicators, which correlates with improving patient safety.

Social Capital

Lin (1999) identified social capital as containing three ingredients: resources embedded in a social structure, accessibility to such social resources by individuals, and use or mobilization of such social resources by individuals in purposive actions; therefore, social capital consists of three elements: structural (embeddedness), opportunity (accessibility), and action-oriented (use).

The dimension that created the social capital in this study derives from the mediating variables of care coordination, communication, teamwork, and trust. The components of the social structure are physician, nurses, and administrators. They are the human resources embedded in the social structure of the healthcare organization. Vazirani, Hays, Shapiro, and Cowan (2005, p. 72) stated, "Improving collaboration and communication between nurses and physicians may enhance satisfaction among nurses, physicians, and patients; increase quality of care; and reduce costs." Creating a common communication platform, as part of their daily tasks, ensures the physician-nurse leadership teams' accessibility, which advances the opportunity to create social capital in support of accomplishing their daily mission. An increase

in the quality and quantity of communication sessions between physicians and nurses, physicians and physicians, or nurses and nurses improve collaboration amongst healthcare professionals and across boundaries created by stoicism. The efforts to increase and improve this professional collaboration create mutual respect, which increases the social capital amongst the professionals. My opinion, improvements in communication and collaboration have a direct link to improving patient safety. Hospital administrators have an important role in the process of improving patient safety in healthcare organizations as they monitor the progress of the dyad partnerships and hold them responsible for achieving organizational goals. Their relationship with senior leadership verifies the action-oriented (use) efforts of the UBCLs and UBCTs to improve patient safety and job satisfaction, which supports the creation of social capital. Each of the dimensions are defined in the hypothesis development section.

Impact of Leader-leader Exchange-Physician Nurse Dyad Partnership and Leader-member Exchange on Care Coordination

Care coordination is "a function that helps ensure the patient's needs and preferences for health services and information sharing across people, functions, and sites are met over time" (Bodenheimer, 2008, p. 1). A report prepared for the U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, *Care Coordination Measure Atlas*, McDonald, et al., (2014, p. 6) defines care coordination as:

> "The deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services. Organizing care involves the marshalling of personnel and other resources needed to carry out all required patient care activities and is often managed by the exchange of information among participants responsible for different aspects of care."

Care Coordination is an opportunistic (accessible) aspect of social capital of the partnership. Graen and Schiemann (1978) stated that high quality exchanges are characterized by a high degree of mutual respect, trust, and obligation. Coordination of task is the opportunity to enhance the social capital of the partnership through meeting the obligations of discussing the patient's plan of care and performing change of shift patient hand-off discussions. Coordination of patient care services on each unit is one of the primary responsibilities of the UBCLs. The physician-nurse dyad team serves as the leader of the multidisciplinary UBCT. Collaboration, communication, and teamwork are needed for a center of excellence to be successful (Brennan, 2011).

Leader-leader exchange-physician nurse dyad partnerships can have a positive influence on care coordination. To understand how a high-quality LLX-PNDP influences coordination, we must understand how high-quality LLX extends beyond the dyad partnership to influence group dynamics. Consistent with LMX theory, leaders develop strong relationships with some of the group members, though not all (Krackhardt & Brass, 1994). The development of these relationships forms strong or weak ties among the leaders and group members, which establishes in- or out-groups that correlate with high- or low-quality LMX, respectively. Members of the group who develop strong ties with the group leader gains a sense of superiority over the group of associates with weak ties, which associates the power and influence with strong ties (Brass, 1984). The relation between strong ties and high LMX and LLX received empirical support as noted by Gerstner and Day (1997) and Zhou et al. (2012), respectively. The social exchange relationship provides chosen subordinates with enhanced resources from the supervisor and rewards the supervisor with enhances in performance and loyalty of promising employees (Eisenberger et al., 2010).

Forming such relationships leads to creating acceptance within the group, whereas, a weak tie relationship can lead to denial from the group. Acceptance within the group leads to a reciprocal reaction from the leaders' acceptance in the LLX-PNDP and LMX relationships. This reciprocity forms trust between the leader and group member, thereby influencing the appropriate decisions to drive favorable outcomes, even in the leader's absence (Liden et al., 1997). The influence of a dyad team, UBCL, with high centrality leading care coordination, communication, teamwork, and trust efforts spawns the efforts of the UBCT to improve quality safety indicators. The physician-nurse dyad team, serving as the UBCLs, coordinate patient care plans to ensure the UBCT focuses on providing the best possible care. Characterizations of the UBCT are mutual respect, trust, and obligation amongst team members, which creates insiders (Liden et al., 1997). Insiders ensure the mission of the team is constantly in a state of execution, with or without the UBCL's presence. This leads to the first hypothesis:

> H_1: Employee perceptions of leadership will have a positive impact on care coordination in a hospital inpatient unit.

Impact of Leader-leader Exchange-Physician-Nurse Dyad Partnership and Leader-member Exchange on Communication

Communication is a verbal transaction with both participants having an active role in the process, which takes place effectively when the listener clearly understands the message the speaker intended to send. Effective clinical communication is respectful, clear, direct, and explicit (Lyndon, Zlatnik, & Watcher, 2011). Communication serves as a structural (embedded) component of the social capital the dyad partners create. Without communication, there is no relationship; it is the basis upon which the relationship begins, fosters, and grows. The more effective the communication, the stronger the relationship ties. Physician-nurse dyad partner,

leadership teams, implement different methods of communicating to facilitate an effective communication process. UBCT huddles at the beginning of each shift, mandatory bedside rounding, and frequent daily check-ins between the UBCLs are methods of facilitating communication (Fllcek, 2012). Lyndon et al. (2011) revealed the purpose of communication is to allow a two-way exchange that requires individuals and teams to constantly scan for, detect, and correct evolving safety threats and adapt to dynamic conditions appropriately; every team member is accountable for speaking up and stating concerns with persistence until there is a clear resolution, strengthening teamwork within the UBCT.

Hecht (1978) researches conceptualization of communication satisfaction and concludes that in organizational settings, communication satisfaction is broadly defined as an individual's satisfaction with various aspects of communication in interpersonal, group, and organizational contexts. Leader-leader exchange and leader-member exchange have a positive influence on the communication between physicians and nurses to support interpersonal, group, and organizational contexts as they permeate identical influences on the different aspects of the inpatient unit leadership dynamics—LLX (UBCL) or LMX (UBCT). The obligation increases each participant's sense of social responsibility to ensure the partnership and team are successful, with or without the presence of either, or both, team members. The social exchange that each contributes must be a contributing resource of value to the other party, and both parties must view the exchange as fair (Liden et al., 1997). Members of high-quality group relationships, in LMX arrangements, foster collegial communication behaviors that enhance perceptions of similarity, characterized by mutual support (Liden, et al, 1997). LMX influences more open and honest communication between partners in a variety of settings (Hecht, 1978; Kacmar, Witt, Zivnuska, & Gully, 2003; Lee, Jaesub, 2001; Maslyn & Uhl-Bien, 2001; Mueller & Lee, 2002;

Myers, 2006). Research has shown that interactions in LMX relationships are marked by different patterns and thus are likely to affect communication satisfaction (Mueller & Lee, 2002).

The perceptions of leadership highlight the quality of the LLX partnerships within the hospital setting. High-quality LLX partnerships that synthesize the mutual respect, trust, and obligation lead participants to ensure they openly communicate mutual decisions that support the team dynamics as UBCLs. For example, the public show of support during team huddles or transition of care plan reviews, led by the UBCLs, leaves a positive impression on the LMX, UBCT members. This cohesiveness promotes the transparency of openly communicating unit treatment procedures and protocols that can have a positive effect on the decisions of the staff members, without fear of retaliation or negativism. On the other hand, low-quality LLX leadership can fail to promote such transparency, which can lead to low levels of communication in the organization. This leads to the second hypothesis:

> H_2: Employee perceptions of leadership will have a positive impact on physician-nurse communication in a hospital inpatient unit.

Impact of Leader-leader Exchange - Physician-Nurse Dyad Partnership and Leader-Member Exchange on Teamwork

In *Merriam Webster's dictionary* (1828) teamwork is defined as work done by several associates with each performing a part but all subordinating personal prominence to the efficiency of the whole. There are multiple studies that have researched the effect of teamwork across different professions in healthcare. Casimiro, Hall, Kuziemsky, O'Connor, and Varpio (2015) presented a study that focused on how teamwork that effectively engages patients and families manifests itself in an acute rural care setting in order to inform the development of teamwork skills. Finn, Learmonth, & Reedy (2010) revealed how the ambiguity of teamwork

opens up opportunities for a complex and diverse range of responses to the managerial discourse among diverse occupational groups, of which there are many in healthcare. Gafà, Fenech, Scerri, and Price (2005) took a traditional research approach with questionnaires and surveys given to over 200 public healthcare workers in a Maltese hospital to determine their perception of teamwork in healthcare. All these studies have offered contributions to the perception of teamwork in healthcare. Gafa et al. (2005, p. 113) stated, "that teams are important because they allow those working in them to use their diverse knowledge, skills, and experience to contribute to collective decision-making and problem solving to achieve the appropriate outcome". Song et al. (2015, p. 2) stated, "better team dynamics within a care team may alleviate stress with primary care physicians' concern about how other providers care for their patients when they are not available, which in turn may improve clinical work satisfaction".

Studies have confirmed that LLX and LMX have a positive effect on teamwork (Allison, 2016; G. Graen et al., 1982; Herdman et al., 2014; Liden, Sparrowe, & Wayne, 1997; Maslyn & Uhl-Bien, 2001; Tangirala et al., 2007; Zhou et al., 2012). High-quality leadership is highlighted by the levels of trust and mutual respect for leaders by the employees. As employees place high levels of trust in and have mutual respect for their leaders, they begin to believe in the mission and values of the organization and their own unit. Subsequently, this belief can translate to within-unit team camaraderie and functioning as they all share a common goal. To this end, in healthcare settings, multiple studies have reviewed the positive effect of LMX on the team dynamics involving the physician and nurse (dyads or UBCLs), and nurse–subordinate relationships (Lindeke & Sieckert, 2005; O'Leary et al., 2010; Song et al., 2015). The LLX effect on team dynamics in healthcare was the focus of Herdman et al. (2014) when the team reviewed the moderating role of LLX on teamwork and work group effectiveness. This supports

the LLX-PNDP UBCL partnerships of high quality positively impacting the LMX UBCT of the respective inpatient unit. Conclusively, researchers have established the correlation between high-quality LLX and LMX leading to a high level of teamwork. This leads to the following hypothesis:

> H_3: Employee perceptions of leadership will have a positive impact on the teamwork in a hospital inpatient unit.

Impact of Leader-leader Exchange - Physician-Nurse Dyad Partnership and Leader-member Exchange on Trust

Trust is assured reliance on the character, ability, strength, or truth of someone or something (Merriam-Webster Dictionary, 1828). Trust in healthcare is paramount for a successful patient interaction with aspects of care, their physician, the healthcare organization, and nursing and support staff. To pursue the patient's good, the patient must trust the physician, nurse, clinical staff member, or organization with personal and private information (Hall, Camacho, Dugan, & Balkrishnan, 2002). For the physician and the patient, trust is a two-way street. Goold (2002) clarified the trust relationship; without this relationship how could a physician expect patients to reveal the full extent of their medically relevant history, expose themselves to the physical exam, or act on recommendations for tests or treatments? Faden, Beauchamp, and King (1986) finds that without trust, the process of informed consent for the most minor interventions, even a prescribed antibiotic, would become as time consuming as that needed for major surgery; presumed consent is a critical manifestation of trust that makes possible much of routine doctor visits. Trust promotes efficient use of both the patient's and the physician's time (Goold, 2002).

LLX and LMX depend on trust, respect and obligation for a successful, high-quality

relationship between the partners (G. B. Graen & Uhl-Bien, 1995; Tangirala et al., 2007). The LLX-PNDP partnership that establishes the UBCLs on the inpatient units promotes mutual respect for decisions from each partner even in each other's absence. The partnership also provides for the development of group cohesion, as illustrated previously. This sense of mutual respect, cohesion, and trust among the leadership translates to trust within the unit, as each partner develops a sense of belief in each other's motivations and competencies. This leads to the following hypothesis:

> H_4: Employee perceptions of leadership will have a positive impact on the trust in a hospital inpatient unit.

Antecedents of Employee Perceptions of Leadership

Senior management, or an executive management team, is a group of individuals at the highest level of management in an organization who have the day-to-day tasks of managing the organization (Menz & Menz, 2012). Healthcare leadership is "the ability to inspire individual and organizational excellence, create a shared vision, and successfully manage change to attain the organization's strategic ends and successful performance" (Cliff, 2012, p. 381). For this study, the senior leadership pertains to the chief executive officer (CEO), chief nursing officer (CNO), and chief medical officer (CMO). This senior leadership group is the antecedent to the employees' perception of leadership. Facilitating interdisciplinary team decisions is one of the primary responsibilities of the senior leaders of acute care medical centers, specifically the CEO, CNO, and CMO.

The CEOs are ultimately responsible for providing an environment conducive for ensuring patient care, continual growth, learning, and innovation, which is accomplished by

keeping the leadership team informed of market projections, manpower, growth strategies, and resource allocations (Prestia, 2014). Setting the example with the CNO as their dyad, supporting the LLX-UBCLs with the necessary resources to facilitate safe patient care, establishing a frequent leadership rounding schedule, and visiting during shift change huddle meetings sustains the team-based approach to healthcare that, in my opinion, positively moderates the efforts of the LLX-PNDP UBCLs to lead the LMX-UBCTs, which positively moderates the effect on social capital creation by the mediating variables. The CNO's are primarily responsible for patient-centered care (Prestia, 2014). They have oversight for the largest professional group in the healthcare system: nurses. The CMO's are responsible for patient-centered quality, safety initiatives, and outcomes (Prestia, 2014). The CMO's also work with the medical staff and the leaders to emphasize the essential role of physicians in providing oversight for the quality of medical care in the hospital (Lambert, 2005).

The senior leaders of the organization will serve as the authority having jurisdiction over approving the leadership structure change on the inpatient unit; Table 1.1 depicts the difference in responsibilities from the dyads to the administrators. However, there is a distinct difference between approving the leadership structure change and supporting the practice after implementation. In addition, the senior leaders are replaceable. New leaders may not be supportive of the LLX and LMX structure. This can explain the variability in senior management support among healthcare organizations.

Table 1.1

Responsibilities of Physician-Nurse Dyads versus Administrators

Physician-Nurse Dyad	**Administrator**
Assuring quality.	Financial management accounting and reporting systems and methods.
Building the medical group practice culture.	Operating and financial performance and ratio analysis and management.
Encouraging teamwork among physicians and multidisciplinary care teams.	Market share performance.
Managing provider productivity.	Competitors' strategy analysis.
Managing the division of labor.	Capital and resource consumption patterns, comparisons, and investment models and management.
Managing physician-driven clinical resource use.	Performance scorecard (dashboard management) applications
Minimizing inappropriate practice style variation across providers.	Labor relations management.
Maximizing provider-driven patient satisfaction and customer service.	Strategic planning and plan implementation.
Providing for physician continuing education and skill building.	Staff recruiting and staffing plan implementation.
Encouraging clinical care innovation.	Collaboration on resource and labor use issues across services, sites or divisions.
	Supply chain management.

Leaders determine, communicate, and guide the vision of any organization, and thus leadership engagement in any culture change initiative is crucial (Frampton, Guastello, & Brady, 2008). Leaders must clearly articulate a hospital's commitment to meet the unique needs of its patients to establish an organizational culture (Cliff, 2012). The CEO, CNO and CMO form their triad partnership that establishes the examples for LLX-PNDP UBCLs with transparency and a mutual show of respect and support. Communal rounding sessions, visits to huddle sessions on inpatient units, and participation in unit cohesive functions positively displays support for the new leadership structure. The senior leaders are the senior administrators of the healthcare organization and they seek to foster high quality relationships with the LLX-PNDPs and LMX-UBCTs. When there is a high level of senior leadership support, it provides an environment conducive to the enhancement of trust, respect, and obligation for the organization's mission. The absence of trust, respect, and obligation leads to the illusion of minimal support from senior leadership to the physician-nurse dyad team and the front-line caregiver. This leads to the following hypotheses:

H_5: Senior leadership support will have a positive impact on employees' perceptions of leadership.

H_6: Organizational support will have a positive impact on employees' perceptions of leadership.

Impact of Social Capital on Patient Safety and Job Satisfaction

Social capital theory asserts that resources embedded in a social structure are accessed or mobilized in purposive actions (Lin, 1999). Social capital is the collective value of all social networks (who people know) and the inclination that arises from these networks to do things for

each other norms of reciprocity; (Dill, 2015). LeoRomero, (2015), in a twitter blog with Thomas Sander, identifies social capital as emphasizing specific benefits that flow from the trust, reciprocity, information and cooperation associated with social networks; it creates value for people who are connected, and for bystanders as well.

Care coordination develops through action driven by collaboration when performing standardized safety procedures, such as transition of care planning, planning for catheter use, planning for HAI testing, and observations for HH. The reciprocity between the clinical care team is mediated through use of algorithms and standardized checklists. Cooperation throughout this process can enhance the general knowledge colleagues share. The social capital is created within the team by presenting the opportunity to challenge each other in a respectful manner without fear of retaliation, facilitating a positive work environment that supports job satisfaction, and ensuring effective management of patient safety initiatives. This leads to the following hypothesis:

H_{7a}: Care coordination will have a positive impact on patient safety and job satisfaction.

Communication provides for open, two-way exchange of ideas that leads to mutual consent on safe patient care plans. Lyndon et al. (2011, p.1) stated, "effective clinical communication is respectful, clear, direct and explicit." Being respectful strengthens the core UBCLs and UBCTs, the insider group, without regards to hierarchy, education, status, or position. This trust enables the team to move towards the common goal of safe patient care and creates value for bystanders—the patient. It is my assumption that as unit-based clinical leaders facilitation of effective communication occurs, it will have an impact on job satisfaction of nurses and physicians since communication strengthens the relationship between the employees

and their units. Positive relationships can reinforce a sense of purpose in the job for employees, which leads to higher levels of job satisfaction. This leads to the following hypothesis:

H_{7b}: Physician-nurse communication will have a positive impact on patient safety and job satisfaction.

Teamwork is a component of team-based care, which the Institute of Medicine defines as "the provision of health services by at least two health providers who work collaboratively with patients and their caregivers to accomplish shared goals within and across settings to achieve coordinated, high-quality care"(Bazemore, Green, Kamerow, Nwando, & Meyers, 2016, p.4) High-quality care in a team environment is fostered by the support of high-quality LLX-PNDP and LMX-UBCT. Song et al. (2015) noted that high-quality team dynamics may result in better information transfer, which is particularly important when a primary care physician asks a colleague to care for a patient in the absence of the primary provider. In addition, teamwork will also likely improve job satisfaction for the nurses and physicians as they feel a sense of accomplishment in their job activities through their social interactions in the team. This leads to the following hypothesis:

H_{7c}: Teamwork will have a positive impact on patient safety and job satisfaction.

Trust evolves as a sociological construct that refers to people' expectations, typically for goodwill, advocacy, and competence (Goold, 2002). In healthcare, the quality of the relationship between the patient and the care team determines whether trust is formed. Patients who trust their doctors rate their care more favorably (Keating et al., 2002). Trust can act as a lubricant in the relationship between stakeholders, ironing out any differences between them (Morgan & Hunt, 1994). Therefore, strengthening the co-creation of trust between the patients, their

physicians, the care teams involved with the patients' care, and the healthcare organization improves patients' outcomes while leading to highly motivated employees. This implies that higher levels of trust can lead to higher levels of patient safety and job satisfaction. This leads to the following hypothesis:

H_{7d}: Trust will have a positive impact on patient safety and job satisfaction.

Time Series Analysis

This research utilized a time series analysis to determine if the quality safety indicators of CAUTI, CLABSI, CDI, and the prevention measure of HH positively correlates with improving over time. For each of the quality safety indicators to improve, the rate of infections for CAUTI, CLABSI and CDI must decrease, while HH compliance must increase. Multiple medical studies across many disciplines have utilized the longitudinal time series analysis method. Research into longitudinal time series analysis in medicine revealed a plethora of studies; for example, a search in the PubMed database, limited to publications from January 2016 through December 2017 with keywords longitudinal time series analysis revealed 4,946 publications. This establishes precedence for use of this method in the healthcare field.

The time series analysis reviewed 40 to 92 months of historical data (data points) which consisted of the quality safety indicators CAUTI, CLABSI, CDI, and the prevention measure of HH to determine if they improve over time. These quality indicators are only a few of the primary measures identified by the AHRQ (2009) to be associated with HAI. Healthcare acquired infections affect 5% to 10% of all hospitalizations each year in the United States, account for nearly $45 billion in direct hospital costs, and cause nearly 100,000 deaths annually (Kennedy, Greene, & Saint, 2013). The AHRQ (2009) identified the prevention of CLABSI and

CAUTI as a national safety imperative for all healthcare organizations. Both CLABSI and CAUTI are derivatives from the use of catheters (indwelling devices) with patients. The most serious is CLABSI, resulting in an increase in length of hospital stay, increase in cost of care, and increase in patient morbidity and mortality (American Hospital Association [AHA], 2016). The CDC (2015) estimated 30,100 CLABSIs occur in U.S. intensive care units each year, with up to 250,000 cases occurring across care settings (Klevens et al., 2007). Patient mortality rates from CLABSI's range from 12% to 25% (CDC, 2011), and the cost of CLABSI's range from $3,700 to $36,000 per episode (Scott, 2009). Catheter associated urinary tract infections account for approximately 48% of hospital infections (Fakih , Safdar, & Fletcher, 2015) and lead to increases in the length of stay, which increases the overall cost of care. Proper diagnosis and treatment of CLABSIs and CAUTIs rarely lead to death.

Clostridium difficile infections is the leading cause of nosocomial diarrhea in the United States, resulting in more than $1 billion in excess health costs annually (Fakih et al., 2015). However, if the true cause for diarrhea is not CDI, for example, a medication regiment that loosens stool leads to unnecessary lab costs. A CDI infection can derive from a CAUTI or through contact with an infected area, such as medical equipment or person-to-person contact. It occurs primarily in acute care hospitals and long-term care facilities, where antimicrobial exposure and environmental contamination are common (Fakih et al., 2015). As the LLX-PNDP and LMX UBCT matures, the process of planning for HAI testing also matures, which eliminates unnecessary testing by adhering to strict protocols and algorithms. Establishing the standards of daily testing supports the maturity of the process, which supports the organization's efforts to improve patient safety.

The preventive measure of HH observations has quickly become an integral topic at daily

huddle discussions because of the CDC. The CDC (2016) identified HH as one of the simplest ways to prevent HAI's. All staff members, clinical and support, should wash their hands before entering a patient's room and immediately after exiting. Daily discussions with the physician and nurse staff identify team members or support staff that abide by, or willfully ignore, the policy. It is the responsibility of the UBCLs to ensure all staff accept open communication when they are reminded of the HH requirement. They must demonstrate public support for corrective actions taken by all staff. Along the same order as planning for catheter use and planning for HAI testing, the process matures with the daily persistence of ensuring all staff adhere to the protocols for handwashing. Also, the maturity of the process supports junior staff when challenging senior staff for not adhering to protocols.

The time series analysis reviewed more than five years of historical data consisting of the quality safety indicators through an analysis of data points, varying in number per quality metric. This research analyzed the data to determine if, over time, as the LLX-PNDP and LMX mature, the healthcare organizations' quality safety indicators improve, resulting in fewer injuries to patients. To measure the impact of the social capital co-creation by the mediating variables on patient safety, the quality indicators of CAUTI, CLABSI, CDI, and the prevention measure of HH, must improve over time. This leads to the following hypothesis:

> H_8: Maturity of LLX-PNDP and LMX initiatives (as measured by time since inception) will be positively associated with the quality safety indicators of CAUTI, CLABSI, CDI, and HH.

Methodology

Secondary Data Analysis

The first method of research involved the use of secondary data in healthcare studies, which is not a new phenomenon. Goode, Crego, Cary, Thornlow, and Merwin (2017) realized the design of healthcare studies using secondary data sets is conceptualized in the same manner as traditional quantitative studies; the investigator identifies a research problem to study and creates specific research questions related to the problem. There are advantages and disadvantages to utilizing a secondary data set. Advantages of secondary data use include: it saves time; the data is readily accessible; secondary data is inexpensive; and one can generate new insights from previous analyses if the data were used for an analysis (López, 2013). Disadvantages are the data may not be appropriate for the study being conducted and the researcher loses control over data quality (Lopez, 2013). This research used the secondary data from an employee engagement survey at a Midwestern AMC.

The employee engagement survey from which secondary data was used was conducted via the internet by Gallup over a three-week period in 2017. The data set consisted of over 534 data points. As noted by Johnston (2014), original survey research rarely uses all of the data collected. Participants were 123 physicians, 148 nurse leaders, and 263 hospital employees. We checked for validity utilizing a few different methods. This research sought to understand the nurse and physician employees' perception of leadership after a different leadership structure was implemented, LLX-PNDP and LMX. The survey was established to gain the employees' perspectives of their organizations, leadership, and physician support. The data set consisted of constructs that collectively established the dimensions of our theoretical framework, further supporting validity. It entails the employees' perceptions of their leadership, developed from

constructs that built the dimensions of care coordination, communication, teamwork, trust, organizational support, senior leadership support, patient safety, and job satisfaction.

We utilized partial least squares–structural equation modeling (PLS-SEM) to analyze the data and report its findings. The PLS-SEM method was designed as a prediction oriented approach to structural equation modeling that relaxes the demands on data and specification of relationships set by covariance based structural equation modeling (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). We chose this method of analysis because it can reliably estimate very complex models using only a few observations without imposing distributional assumptions on the data (Sarstedt et al., 2014). It provides more flexibility with large data sets than the traditional covariance based structural equation modeling. Partial least squares-structural equation modeling also tests reliability, construct validity, convergent validity, discriminant validity, collinearity, and statistical significance, which were all inclusive the final report.

Time Series Analysis

The second method of research in this study reviewed 7.5 years of historical data of the quality safety indicators CAUTI, CLABSI, CDI, and the prevention measure of HH. The quality indicators consisted of varying points of data: CAUTI, 66 data points; CLABSI, 90 data points; CDI, 42 data points; and HH, 67 data points. This research utilized the Statistical Package for the Social Sciences (SPSS) linear regression module to analyze the data and determine if, over time, as the LLX-PNDP and LMX matures the healthcare organization's quality safety indicators improved, resulting in fewer injuries to patients. To measure the impact of the social capital co-creation by the mediating variables (care coordination, communication, teamwork, and trust) on patient safety, each quality indicator must improve over time.

The Midwestern healthcare organization implemented the LLX-PNDP and LMX program simultaneously, with the following protocols as part of the organization-wide effort to decrease further harm to patients and improve patient safety. As the LLX-PNDP and LMX mature over time, the quality safety indicators should improve, which translates to CLABSI, CAUTI, and CDI decreasing while HH observations increase. Figures 1.2–1.4 demonstrate the dashboards managed by the healthcare organization's Quality, Safety and Innovation (QSI) department, which is the source of secondary data in the research. The healthcare organization utilized transition of care planning to discuss the care plan for all patients on the units and determine the appropriate level of care at that specific time of discussion. Transition of care planning creates the structural base for the change of shift huddle sessions lead by the UBCLs as part of the UBCTs. The UBCLs ensure this process takes place daily.

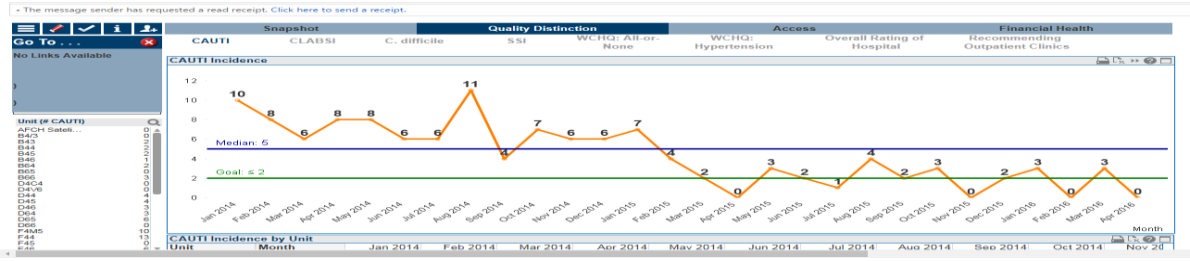


Figure 1.3. Catheter Associated Urinary Tract dashboard.

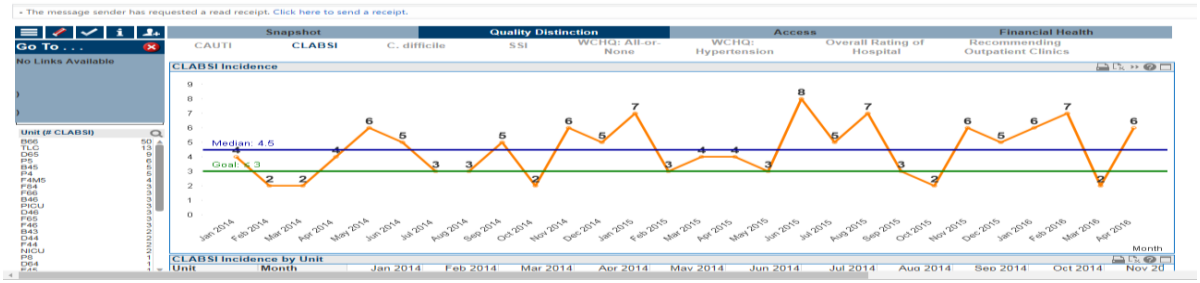


Figure 1.4. Central Line Associated Bloodstream Infection dashboard.

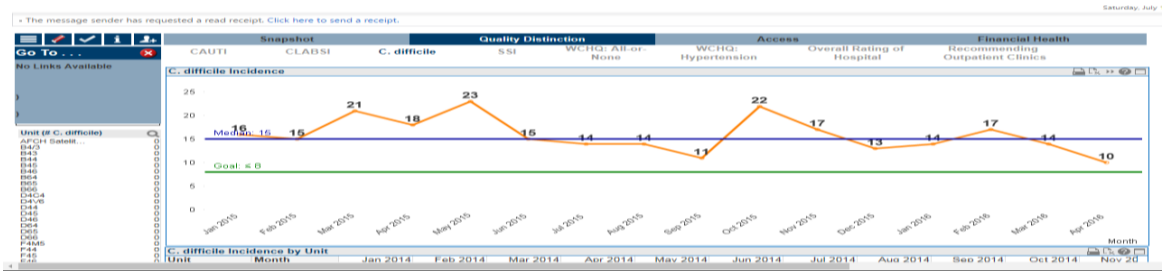


Figure 1.5. Clostridium Difficile Infection dashboard; example from healthcare facility database.

Measures

In summary, the first essay utilized two different data sets. Secondary data from the most recent employee engagement survey, which contained 534 points of data, was utilized to gain the employees' perception of their leadership. The employees consisted of members from the UBCTs, who had firsthand knowledge of the LLX-PNDP and LMX implementations' impact on job satisfaction and patient safety. We posited that high quality LLX-PNDP and LMX will strengthen the social capita of the dimensions care coordination, communication, teamwork, and trust. The dimensions are important characteristics of an effective UBCT in healthcare, and the social capital of these dimensions will positively impact patient safety and job satisfaction. Second, a time series analysis of 40 to 92 measuring points that analyzed the change in quality safety indicators over a five-year period was conducted, which associates with patient safety.

Patient safety, in all aspects of healthcare, has captured the attention of researchers worldwide (Gaal, van Den Homberg, Verstappen, & Wensing, 2010). Coetzee, Klopper, Ellis, and Aiken (2013) examined the practice environment, in which nurses reported quality of care and patient safety, for nurse workforce outcomes in medical and surgical units in private and public hospitals in South Africa. They determined the association of modifiable features of the hospital, such as practice environment and patient-to-nurse workloads, affected these outcomes. Romero, González, and Calvo (2017) performed research to determine the views held by family practice residents on different dimensions of patient safety in order to identify potential areas for improvement in Galicia, Crotia. Zhu, Gao, Zhou, and Huang (2018) investigated the quality and patient safety of anesthesia practices in China. A scan of peer-reviewed articles in the PubMed and Medline databases revealed over 74,000 studies, researching many different aspects of patient safety in healthcare organizations. Improving the quality of care has been determined to

be a worldwide crisis, not just a crisis in the United States.

Job satisfaction in healthcare is also a topic of discussion for researchers as this has been identified as one of the top factors that affects employee turnover (Farquharson et al., 2012). Job satisfaction, like patient safety, is a worldwide concern. Delobelle et al. (2011) reported a correctional study of the relationships between demographic variables, job satisfaction, and turnover intent among primary healthcare nurses in a rural area of South Africa. Mundongo, Ditend, Vancaillie, and Malonga (2014) evaluated the level of job satisfaction of healthcare providers after the implementation of the European Foundation for Quality Management of excellence in Lubumbashi, Democratic Republic of Congo. Alameddine et al. (2017) investigated the level of, and factors in association with, healthcare providers' job satisfaction in the national primary healthcare network in Lebanon. Zhang and Fang (2016) performed a study to assess village doctors' job satisfaction during the reforms in China, the year of 2009, to determine if the new healthcare policies improved job satisfaction in village clinics. A search of peer-reviewed articles in PubMed and Medline revealed over 11,000 studies involving job satisfaction in healthcare. Decreasing turnover in any industry is a top priority for professional leaders. This is no different for healthcare. Improving job satisfaction positively impacts this phenomenon.

Controlling for Method Bias

The use of secondary data does not lend itself to controlling for common method bias. The study utilized secondary data obtained from a third-party survey in the hospitals. Therefore, we cannot attest to the data collection procedures or to the quality of the secondary data as these are beyond our control. However, the SmartPLS software afforded us the opportunity to utilize some statistical analysis to check for common method bias, which we implemented.

Controlling for Other Factors

Controlling factors for this analysis were as follows: survey participants had to be employees of the healthcare organization, tenure within the organization was required to be at least 12 months, and participants had to be an employee, physician, or manager. Basic demographic information exists. However, the senior leadership of the case organization would not release race, age, or gender information due to hospital policies restricting use of this type of information. These control variables were not critical to completing this analysis.

Analysis and Results

This section depicts the statistical analysis of the two types of secondary data, an employee engagement survey and patient quality safety metrics data, from the healthcare organization participating in the research. The employee engagement data was analyzed with SmartPLS 3.2.6. The quality metric data was analyzed with SPSS, Version 24 utilizing the linear regression module (Brockwell & Davis, 2013).

Secondary Data Analysis: Employee Engagement Survey

The secondary data from the employee engagement survey consisted of items that are implicit to the constructs of our theoretical and structural model. This data was analyzed with SmartPLS 3.2.6., which consisted of an in-depth analysis of the results, measurement model, and structural model. The measurement model evaluated reliability, convergent validity, and discriminant reliability, while the structural model was utilized to test the hypotheses. First, we present the measurement model, then the structural model, and finally the supplemental analysis.

Measurement Model

The analysis began with a confirmatory factor analysis to establish model, convergent, and discriminant reliability using published guidelines (Gefen & Straub, 2005). The

confirmatory factor analysis was conducted to establish variable reliabilities based on the model presented in Figure 1.2. The final measurement model is depicted in Figure 1.6. Item reliabilities were verified to evaluate the model and all were above .70 (Henseler, Ringle, & Sarstedt, 2015). The first requirement in establishing convergent validity was recognized when all the items had *t*-values greater than 1.96 (Gefen & Straub, 2005), as shown in Table 1.2. In addition, verification of average variance extracted (AVE) values of greater than .05 was recommended (Fornell & Larcker, 1981) and achieved as depicted in Table 1.3. The highlighted items further solidified the reliability by depicting outer loadings of .70 or higher (Garson, 2016).

Table 1.2

Outer Model Loadings

Construct	Item	Question	*t*-Statistics
Care Coordination (CC)	CC3	Nurses in my work unit/department help others to accomplish their work.	38.128
	CC4	Nurses in my work unit/department help others even when it's not part of their job.	29.118
	CC5	My work unit/department works well together.	63.665
Communication (COM)	COM2	There is effective communication in my work unit/department.	62.915
	COM4	Communication between shifts is effective in my work unit/department.	36.137
	COM7	Communication between work units/departments is effective in this organization.	46.629
	COM8	Communication between physicians, nurses, and other medical personnel is good in this organization.	26.624
Job Satisfaction (JS)	JS2	I am proud to tell people I work for this organization.	50.566
	JS3	Overall, I am a satisfied caregiver.	69.893
	JS6	I would recommend this organization to family and friends who need care.	47.535
Organization Support (OS)	OS1	This organization provides career development opportunities.	30.802
	OS3	This organization provides assistance to help deal with job stress and burnout.	36.200
	OS4	This organization offers opportunities to improve my health and wellness.	34.744
	OS5	This organization is interested in caregiver health and wellness and supports a healthy lifestyle.	34.380
	OS6	I get the tools and resources I need to provide the best care/service for our clients/patients.	37.132
Employee Perception of Leadership (EPL)	EPL4	The person I report to supports free exchanges of opinions and ideas.	61.565
	EPL6	The person I report to is a good communicator.	62.268
	EPL7	The person I report to uses the performance process to coach me on my professional development.	30.793
	EPL8	The person I report to treats me with respect.	39.828

(Continued)

Construct	Item	Question	*t*-Statistics
	EPL9	I respect the abilities of the person to whom I report.	54.507
	EPL10	The person I report to is responsive when I raise an issue.	38.792
Patient Safety (PS)	PS2	My work unit/department is adequately staffed.	35.325
	PS3	This organization makes every effort to deliver safe, error-free care to patients.	59.494
	PS4	Executive Leadership provides a work climate that promotes patient safety.	69.455
Senior Leadership Support (SLS)	SLS1	Executive Leadership provides clear direction about where we are going as an organization.	20.083
	SLS2	Nurse leaders are accessible in this organization.	63.349
	SLS3	Senior nursing leadership is responsive to my feedback.	42.230
	SLS4	Nurse leaders share a clear vision for how nursing should be practiced in this organization.	43.835
Trust (TRU)	TRU1	There is a climate of trust in this organization.	66.644
	TRU2	There is a climate of trust within my work unit/department.	140.175
Teamwork (TW)	TW1	Different work units/departments work well together in this organization.	66.038
	TW2	There is effective teamwork between physicians and nurses at this organization.	33.842

Table 1.3

Item-to-Construct Correlations

	Care Coord (CC)	Comm (COM)	Emp Percep of Leadership (EPL)	Job Sat (JS)	Org Support (OS)	Pat Safety (PS)	Sr Ldr Support (SLS)	Team-work (TW)	Trust (TR)
CC3	**0.827**	0.330	0.484	0.323	0.329	0.363	0.448	0.284	0.316
CC4	**0.783**	0.269	0.365	0.285	0.277	0.332	0.407	0.227	0.307
CC5	**0.834**	0.595	0.595	0.546	0.607	0.587	0.489	0.431	0.570
COM2	0.520	**0.848**	0.633	0.532	0.619	0.512	0.551	0.542	0.768
COM4	0.481	**0.798**	0.493	0.502	0.571	0.519	0.512	0.482	0.559
COM7	0.379	**0.843**	0.436	0.500	0.567	0.517	0.555	0.655	0.710
COM8	0.312	**0.762**	0.388	0.450	0.525	0.454	0.446	0.705	0.572
EPL4	0.539	0.460	**0.793**	0.405	0.465	0.407	0.558	0.341	0.455
EPL6	0.512	0.530	**0.833**	0.557	0.584	0.520	0.467	0.393	0.538
EPL7	0.455	0.551	**0.837**	0.458	0.504	0.423	0.424	0.393	0.581
EPL8	0.534	0.422	**0.757**	0.409	0.482	0.427	0.589	0.346	0.420
EPL9	0.450	0.461	**0.752**	0.448	0.453	0.426	0.372	0.305	0.499
EPL10	0.460	0.480	**0.818**	0.486	0.479	0.414	0.379	0.329	0.493
JS2	0.416	0.425	0.471	**0.817**	0.605	0.558	0.448	0.397	0.417
JS3	0.427	0.636	0.513	**0.844**	0.781	0.679	0.580	0.613	0.579
JS6	0.392	0.397	0.426	**0.795**	0.549	0.659	0.375	0.439	0.370
OS1	0.439	0.521	0.506	0.625	**0.773**	0.570	0.555	0.497	0.530
OS3	0.396	0.526	0.501	0.618	**0.740**	0.639	0.534	0.483	0.527
OS4	0.460	0.493	0.443	0.661	**0.807**	0.656	0.526	0.512	0.450
OS5	0.349	0.540	0.420	0.648	**0.816**	0.616	0.488	0.573	0.455
OS6	0.447	0.660	0.542	0.603	**0.788**	0.600	0.563	0.618	0.622
PS2	0.409	0.572	0.425	0.496	0.568	**0.765**	0.451	0.443	0.551
PS3	0.489	0.460	0.480	0.706	0.632	**0.849**	0.495	0.481	0.407
PS4	0.482	0.505	0.459	0.722	0.747	**0.874**	0.621	0.570	0.457
SLS1	0.342	0.643	0.408	0.573	0.628	0.565	**0.706**	0.565	0.564
SLS2	0.441	0.485	0.475	0.424	0.523	0.473	**0.884**	0.365	0.465
SLS3	0.438	0.485	0.471	0.413	0.520	0.475	**0.834**	0.369	0.567
SLS4	0.567	0.484	0.527	0.507	0.566	0.551	**0.821**	0.420	0.441
TR1	0.383	0.654	0.435	0.560	0.651	0.544	0.506	**0.885**	0.587
TR2	0.314	0.585	0.315	0.475	0.518	0.487	0.378	**0.831**	0.447
TW1	0.396	0.708	0.485	0.479	0.553	0.489	0.559	0.570	**0.894**
TW2	0.541	0.761	0.642	0.557	0.655	0.541	0.572	0.542	**0.928**

Note: The bolded items depict AVE values greater than .7. Care Coord = Care Coordination; Comm = Communications; Emp Precp of Leadership = Employee Perception of Leadership; Job Sat = Job Satisfaction; Org Support = Organizational Support; Pat Safety = Patient Safety; Sr. Ldr Support = Senior Leadership Support.

Two criteria were utilized to establish discriminant validity. Item-to-construct correlations have to be greatest for the intended construct (Gefen & Straub, 2005), and the square root of the AVE of the construct must have been greater than the correlations with the other constructs (Fornell & Larcker, 1981). Table 1.3 allows comparisons of each row of the loadings; bolded items depict the loadings of the intended constructs. It was evident that the highest loading for each item was on the bolded area, meeting the first requirement for discriminant validity. Table 1.4 allows an examination of the square root of AVE construct to ensure it was higher than the correlations with all other constructs. Looking at the diagonal elements in Table 1.4 exhibits this requirement was achieved and all diagonal values were in fact more than the off-diagonal elements. This met the second requirement for discriminant validity for these constructs.

Table 1.4

Measurement Model Validations

	EMP	MAN	PHY	YofS	CC	COM	EPofL	JS	OS	PS	SLS	TW	TR
EMP	0.815												
MAN	0.528	0.813											
PHY	0.529	0.661	1.000										
YofS	0.615	0.608	0.558	0.799									
CC	0.503	0.612	0.666	0.578	0.819								
COM	0.544	0.581	0.631	0.787	0.595	1.000							
EPofL	0.536	0.704	0.781	0.621	0.804	0.628	0.785						
JS	0.555	0.616	0.663	0.547	0.775	0.567	0.785	0.831					
OS	0.316	0.672	0.532	0.433	0.506	0.386	0.590	0.505	1.000				
PS	0.557	0.637	0.619	0.581	0.585	0.485	0.684	0.632	0.543	0.814			
SLS	0.409	0.724	0.612	0.442	0.606	0.440	0.686	0.602	0.651	0.521	0.858		
TW	0.521	0.807	0.625	0.625	0.571	0.589	0.667	0.567	0.631	0.620	0.608	0.911	
TR	0.075	0.119	0.114	0.052	0.061	0.062	0.109	0.064	0.082	0.089	0.107	0.117	1.000

Note. The diagonal AVE values are higher than the correlations with all other constructs. EMP = Employee; MAN = Manger; PHY =Physician; YofS = Years of Service; CC = Care Coordination; COM = Communication; EPofL = Employee Perception of Leadership; JS = Job Satisfaction; OS = Organization Support; PS = Patient Safety; SLS = Senior Leadership Support; TW = Teamwork; TR = Trust

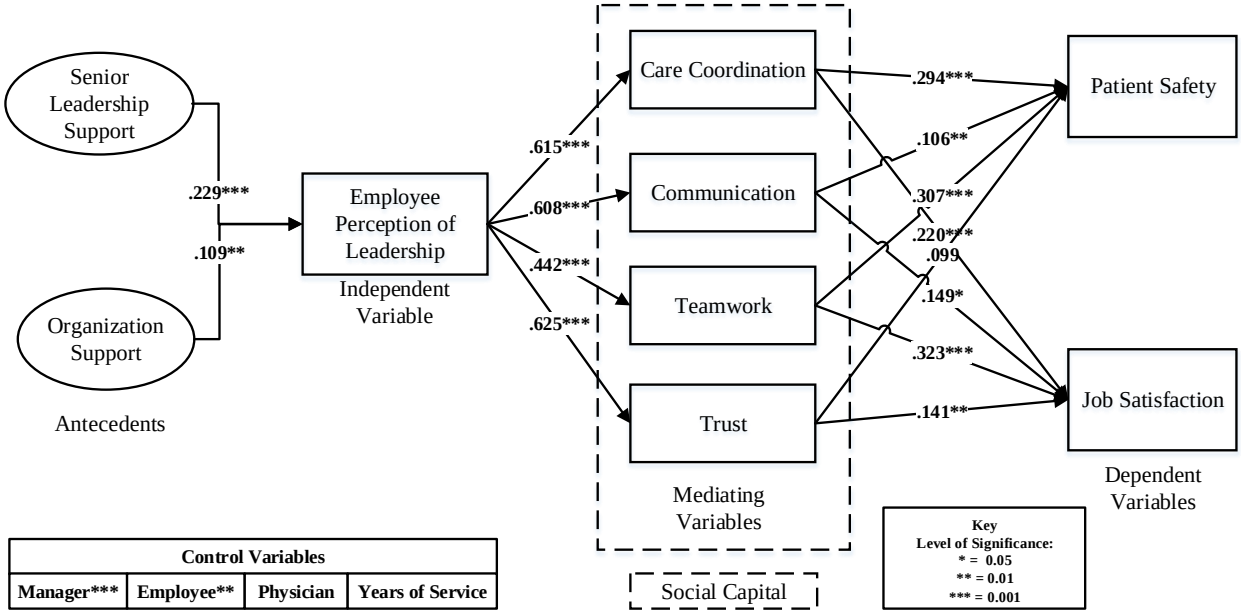


Figure 1.6. Structural model.

Structural Model Analysis

The model tested in the present analysis is presented in Figure 1.6. The corresponding path coefficients were found to be significant at the $p < 0.001$ level: senior leadership support to employee perceptions of leadership ($b = .229$, t-value = 5.541); employee perceptions of leadership to care coordination ($b = .615$, t-value = 21.094); employee perceptions of leadership to communication ($b = .608$, t-value = 19.569); employee perceptions of leadership to teamwork ($b = .442$, t-value = 11.711); employee perceptions of leadership to trust ($b = .625$, t-value = 22.716); care coordination to patient safety ($b = .294$, t-value = 7.907); care coordination to job satisfaction ($b = .220$, t-value = 5.498); teamwork to patient safety ($b = .307$, t-value = 5.809); and teamwork to job satisfaction ($b = .323$, t-value = 6.054). The following corresponding path coefficients were found to be significant at the $p < 0.010$ level: organization support to employee perceptions of leadership ($b = .109$, t-value = 2.446); communication to patient safety ($b = .160$, t-value = 2.570); and trust to job satisfaction ($b = .141$, t-value = 2.426). The following corresponding path coefficient was found to be significant at the $p < 0.050$ level: communication to job satisfaction ($b = .149$, t-value = 2.224). The path coefficient of trust to patient safety was not significant ($b = .099$, t-value = 1.839); the p-value was 0.067, insignificant by .017. The results of all significant and not significant test are identified with the probability results in Figure 1.6.

The first hypotheses, H_1–H_4, relate to the effect the dependent variables will have on the mediating variables. H_1 stated that employee perceptions of leadership will have a positive impact on care coordination in a hospital inpatient unit. Results from the structural equation model depicted in Figure 1.6 supported this hypothesis (employee perceptions of leadership positively relate to care coordination), which was significant at the 0.001 level, (H_1: $b = .615$, t-

value = 21.094).

H_2 stated employee perceptions of leadership will have a positive impact on physician–nurse communication in a hospital inpatient unit. Results from the structural equation model in Figure 1.6 supported this hypothesis, as employee perceptions of leadership had a positive impact on communication (H_2: b = .608, t-value = 19.569).

H_3 stated employee perceptions of leadership will have a positive impact on the teamwork in a hospital inpatient unit. Results from the structural equation model in Figure 1.6 supported this hypothesis, as employee perceptions of leadership had a positive impact on teamwork, which was significant at the 0.001 level (H_3: b = .442, t-value = 11.711).

H_4 stated employee perceptions of leadership will have a positive impact on the trust in a hospital inpatient unit. Results from the structural equation model in Figure 1.6 supported this hypothesis, as employee perceptions of leadership had a positive impact on trust, which was significant at the 0.001 level (H_4: b = .625, t-value = 22.716).

H_5 and H_6 were associated with the antecedents to the dependent variable, employee perceptions of leadership. H_5 stated senior leadership support will have a positive impact on employees' perceptions of leadership. Results from the structural equation model in Figure 1.6 supported this hypothesis, as senior leadership support had a positive impact on employee perceptions of leadership, which was significant at the 0.001 level (H_5: b = .229, t-value = 5.541)

H_6 stated organizational support will have a positive impact on employees' perceptions of leadership. Results from the structural equation model in Figure 1.6 supported this hypothesis, as organization support had a positive impact on employee perceptions of leadership, which was

significant at the 0.01 level (H_6: b = .109, t-value = 2.446).

H_7, and its four parts, tested the relationship between the mediating and dependent variables. H_{7a} stated care coordination will have a positive impact on patient safety and job satisfaction. Results from the structural equation model in Figure 1.6 supported this hypothesis as it related to patient safety, which was significant at the 0.001 level (H_{7a}: b = .294, t-value = 7.907), as well as job satisfaction at the 0.001 (H_{7a}: b = .220, t-value = 5.498).

H_{7b} stated communication will have a positive impact on patient safety and job satisfaction. Results from the structural equation model in Figure 1.6 supported this hypothesis as it relates to patient safety, which is significant at the 0.01 level (H_{7b}: b = .160, t-value = 2.570), and job satisfaction at the 0.05 level (H_{7b}: b = .149, t-value = 2.224).

H_{7c} stated teamwork will have a positive impact on patient safety and job satisfaction. Results from the structural equation model in Figure 1.6 supported this hypothesis as it relates to patient safety, which was significant at the 0.001 level, (H_{7c}: b = .307, t-value = 5.809), as well as job satisfaction at the 0.001 level, (H_{7c}: b = .323, t-value = 6.054).

H_{7d} stated trust will have a positive impact on patient safety and job satisfaction. Results from the structural equation model in Figure 1.6 supported this hypothesis. Trust had a positive relationship with job satisfaction at the 0.01 level (H_{7d}: b = .141, t-value = 2.426); however, trust did not have a significant relationship with patient safety (H_{7d}: b = .099, t-value = 1.839). This was the only insignificant coefficient path in the structural model.

Table 1.5

Supported Hypotheses

Hypothesis	Supported	Path	Level of Significance
H_1	Supported	EPL--> Care Coordination	0.001
H_2	Supported	EPL--> Communication	0.001
H_3	Supported	EPL--> Teamwork	0.001
H_4	Supported	EPL--> Trust	0.001
H_5	Supported	SLS--> EPL	0.001
H_6	Supported	OS--> EPL	0.01
	Supported	CC--> Patient Safety	0.001
H_{7A}	Supported	CC--> Job Satisfaction	0.001
	Supported	COM--> Patient Safety	0.01
H_{7B}	Supported	COM--> Job Satisfaction	0.05
	Supported	Teamwork--> Patient Safety	0.001
H_{7C}	Supported	Teamwork--> Job Satisfaction	0.001
	Not Supported	Trust--> Patient Safety	
H_{7D}	Supported	Trust--> Job Satisfaction	0.01

Of the control variables, manager, employee, and physician had a significant relationship with the dependent variable of employee perceptions of leadership: manager was positive and significant at the 0.001 level (b = .685, t-value = 18.745), employee was negative and significant at the 0.01 level (b = -.110, t-value = 2.686), and physician was positive and not significant at (b = .050, t-value = 1.516). Tenure, measured in years of service, was negative and not significant (b = -.012, t-value = .486). The dependent variable (employee perceptions of leadership) R^2 value was 0.679. The R^2 values for the mediating variables were: care coordination, R^2 = 0.378; communication, R^2 = 0.370; teamwork, R^2 = 0.195; and trust, R^2 = 0.391. The R^2 values for the independent variables were: patient safety, R^2 = 0.502; and job satisfaction, R^2 = .0477.

Common Method Bias Analysis

The use of secondary data does not lend itself to controlling for common method bias. This secondary was data obtained from a third-party surveyor, administered to the hospital involved in the research. We cannot attest to the data collection procedures or to the quality of the secondary data as these were beyond our control. Therefore, we utilized statistical methods to check for common method bias. Table 1.3 was utilized in testing for convergent validity and average variance extracted (Fornell & Larcker, 1981; Gefen & Straub, 2005). The bold cross-loadings verified item reliabilities, which SmartPLS measured at 0.7 (Henseler et al., 2015). Common method bias will lead to marked inflation in the item-to-construct cross loadings (bold items; Kock, 2014), which was not evident in Table 1.2. Furthermore, collinearity has classically been defined as a predictor-predictor phenomenon in multiple regression models. Kock and Lynn (2012) proposed the full collinearity test as a comprehensive procedure for simultaneous assessment of both vertical and lateral collinearity, which creates variance inflation factors (VIF) for all latent variables. The occurrence of a VIF greater than 3.3 proposes an

indication of pathological collinearity and also as an indication that a model may be contaminated by common method bias (Kock & Lynn, 2012). Table 1.6 demonstrates that all items were not greater than 3.3, which statistically confirms the absence of common method bias.

Table 1.6

Variance Inflation Factors

Item	VIF	Item	VIF	Item	VIF	Item	VIF
CC3	2.037	EPL6	2.348	OS4	2.188	SLS4	1.848
CC4	1.941	EPL7	2.592	OS5	2.278	TRU1	1.787
CC5	1.282	EPL8	2.190	OS6	1.674	TRU2	1.787
COM2	1.923	EPL9	2.660	PHY	1.000	TW1	1.294
COM4	1.683	JS2	1.669	PS2	1.346	TW2	1.294
COM7	2.069	JS3	1.423	PS3	1.894	YOS	1.000
COM8	1.670	JS6	1.583	PS4	1.974		
EMP	1.000	MAN	1.000	SLS1	1.397		
EPL10	2.809	OS1	1.635	SLS2	2.675		
EPL4	2.277	OS3	1.501	SLS3	2.103		

Secondary Data Analysis: Employee Engagement Survey, Summary

The measurement model examined in this study demonstrated satisfactory construct validity and reliability. The structural model was tested using SmartPLS 3.2.6. These results supported hypotheses H_1, H_2, H_3, H_4, H_5, H_6, H_{7A}, H_{7B}, and H_{7C}. H_{7D} was not supported. Additional analysis also occurred to test the model for common method bias utilizing statistical analysis; no issues were identified with the tests.

Time Series Analysis: Quality Metrics Secondary Data

The quality metrics secondary data consisted of CAUTI, CLABSI, CDI, and HH (CMS, 2017). The CMS has many other quality metrics, including readmission rate, mortality rate, and surgical site infections, for monitoring (CMS, 2017) however, this study only focused on the aforementioned metrics. This study utilized SPSS, Version 24, linear regression module to analyze the data.

Catheter associated urinary tract infections. A urinary tract infection (UTI) is an infection involving any part of the urinary system, including urethra, bladder, ureters, and kidney (CDC, 2011). The rate of infection for a CAUTI is confirmed when a patient tests positive for a UTI due to catheter use divided by the number of days the catheter was in place. The rate of infections for each point of data (month) is the per 1,000 patient days divided by the total number of infections, per unit, in the acute care setting (Rees, 2015). The time series analysis data was from January 2013 through June 2018, resulting in 66 points of data. The linear trend model was utilized to evaluate the data. The model being fit was given by $CAUTI\text{ - }Rate\ of\ Infections_t = a + b * t$ (Brockwell & Davis, 2013); a is the unstandardized coefficient constant; b is the Month of CAUTI Observations. The model summary is given in Table 1.7, as are the estimated coefficients.

Table 1.7

Catheter Associated Urinary Tract Infection Model Summary

Model Summary

Model	*R*	R^2	Adjusted R^2	*SE* of the Estimate
1	.630[a]	.397	.388	1.04329

[a]Predictors: (Constant), Time

Table 1.8

Catheter Associated Urinary Tract Infection Coefficients

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		*β*	*SE*	*β*	*t*	Significance
1	(Constant)	3.439	.260		13.239	.000
	Time	-.044	.007	-.630	-6.497	.000

[a]Dependent variable: Catheter Associate Urinary Tract Infection rate

The linear trend model was given by *CAUTI - Rate of Infections*$_{(time)}$ *= 3.439 - .044 * time.* The 66-month linear trend for infections is illustrated in Table 1.7. As evidenced in the coefficient Table, 1.8 the beta was negative and significant at the .001 level, (β - .044; p = .000), therefore supporting the decrease in CAUTI infections. The y-axis in Figure 1.7 is the CAUTI infection rate for the period depicted on the x-axis, which represents 66-months of observations or data points.

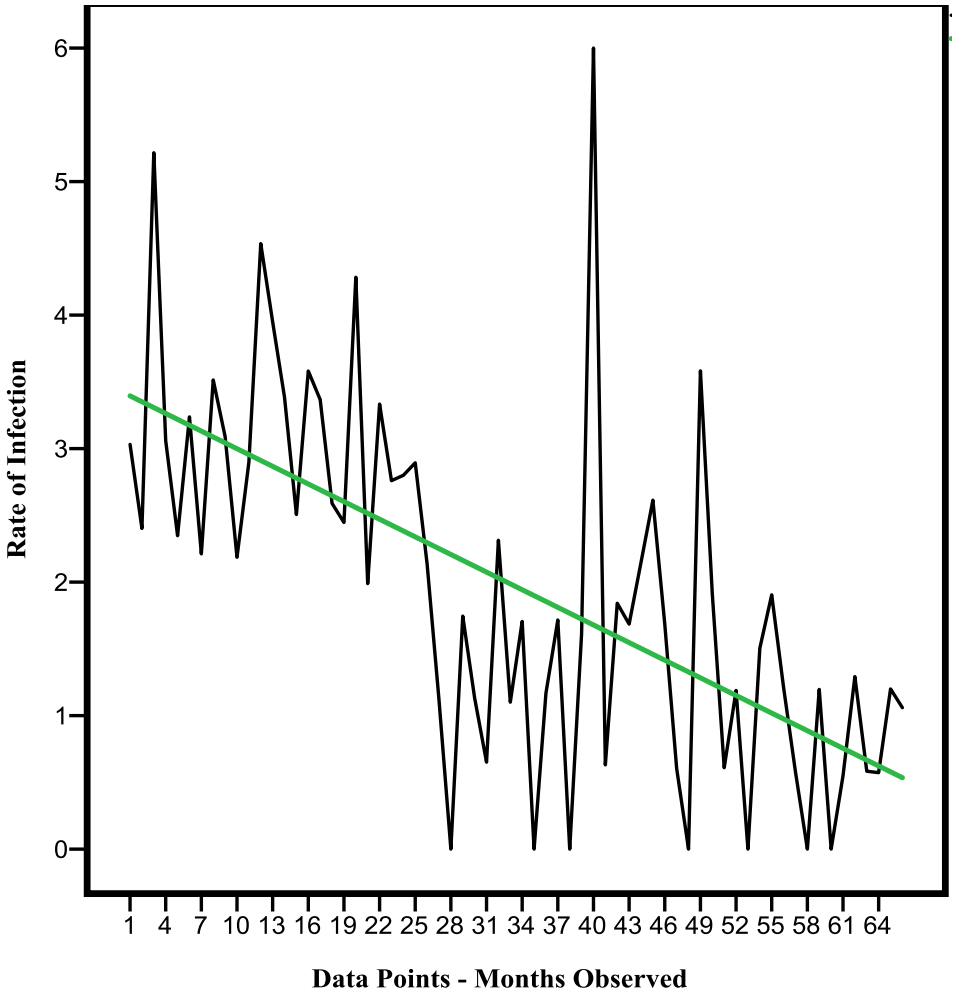


Figure 1.7. Catheter Associate Urinary Tract Infection rate.

Figure 1.8 represents the CAUTI infection rate in scatter plot format to evaluate how maturation of the PNDP program impacts the rate of infections. A standardized process for tracking the CAUTI rate of infections was implemented across the organization in January 2013. The PNDP leadership structure was implemented in January 2012. The additional fit line on the x-axis in Figure 1.8 represents 48 months after the PNDP, UBCLs were implemented on the inpatient units—48 months of maturation. The fit line on the y-axis in Figure 1.8 represents the mean infection rate of 1.97. The top-right quadrant in Figure 1.8 represents the infection rate above the mean after 48 months of PNDP implementation. Four observation periods of infection rates were calculated above the mean, supporting the effectiveness of the PNDP leadership program.

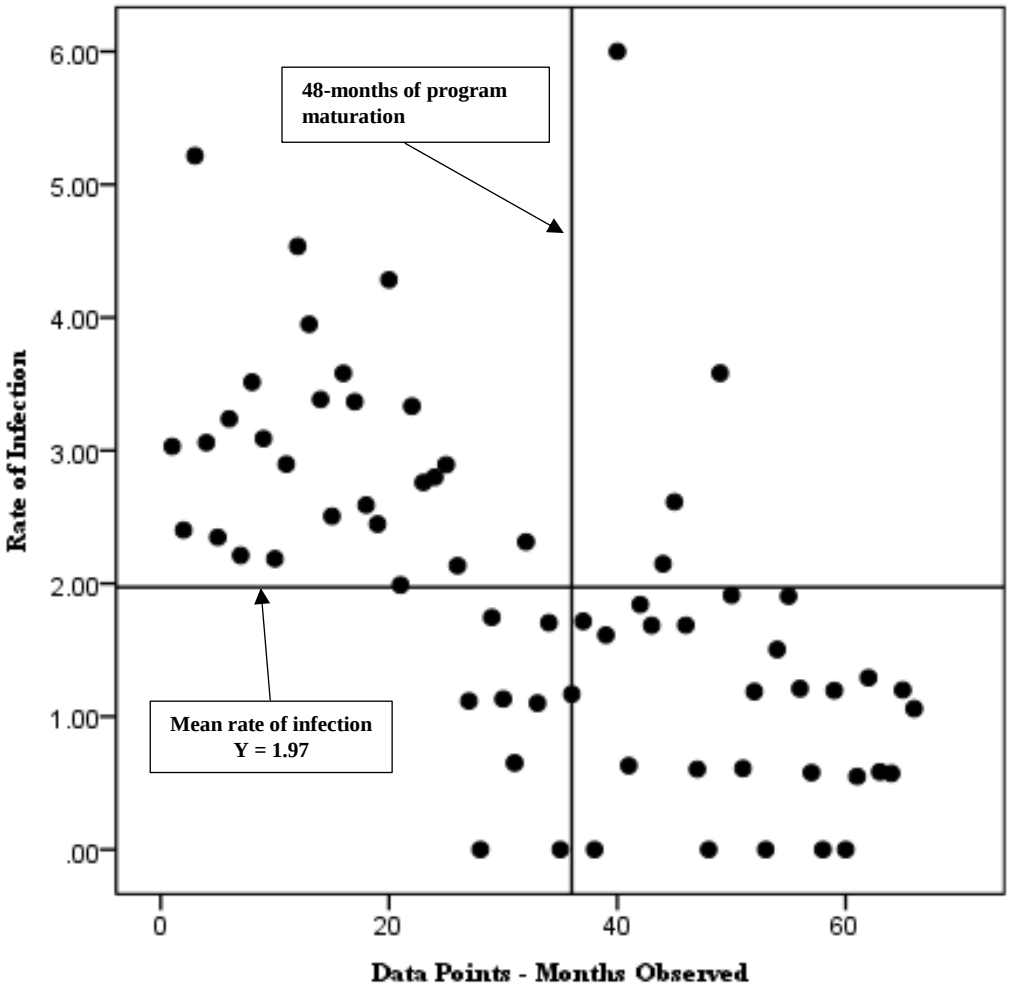


Figure 1.8. Catheter Associated Urinary Tract Infection rate of infection (scatter plot).

Central line associated blood stream infections. A CLABSI is a serious infection that occurs when germs (usually bacteria or viruses) enter the bloodstream through the central line (CDC, 2011). The rate of infection for a CLABSI is confirmed when a patient test positive for a blood stream infection due to catheter use divided by the number of days the catheter was in place. The rate of infections per month is the total number of infections, per unit, in the acute care setting (Rees, 2015). The time series analysis data was from January 2011 to June 2018, resulting in 90 points of data. The linear trend model was utilized to evaluate the data. The model being fit was given by $CLABSI\text{ - }Rate\ of\ Infection(_{time)} = a + b * time$ (Brockwell & Davis, 2013)***;*** *a* is the unstandardized coefficient constant; *b* is the month of CLABSI observations . The model summary is given in Table 1.9. The estimated coefficients are provided in Table 1.10.

Table 1.9.

Central Line Associated Bloodstream Infection Model Summary

Model Summary

Model	*R*	R^2	Adjusted R^2	*SE* of the Estimate
1	.430[a]	.185	.175	.62642

[a]Predictors: (Constant), Time

Table 1.10

Central Line Associated Bloodstream Infection Coefficients

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		β	*SE*	β	*t*	Significance
1	(Constant)	1.974	.133		14.821	.000
	Time	-.011	.003	-.430	-4.464	.000

[a]Dependent variable: Central Line Associated Bloodstream Infection rate.

The linear trend model is given by *CLABSI - Rate of Infections*$_{(time)}$ *= 1.974 - .011 * time.* The 90-month linear trend model for infections is illustrated in Figure 1.9. As evidenced in the coefficient Table, 1.10, the beta was negative and significant at the .001 level from a two-tailed *p*-value, (β = - .011; p = .000), therefore supporting the decrease in CLABSI infections over the 90-month period. The y-axis in Figure 1.9 is the CLABSI infection rate for each time period depicted on the x-axis, which represents 90 months of observations or points of data.

Figure 1.10 represents the CLABSI infection rate in scatter plot format to evaluate how maturation of the PNDP program impacts the rate of infections. A standardized process for tracking the CLABSI rate of infections was implemented across the organization in January 2011. The PNDP leadership structure was implemented in January 2012, represented by Fit Line 1 in Figure 1.10. Fit Line 2 on the x-axis in Figure 1.10 represents 48 months after the PNDP, UBCLs were implemented on the inpatient units. The fit line on the y-axis in Figure 1.10 represents the mean infection rate of 1.47. The top-right quadrant represents the infection rate above the mean after 48 months of PNDP implementation. Eight observation periods of infection rates were calculated above the mean, supporting the effectiveness of the PNDP leadership program.

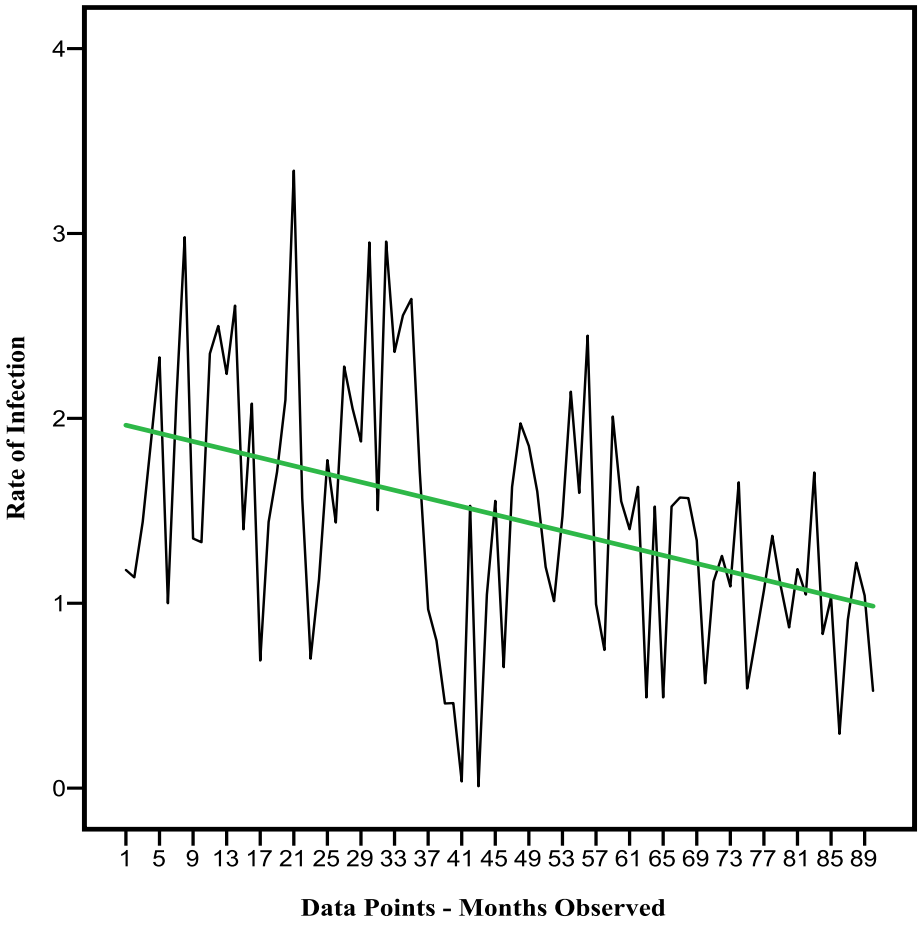
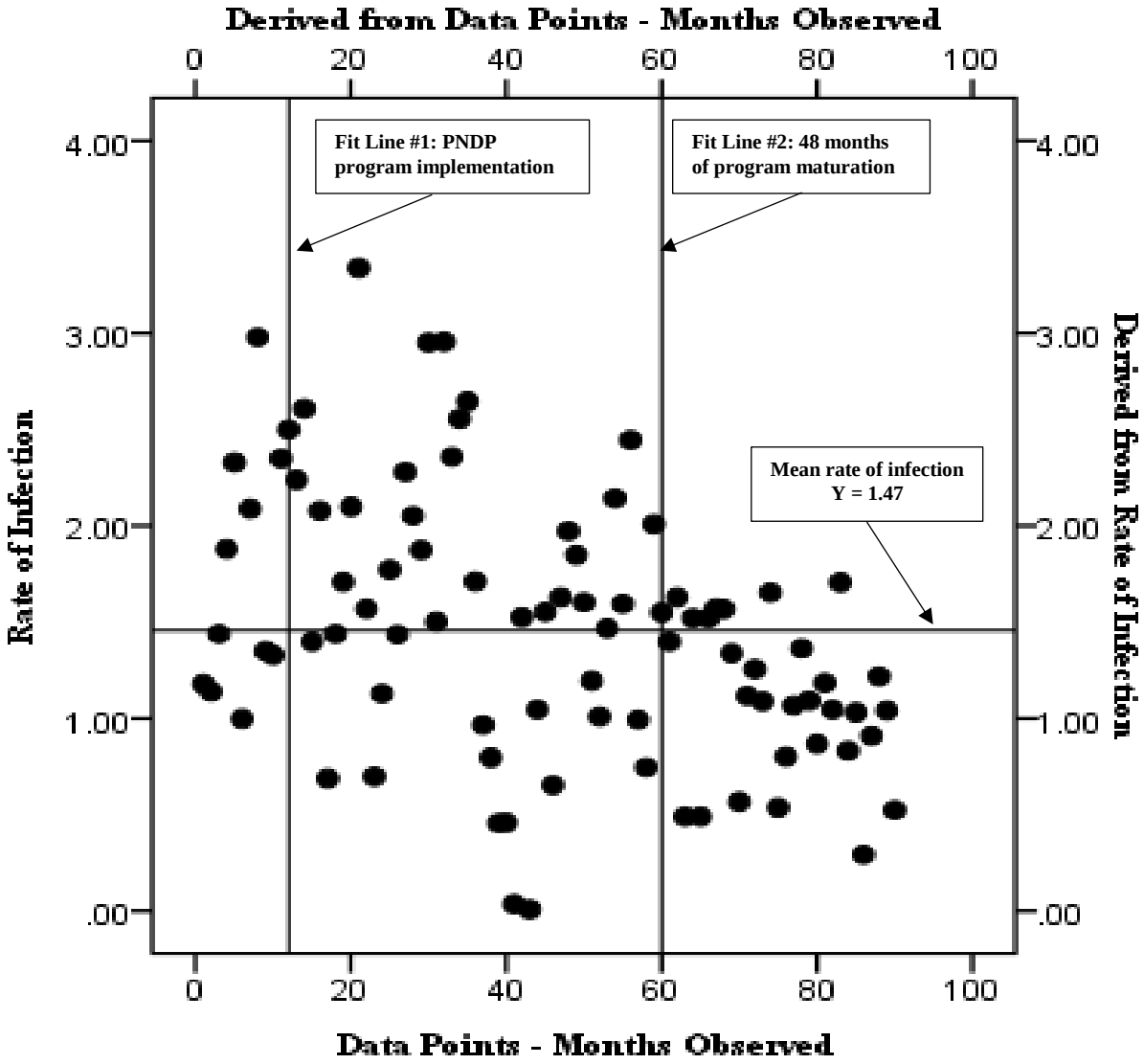


Figure 1.9. Central Line Associated Bloodstream Infection rate.



Key: PNDP: Physician Nurse Dyad Partnership

Figure 1.10. Central Line Associated Bloodstream Infection rate (scatter plot).

Clostridium difficile infections. The infection for a CDI is suspected when an inpatient presents symptoms of excessive diarrhea, nausea, and vomiting (CDC, 2011). The infection is confirmed, or ruled out, with laboratory testing. The number of infections per month is the average of total observations per unit in the acute care setting (Rees, 2015). The case organization was premature in tracking CDI infections and only had 42 months of data from January 2015 to June 2018. The linear trend model was utilized to evaluate the data. The model being fit was given by $CDI\text{ - }Rate\ of\ Infections_{(time)} = a + b * time$ (Brockwell & Davis, 2013)**;** a is unstandardized coefficients constant; and b is months of CDI observation. The model summary is given in Table 1.11. The estimated coefficients are provided in Table 1.12.

Table 1.11

Clostridium Difficile Infection Model Summary

Model Summary

Model	*R*	R^2	Adjusted R^2	*SE* of the Estimate
1	.691[a]	.477	.464	2.73831

[a]Predictors: (Constant), Time

Table 1.12

Clostridium Difficile Infection Coefficients

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		β	*SE*	β	*t*	Significance
1	(Constant)	12.303	.860		14.299	.000
	Time	-.211	.035	-.691	-6.040	.000

[a]Dependent variable: Clostridium Difficile Infection rate

The linear trend model was given by *CDI - Rate of Infections*$_t$ *= 12.303 - .211 * time.* The 42-month linear trend model for infections is illustrated in Figure 1.11. As evidenced by the coefficient table in Table 1.12, the beta was negative and significant at the .001 level from a two-tailed *p*-value, (β = - .211; *p* = .000), therefore supporting the decrease in CDI infections over the 43-month period. The y-axis in Figure 1.11 is the CDI infection rate for each time period depicted on the x-axis, which represents 43 months of observations or points of data.

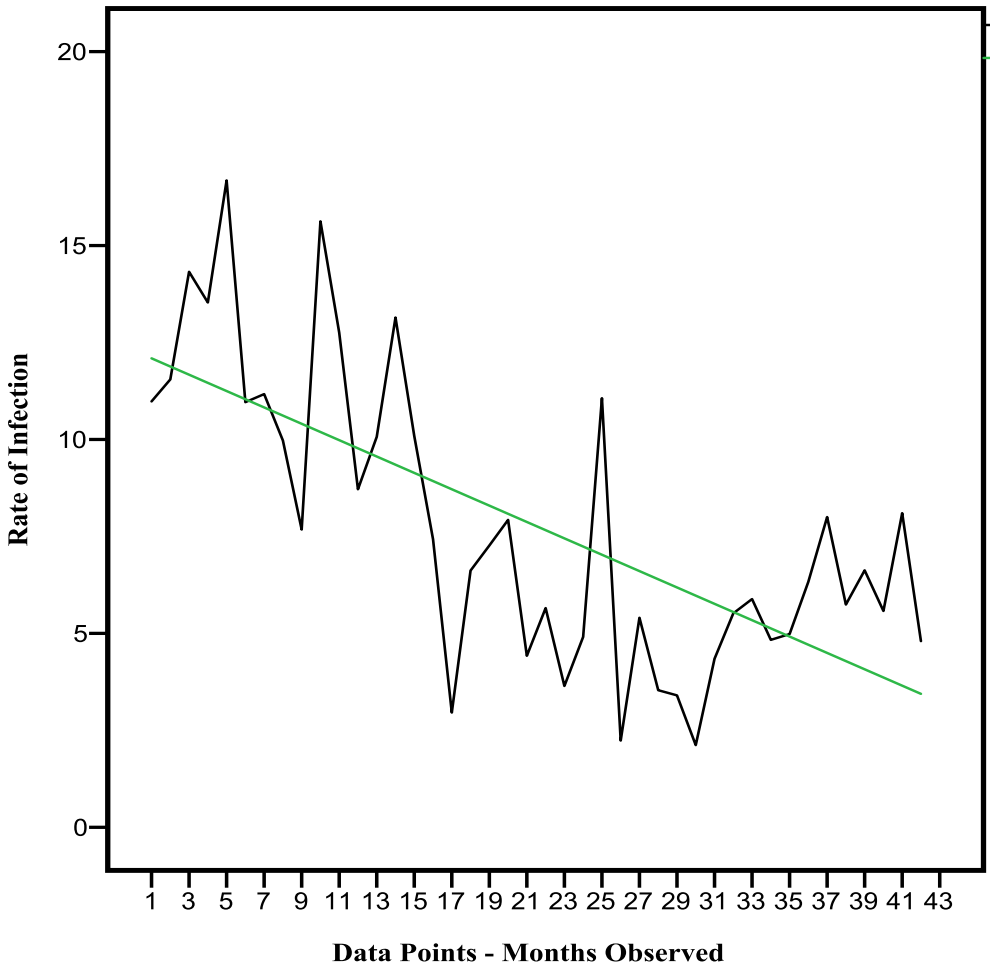


Figure 1.11. Clostridium Difficile Infection rate.

Figure 1.12 represents the CDI infection rate in scatter plot format to evaluate how maturation of the PNDP program impacts the rate of infections. A standardized process for tracking the CDI rate of infections was implemented across the organization in January 2015. The PNDP leadership structure was implemented in January 2012. The additional fit line on the x-axis of Figure 1.12 represents 48 months after the PNDP, UBCLs were implemented on the inpatient units (48 months of maturation). The fit line on the y-axis of Figure 1.12 represents the mean infection rate of 7.78. The top-right quadrant represents the infection rate of compliance above the mean after 48 months of PNDP implementation. Six observation periods of infection rates were calculated above the mean, supporting the effectiveness of the PNDP leadership program. Twelve months after the quality safety indicator of CDI was identified and standardized for observation across the organization, the PNDP program reached 48 months of maturity. The organization was able to effectively impact the infection rates within those 12 months, further supporting the maturation effect of the PNDP leadership model.

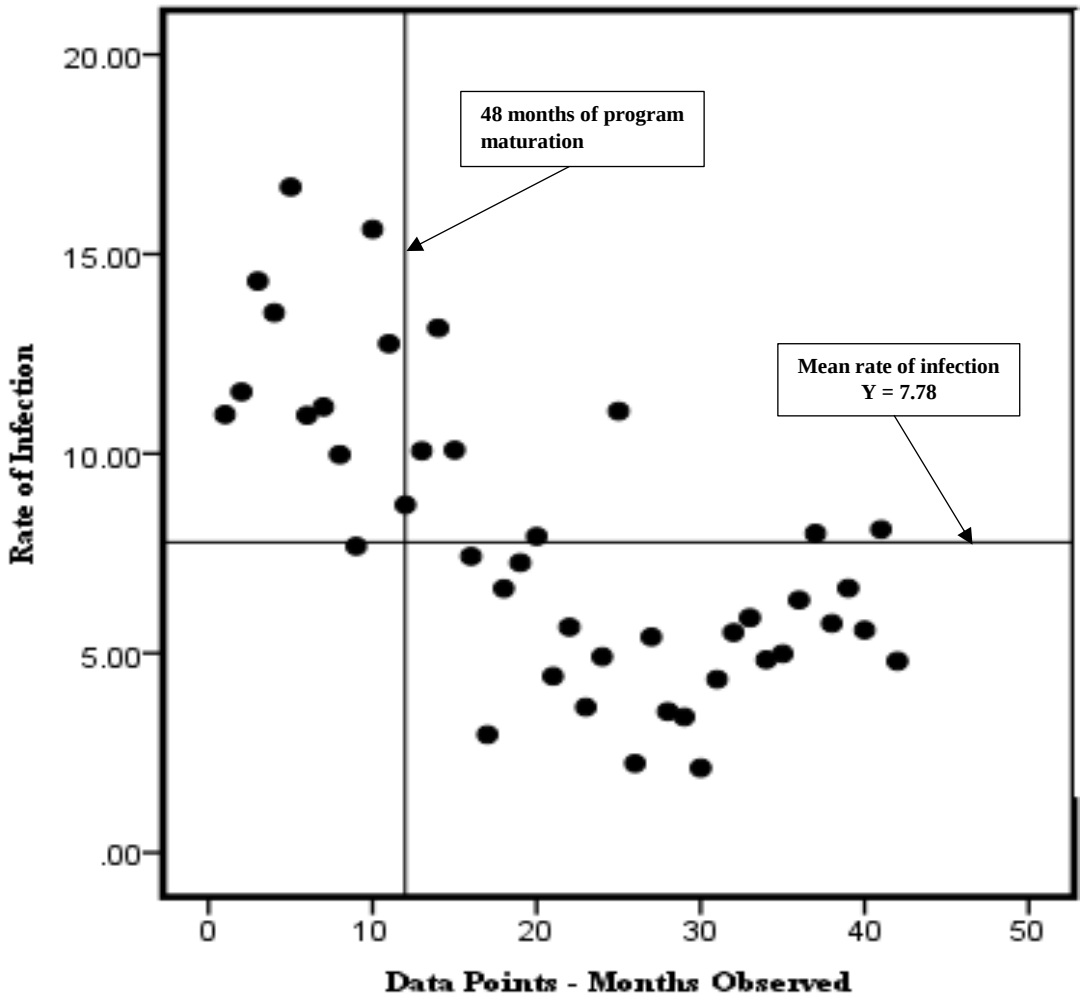


Figure 1.12. Clostridium Difficile Infection rate (scatter plot).

Hand hygiene. The observation for HH was confirmed when a staff member was observed washing or sanitizing hands upon entering or exiting an inpatient room (Rees, 2015). The proper method of HH is to use soap and water, scrub for 30 seconds, then rinse or to use the appropriate antiseptic; a positive observation was documented when a staff member was witnessed abiding by the HH policy (CDC, 2011). The number of observations per month was the average of the total observations per acute care setting by all staff (Rees, 2015).

The time series analysis data was from January 2013 to July 2018 (67 points of data). The linear trend model was utilized to evaluate the data. The model being fit was given by $HandHygiene - Observation(_{time)} = a + b * time$; *a* is the unstandardized coefficient constant; *b* is the month of HH observations. The model summary is provided in Table 1.13. The estimated coefficients are provided in Table 1.14.

Table 1.13

Hand Hygiene Model Summary

Model Summary

Model	*R*	R^2	Adjusted R^2	*SE* of the Estimate
1	.883[a]	.781	.777	.01100

[a]Predictors: (Constant), Time

Table 1.14

Hand Hygiene Coefficients

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		β	*SE*	β	*t*	Significance
1	(Constant)	.915	.003		336.419	.000
	Time	.001	.000	.883	15.204	.000

[a]Dependent Variable: Hand hygiene rate

The linear trend model was given by $HandHygiene - Observation_t = .915 + .001 * time$. The 67-month linear trend for observations is illustrated in Figure 1.13. As evidenced from the coefficient Table 1.14, the beta was positive and significant at the .001 level, ($\beta = .915$; $p = .000$), therefore supporting the increase in HH observations over the 67-month period. The y-axis in Figure 1.13 is the observed rate of HH compliance for each time period depicted on the x-axis, which represents 67 months of observations or points of data.

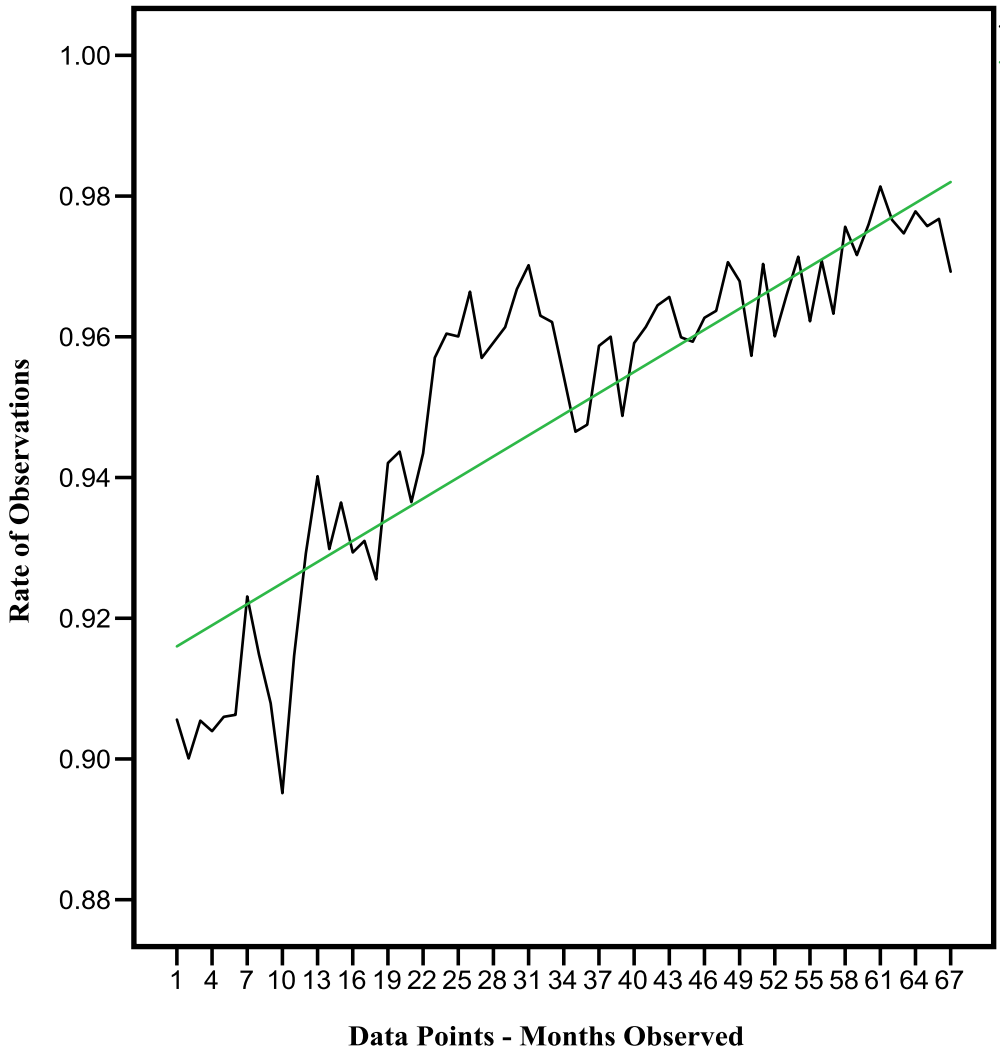


Figure 1.13. Hand hygiene observations.

Figure 1.14 represents the HH observation rate in scatter plot format to evaluate how maturation of the PNDP program impacts the compliance of observations for hand washing. A standardized process for tracking the HH observations was implemented across the organization in January 2013. The PNDP leadership structure was implemented in January 2012. The additional fit line on the x-axis in Figure 1.14 represents 48 months after the PNDP, UBCLs were implemented on the inpatient units (48 months of PNDP maturation). The fit line on the y-axis of Figure 1.14 represents the mean infection rate of .95. The lower-right quadrant represents compliance of the observation rates below the mean after 48 months of PNDP implementation. The preventive measure of HH should see improvements in the observation rates, which indicates compliance with the healthcare organizations HH policy. There were two observation periods of non-compliance below the mean, supporting the effectiveness of the PNDP leadership program.

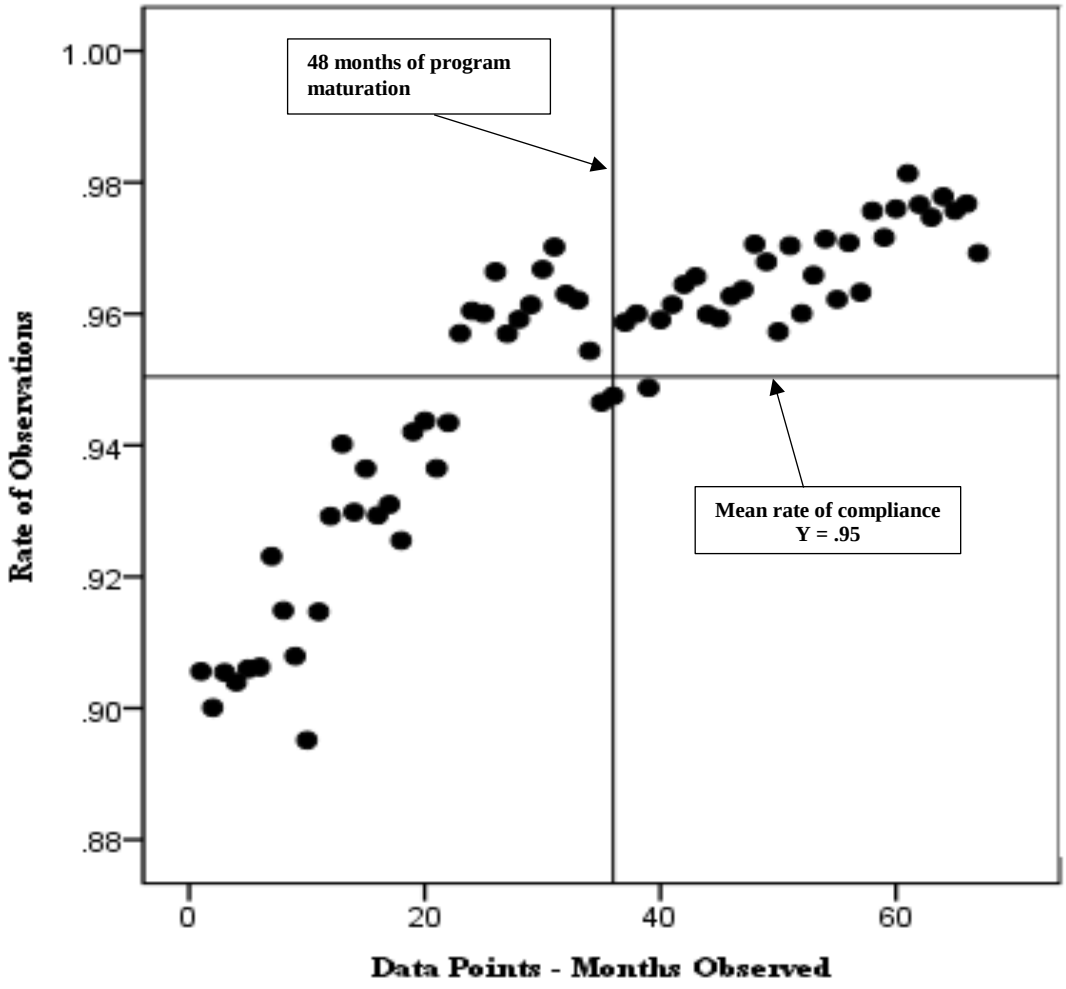


Figure 1.14. Hand hygiene observation rate (scatter plot).

Summary

The time series analysis reviewed historical data of the quality indicators through an analysis of varying data points per metric. This research analyzed the data to determine if as the PNDP, implemented in 2012, matured, the healthcare organization's quality safety indicators would improve, resulting in fewer injuries to patients. The measurement of the quality safety indicator CAUTI was implemented in January 2013, analyzing 66 points of data through June 2018. The CLABSI quality safety indicator was implemented in January 2011, analyzing 90 points of data through June 2018. The CDI quality safety indicator was implemented in January 2015, analyzing 42 points of data through June 2018. Finally, the preventive measure of HH was implemented January 2013, analyzing 67 points of data through July 2018. The results of the analysis demonstrated that all quality safety indicators significantly improved over time after implementation of the PNDP. This leads to the conclusion that H_8 was supported.

> H_8: Maturity of LLX-PNDP and LMX initiatives (as measured by time since inception) will be positively associated with the quality safety indicators of CAUTI, CLABSI, CDI, and HH.

Discussion and Implications

This essay reviews a healthcare organization's change in leadership structure from a hierarchical compartmentalized socio-technical theory of management to a theoretical style that is based on open communication across medical specialties, departments, and individual responsibilities: the LLX and LMX theories of governance. The LLX and LMX theories of governance were instituted at the case organization through the PNDP implementation on inpatient units. The team of dyads created the UBCLs, who assumed responsibility for governance of the UBCTs. We explored the efficacy of this leadership team through the

employees' perceptions of its impact on the social capital of care coordination, communication, teamwork, and trust; the effect of quality safety indicators on patient safety; and how employees perceived the leadership structure to impact job satisfaction. First, the employees' perceptions were evaluated by statistically analyzing an employee engagement survey, which consisted of over 534 points of data, utilizing SmartPLS. This demonstrated significant support for the leadership's ability to positively impact the social capital, patient safety, and job satisfaction. Next, to determine if there was significant impact on patient safety, we utilized SPSS linear regression and linear trend time series analysis to investigate the historical data of quality safety indicators—CAUTI, CLABSI, CDI, and the infection control preventive measure of HH—to determine if these indicators improve as the PNDP matured over time. The results of this analysis were also significant, as the time of implementation of the leadership structure correlated with the quality indicator improvement after analyzing the historical data.

Discussion

This section discusses the findings from each specific hypothesis test, as well as the interpretation of the results. It is organized into two parts, first discussing the employees' perceptions of the PNDP leadership model by analyzing what perceived impact the UBCLs had on the social capital of care coordination, communication, teamwork, and trust. Furthermore, we analyzed how employees perceived the impact of this relationship on patient safety and job satisfaction. Last, we discuss the time series analysis exposure of the significant association with the implementation of the PNDP and its maturation, with the improvement of the aforementioned quality safety indicators, which supports the final hypothesis.

Employee perceptions of leadership. This research proposed the employees would perceive that the post implementation of LLX-PNDP and LMX leadership structure on inpatient

units strengthened the social capital created by the mediating variables of care coordination, communication, teamwork, and trust. We predicted employees would perceive that the enhanced social capital of the mediating variables would have a positive impact on the independent variables of patient safety and job satisfaction. We also posited the employees would perceive that senior leadership and the organization's support serve as antecedents to their perception. We review their perceptions as identified by each hypothetical statement.

Impact of Leader-leader Exchange-Physician Nurse Dyad Partnership and Leader-member Exchange on care coordination. Care coordination is defined as "a function that helps ensure that the patients' needs and preferences for health services and information sharing across people, functions, and sites are met over time" (Bodenheimer, 2008, p.1). It maximizes the value of services to patients by facilitating beneficial, efficient, safe, and high-quality patient experiences, which leads to improved healthcare outcomes (Doty, Fryer, & Audet, 2012). High-quality LLX-PNDP and LMX relationships are characterized based on mutual respect, trust, and obligation amongst team members, which will have a positive impact on care coordination. The new leadership structure creates acceptance within the work group, which leads to reciprocal reaction to the leader's acceptance (Liden et al., 1997). This reciprocity forms trust between the leader and group members, thereby influencing the appropriate decisions to drive favorable outcomes, even in the leader's absence (Liden at al., 1997). The employees perceived this leadership structure had a significant positive impact on care coordination in a hospital unit (H_1: $\beta = .615$, t-value = 21.094).

Impact of Leader-leader-Physician Nurse Dyad Partnership and Leader-member Exchange on communication. Effective clinical communication is respectful, clear, direct, and explicit (Lyndon, Zlatnik, & Watcher, 2011), which serves as a structural (embedded)

component of the social capital created by the PNDP. In an organizational setting, communication satisfaction is broadly defined as an individual's satisfaction with various aspects of communication in interpersonal groups and organizational contexts (Hecht, 1978). Without communication, the PNDP does not exist. UBCLs and UBCTs performing huddle meetings at the beginning of each shift, mandatory bedside rounding sessions, and frequent daily check-ins between UBCLs are all examples of communication facilitation between components of the LLX-PNDP and LMX leadership structure (Fllcek; 2012). Cohesiveness between high-quality LLX-PNDPs promotes transparency of openly communicating unit treatment procedures and protocols, which has a positive effect on the functioning of the staff members without fear of retaliation or negativism. The employees perceived this leadership structure had a significant positive impact on communication (H_2: $\beta = .608$, t-value = 19.569).

Impact of Leader-leader Exchange-Physician Nurse Dyad Partnership and Leader-member Exchange on teamwork. Multiple studies have researched the effect of teamwork in healthcare (Casimiro, Hall, Kuzimesky, O'Connor, & Varpio, 2015), including how teamwork that effectively engages patients and families manifests itself in an acute rural care setting reveals how the ambiguity of teamwork opens up opportunities for complex, diverse range of responses to the managerial discourse among diverse occupational groups, of which there are many in healthcare (Finn, Learmonth, & Reedy, 2010). Gafa, French, Scerri, and Price (2005) took a traditional approach with questionnaires and surveyed over 200 public healthcare workers in a Maltese hospital to determine their perceptions of teamwork in healthcare. Song et al. (2005) stated better team dynamics within a care team may alleviate stress associated with primary care physicians' concerns about how other providers care for their patients when they are not available, which in turn, may improve clinical work satisfaction. Studies have also confirmed

that LLX and LMX have a positive effect on teamwork (Allison, 2016; Graen, et al., 1982; Herdman et al., 2014; Liden et al., 1997; Maslyn & Uhl-Bien, 2001; Tangirala et al., 2001; Zhou et al., 2012). The employees perceived this leadership structure had a significant positive impact on teamwork (H_3: $\beta = .442$, *t*-value = 11.711).

Impact of Leader-leader Exchange-Physician Nurse Dyad Partnership and Leader-Member Exchange on trust. To pursue patients' good, patients must trust physicians (or clinicians or organizations) with private information about their bodies (Hall et al., 2002). For the physician and the patient, trust is a two-way street, as Goold (2002) stated; without the trust relationship, how could a physician expect patients to reveal the full extent of their medically relevant histories, expose themselves to the physical exam, or act on recommendations for test or treatments. Trust promotes efficient use of both the patient's and the physician's time. High-quality LLX and LMX depend on trust, respect, and obligation for a successful relationship between partners (Graen et al., 1995). The employees perceived this leadership structure had a significant positive impact on trust (H_4: $\beta = .625$, *t*-value = 22.716).

Antecedents of employee perceptions of leadership. The senior or executive management team is a group of individuals at the highest level of management in an organization with the day-to-day tasks of managing the organization (Menz & Menz, 2012). Healthcare leadership is defined as the ability to inspire individual and organizational excellence, create a shared vision and successfully manage change to attain the organization's strategic ends, and successful performance (Cliff, 2012). Leaders determine, communicate, and guide the vision of the organization, and thus leadership engagement in any culture change initiative is crucial (Frampton et al., 2008). This research focused on the CEO, CNO, and CMO senior leaders. Each senior leader has a specific role in supporting the LLX-PNDP and LMX leadership

structure. The CEO is ultimately responsible for providing and environment conducive for ensuring patient care, continual growth, learning, and innovation (Prestia, 2014). The CEO bears overall responsibility for ensuring the program's implementation, staffing, and monitoring for successful outcomes. The CNO has primary responsibility for ensuring patient-centered care is prevalent within the organization (Prestia, 2014). This individual ensures the nursing leadership supports the leadership structure, informs them of the program, and assigns responsible leaders as the nurse dyad partners. The CMO is responsible for patient-centered quality, safety initiatives, and outcomes within the organization (Prestia, 2014). This individual portrays identical responsibilities as the CNO with the physician population. The employees perceived the senior leadership support had significant positive impact on their perceptions (H_5: $\beta = .229$, *t*-value = 5.541).

Organizational support is established when leaders clearly articulate a hospital's commitment to meet the unique needs of its patients and support for its employees (Cliff, 2012). The CEO, CNO, and CMO involvement in the facilitation of the leadership structure on inpatient units—for example, participating in communal rounding, huddle sessions, and root-cause analysis—demonstrates organizational support for the leadership structure. Furthermore, implementing programs that improve the work environment for the employees, their health and wellbeing, and opportunities for their opinions to be heard (i.e., townhall sessions) demonstrates organizational support. The employees perceived the organizational support had significant positive impact on their perceptions (H_6: $\beta = .109$, *t*-value = 2.446).

Impact of social capital on patient safety and job satisfaction. Social capital is the collective value of all social networks and the inclinations that arise from these networks to do things for each other—norms of reciprocity (Sander, 2015). The social capital of the mediating

variables care coordination, communication, teamwork, and trust emphasizes specific benefits that flow from the trust, reciprocity, information, and cooperation, thereby creating value for people who are connected and for bystanders as well (Sander, 2015).

Care coordination develops through action driven by collaboration when performing standardized safety procedure reviews such as: transition of care planning, planning for catheter use, planning for HAI testing, and observations for HH. The reciprocity amongst the clinical care team is mediated through use of algorithms and standardized checklists. Their ability to challenge each other in a respectful manner, without fear of retaliation, facilitates a positive work environment that supports job satisfaction and ensures management of patient safety initiatives. The employees perceived that care coordination had a significant positive impact on patient safety (H_{7a}: $\beta = .294$, t-value = 7.907) and job satisfaction ($\beta = .220$, t-value = 5.498).

Communication provides for open, two-way exchange of ideas that leads to mutual consent on patient care plans. Effective clinical communication is respectful, clear, direct, and explicit (Lyndon et al., 2011). Facilitating respectful communication strengthens trust between UBCLs and the UBCTs, which enables the team to work towards a common goal of safe patient care. High-quality UBCLs' facilitation of effective communication has a positive impact on job satisfaction of staff nurses and physicians of the UBCTs by demonstrating the reciprocal exchange of ideas and performance measures through the standardized process. The employees perceived that communication had a significant positive impact on patient safety (H_{7b}: $\beta = .160$, t-value = 2.570) and job satisfaction ($\beta = .149$, t-value = 2.224).

Teamwork in healthcare is the provision of health services by at least two health providers who work collaboratively with patients and their caregivers to accomplish shared goals within and across settings to achieve coordinated, high-quality care (Song et al., 2015). High-

quality LLX-PNDP and LMX support the provision of high-quality care. High-quality team dynamics may result in better information transfer, which is particularly important when primary care physicians ask colleagues to care for a patient in their absence (Song et al., 2015), which facilitates safe patient care. Teamwork improves job satisfaction by nurses and physicians feeling a sense of accomplishment in their job activities through social interactions. The employees perceive that teamwork has a significant positive impact on patient safety (H_{7c}: β = .307, *t*-value = 5.809) and job satisfaction (β = .323, *t*-value = 6.054).

Trust, in healthcare, is created between the patient and the care team. Patients who trust their doctors rate their care more favorably (Keating et al., 2002). Strengthening the co-creation of trust between the patients, their physicians, the care team involved with the patients' care, and the healthcare organization improves patient outcomes while leading to highly motivated employees. This implies that higher levels of trust can lead to higher levels of patient safety. However, the employees did not perceive that trust had an impact on patient safety (H_{7d}: β = .099, *t*-value = 1.839). The employees did perceive that trust had a significant positive impact on job satisfaction (β = .141, *t*-value = 2.426).

Table 1.15

Trust Construct

Construct	*Item*	*Question*	*t-statistic*
Trust (TRU)	TRU1	There is a climate of trust in this organization.	66.644
	TRU2	There is a climate of trust within my work unit/department.	140.175

To gain an understanding of why the employees would perceive that trust does not impact patient safety, we reviewed the specific indirect effects of trust. Table 1.15 depicts the two items that established the trust construct. The following indirect effects were significant: the control group of employee; indirect effect on employee perceptions of leadership; and trust were negative and significant at the 0.01 level (β= -0.064, *t*-value = 2.518); the control group of managers indirect effect on employee perceptions of leadership; and trust were positive and significant at the 0.001 level (β = .467, *t*-value = 18.109); the control group of physicians indirect effect on employee perceptions of leadership; and trust were positive and significant at the 0.05 level (β = .043, *t*-value = 2.048); the antecedent of organization support indirect effect on employee perceptions of leadership; and trust were positive and significant at the 0.01 level (β = .066, *t*-value = 2.383); and antecedent of senior leadership support indirect effect on employee perceptions of leadership; and trust were positive and significant at the 0.001 level (β = .111, *t*-value = 4.901). The insignificant relationship of the specific indirect effects of trust was the control group of years of service indirect effect on employee perceptions of leadership; and trust, which was negative and insignificant (β = -0.005, *t*-value = .297). The control variable, years of service, had insignificant impact on the specific indirect effect of trust, leading to the assumption that senior employees perceive there is an insignificant relationship regarding patient safety and the climate of trust in the organization.

Trust is an essential part of healthcare, not only between clinicians and patients, but also between staff and management (Firth-Cozens, 2004). Firth-Cozens (2004) identified that trust has a beneficial impact on many aspects of working life, including job satisfaction and organizational effectiveness, and both factors have been shown to affect the quality of patient care. Furthermore, Firth-Cozens (2004) identified the aspects of trust which need to be

developed between the staff and management:

> Staff need to trust management sufficiently in order: to tell the truth about their own errors and those of others; to be sure they are not seen as telling tales on colleagues but protecting patients; that actions to protect patients better will follow their reporting; and that their reputation will be enhanced by reporting honestly.
>
> Management must be trusted: to be open and fair about the handling of error throughout the organization; to investigate the incident with care, integrity, and sensitivity; not to harm the one who reports honestly; to treat the error maker fairly; to use the information well to improve patient care; and need to trust staff to provide accurate data for their decision and policy making (p. 57).

In this case, the control variable of years of service identified the employee tenure with the organization. The mean number of years the employees have been with the organization was 16 and the mode number of years was 8. Of the 534 employees participating in the survey, over 280 have 15 or more years of service, with the most senior employee at 46 years with the organization. This supports the assumption that senior employees of the organization believe there is an insignificant relationship between patient safety and the climate of trust in the organization, which can impact the organization's effectiveness to provide high quality patient care.

Time series analysis.

This research proposed that as the PNDP leadership structure matured, the healthcare organization's quality safety indicators of CAUTI, CASBI, CDI, and the prevention measure of HH will improve, resulting in fewer injuries to patients that can prolong their length of stay in the hospital. The healthcare organization changed their leadership structure in January 2012 to

the PNDP model, implementing the UBCLs and the UBCTs. We considered 48 months of program maturation in the healthcare organization for each quality safety indicator, regardless of how long standardized monitoring and reporting for the indicator had been initiated. The quality safety indicators were reported monthly as a rate of infection or observation. The historical data utilized consisted of each month observed, which served as a specific data point for this study. Each quality safety indicator's historical data varied due to the time of implementation into the healthcare organization's quality safety program. Next, the specific results of each quality safety indicator are discussed.

Catheter Associated Urinary Tract Infection quality safety indicator. The healthcare organization implemented a standardized monitoring and reporting program for CAUTI in January 2013. The PNDP leadership structure began in January 2012, which established the UBCLs and UBCTs 12 months before the formal CAUTI observation period began. The 48-month maturation period for the PNDP program ended in December 2015. The formal monitoring process included implementing standardized procedures throughout the organization to provide the evidence-based interventions for appropriate use of indwelling urinary catheters to prevent CAUTIs (Gould, Gaze, Drey, & Cooper, 2017). Appendix A provides an example of the CAUTI prevention bundle, which standardized the process for utilization, maintenance, removal and culture testing of an indwelling urinary catheter. Appendix A is one example of a tool utilized to assist UBCLs and UBCTs in managing urinary catheter use. For the quality safety indicator to improve, the rate of infection must decrease over time. The linear regression time series analysis revealed significant results at the 0.001 level that over time the CAUTIs decreased (constant $\beta = 3.439$, *t*-value = 13.239; time $\beta = -.044$, *t*-value = -6.497). This indicates that for every 3.4 culture samplings for CAUTI infections, the rate decreased by 4.4%. The

CAUTI scatter plot diagram (Figure 1.8) identifies four observations periods of infection rates above the mean of 1.97 after 48 months of implementing the PNDP leadership structure, which supports the effectiveness of the program.

Central Line Associated Bloodstream Infection quality safety indicator. CLABSI, the most serious HAI, usually results in an increase in the length of hospital stay, increase in cost of care, and increase in patient morbidity and mortality rate (AHA, 2016). Patient mortality rates of CLABSI range from 12% to 25% (CDC, 2011), and the cost ranges from $3,700 to $36,000 per episode (Scott, 2009). The healthcare organization implemented a standardized monitoring and reporting program for CASBI in January 2011. The PNDP leadership structure began January 2012. The 48-month maturation period for the PNDP program ended December 2015. Appendix B represents the adult central vascular access device maintenance bundle utilized by the UBCLs and UBCTs to manage catheter use that could lead to CLABSI infections. For the quality safety indicator to improve, the rate of infections must decrease over time. The linear regression time series analysis revealed significant results at the 0.001 level that over time the CLABSIs decreased (constant $\beta = 1.974$, *t*-value = 14.821; time $\beta = -.011$, *t*-value = -4.464. This indicates that for every 1.9 culture samplings for CLABSI infections, the rate decreased by 1.1%. The CLABSI rate of infection scatter plot diagram (Figure 1.10) identifies eight observations periods of infection rates above the mean of 1.46 after 48 months of implementing the PNDP leadership structure, which support the effectiveness of the program.

Clostridium Difficile Infection quality safety indicator. The leading cause of nosocomial diarrhea in the United States is CDI, which has historically resulted in more than $1 billion in excess health costs annually (Fakih et al., 2015). The healthcare organization implemented a standardized monitoring and reporting program for CDI in January 2015. The PNDP leadership

structure began in January 2012. The 48-month maturation period for the PNDP program ended in December 2015, 12 months after the formal monitoring program began for CDI. Figure 1.15 provides an example of the CDI algorithm, which standardizes the process for when, and under what conditions, to collect laboratory specimens to be tested for CDI. For the quality safety indicator to improve, the rate of infections must decrease over time. The linear regression time series analysis revealed significant results at the 0.001 level that over the 12-month standardized monitoring period and the 48-month maturity period for the PNDP implementation the CDIs decreased (constant $\beta = 12.303$, *t*-value = 14.299; time $\beta = -.211$, *t*-value = -6.040. This indicates that for every 12.3 culture samplings for CDI infections, the rate decreased by 21.1%. The CDI rate of infection scatter plot diagram (Figure 1.11) identified eight observation periods of infection rates above the mean of 7.78 after 12 months of standardized monitoring and 48 months of implementing the PNDP leadership structure, which supports the effectiveness of the program.

Hand hygiene quality safety indicator. Identified as one of the simplest ways to prevent HAIs, HH has become an integral topic of daily huddle discussions (CDC, 2016). The HH quality safety indicator serves as a prevention measure that requires all staff members to wash their hands before entering and immediately after exiting an inpatient room. Family members should be reminded to wash their hands, but they are not privy to the formal monitoring and reporting process. The healthcare organization has monitors who identify specific inpatient units to observe at random times. One instance where a staff member is observed not washing his or her hands, according to policy, leads to a non-compliant observation. The healthcare organization implement the standardized monitoring and reporting program for HH in January 2013. The PNDP leadership structure began in January 2012, which gave the UBCLs and UBCTs 12 months of maturity before the formal HH observation period began. The 48-month

maturation period for the PNDP program ended in December 2015. For the prevention measure of HH quality safety indicator to improve, the number of compliant observations must increase over time. The linear regression time series analysis revealed significant results at the 0.001 level that over time the HH observations improved (constant $\beta = .915$, *t*-value = 336.519; time $\beta = -.001$, *t*-value = -15.204. This indicates that for every .915 observations, HH rate of compliance increased by .1%. The HH scatter plot diagram (Figure 1.13) identifies no observations periods of HH compliance below the mean of .95 after 48 months of implementing the PNDP leadership structure, which supports the effectiveness of the program.

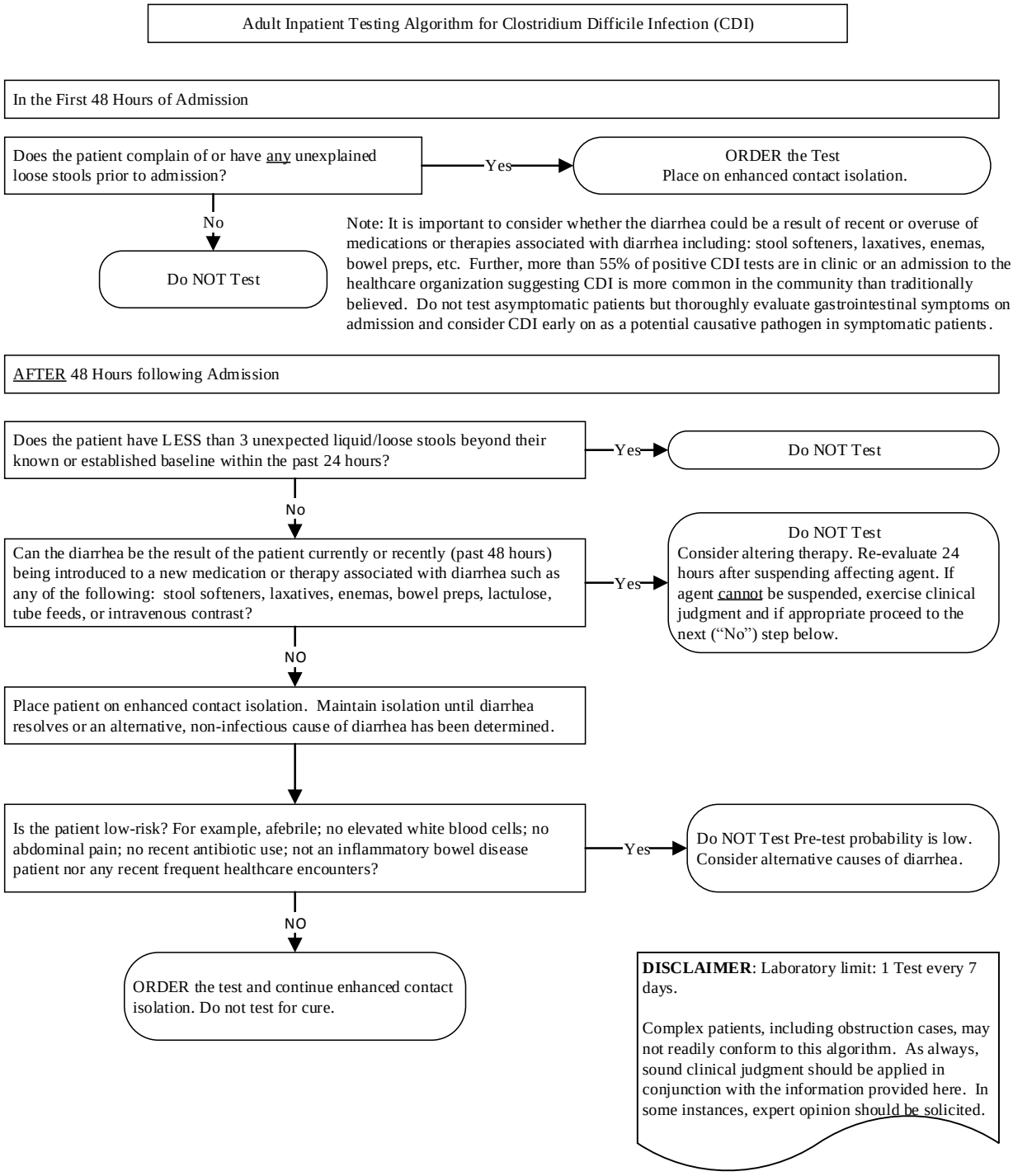


Figure 1.15. Clostridium Difficile Infection Algorithm

Limitations

The limitations of this study include two main issues. First, the study utilized secondary data obtained from a third-party survey in a hospital. Therefore, we cannot attest to the data collection procedures or to the quality of the secondary data as these were beyond our control, which could lead to common method bias. We did statistically rule out common method bias; however, if we did not control the method of distributing and collecting the data, we cannot totally rule out the possible effect. Second, since the study was conducted in a large, 600+ bed midwestern AMC, the generalizability of the study across other healthcare organizations may be limited in scope. Therefore, any findings from this study would need to be carefully considered before being applied to other contexts.

Implications for Research

Findings from this dissertation address a substantial research gap in the healthcare literature in terms of physician-nurse dyads serving in leadership roles and how the theoretical roots of LLX and LMX can provide a training base to begin a program. In this section we review three potential implications. First, Clausen et al. (2017) established theory of intentional partnering, identified why and how nurse and physician managers aligned their professional agendas. LLX and LMX leadership theories are based on mutual respect, trust, and obligation, which aligns with the intentional partnering theory of Clausen et al. (2017). More research on understanding how to build the functional professional partnership in a healthcare organization will benefit the industry.

Second, the limited generalizability of this study lends itself to future research by expanding the scope beyond midwestern hospitals to national and international healthcare. This research was based in a large, 600+ bed AMC, and could also be expanded to rural healthcare

facilities. Smaller, rural healthcare organizations experience leadership, quality, safety, and patient satisfaction problems the same as large AMCs. Nurses are the predominant employee group in healthcare facilities; involving them in the patient care decision making process builds their trust and engagement, while increasing the physicians' confidence in their abilities. This is beneficial to any healthcare organization, no matter how big or small. Lastly, we focused on four quality safety indicators, one of which was a prevention measure. The Hospital Value Based Purchasing Program of CMS (2017) identified other quality indicators such as surgical site infections, readmission rates, the Hospital Consumer Assessment of Hospital Providers and Systems (HCAHPS) patient satisfaction survey, falls with injury, and mortality rates that could be points of evaluation to determine if the leadership program impacts these quality safety measures.

Healthcare organizations are comprised of multiple autonomous work groups that create mini social societies, contributing to their complexity. These social societies create communication boundaries that inhibit the ability to create a cohesive team environment, which is imperative to providing high quality patient care; there is no human healthcare without communication (Visser & Erby, 2014). Healthcare providers have been advised to emulate the high-quality achievable in auto manufacturing, the safety realization in the airline industry, and the consistency of low cost of the food service industry by standardizing processes and training employees in quality improvement (Weeks & Wadsworth, 2013). In order to achieve the standards of the auto, airline, and food service industries, the leaders in healthcare must first learn how to permeate the communication barriers of the STS theory of governance, which identifies with the autonomous working groups (Niepce & Molleman, 1998).

This research demonstrates how a healthcare organization can change its leadership structure from the autonomous grouping STS theory of governance to the PNDP and have a positive impact on patient safety and job satisfaction. The PNDP is a derivative of the LLX and LMX theories of management that posit peer-to-peer and leader-to-subordinate governance models can create high-quality relationships when, over time, they build mutual trust, respect, and obligation (Graen & Uhl-Bien, 1995; Tangirala et al., 2007). This study revealed the case organization employees perceived the high-quality relationships between inpatient UBCLs and the inpatient unit staff (UBCTs) strengthened the social capital of care coordination, communication, teamwork, and trust, which ultimately has a positive impact on patient safety and job satisfaction. Furthermore, the time series analysis validated that as the relationships matured (48 months for this research), the PNDP governance structure has a positive impact on the quality safety indicators of CAUTI, CLABSI, CDI, and the prevention measure of HH. This supports the LLX and LMX theories, which identify time as a factor for the PNDP to mature and become a stronger leadership team to support achieving organizational goals.

Clausen et al. (2017) researched the intentional partnering of physicians and nurses and created a substantive theory of intentional partnering, which explained how nurse and physician managers align their professional agendas. The basic principles of the intentional partnering theory were modeled after the basic principles of the LLX and LMX theories of governance: building mutual respect, trust, and obligation amongst the paired leaders and their subordinates (Clausen et al., 2017). This model of governance has demonstrated how it can break down communication barriers and support healthcare leaders' efforts to build a high-quality patient care organization.

Implications for Practice

The findings from this dissertation are expected to have immense practical significance as they answer two key fundamental questions regarding physician-nurse dyads: 1) do physicians-nurse dyads provide value to the healthcare organizations; and 2) if the PNDP program is sustained and matures, will it have a positive impact on patient safety and job satisfaction? Healthcare leadership is complex with matrixes in their reporting structures. Investigating new leadership structures to simplify the complexity when the making decisions with regards to patient care has led other organizations to implement the PNDP governance structure (Kim et al., 2014; Rees, 2015). This study provides value by outlining key factors that could impact exploring healthcare organizations' decisions to implement the PNDP program. Furthermore, it provides insight on the employee's perception of the program after an elongated period of operating under this governance model. Understanding how the organization utilizes algorithms and standardized checklists to monitor the dyad teams and their inpatient units' performance, will provide a blueprint for organizations implementing their independent programs.

Conclusion

Healthcare systems around the world face complex challenges, such as pressures for cost containment, complex care environments, and rapid changes, while continuing to strive for high-quality and safe patient care (Clausen et al., 2017). Complex demands and risks in decision-making have made it difficult for one individual to lead alone; collaborative healthcare management structures and leadership, particularly senior leaders, are key factors to facilitate change and transform healthcare delivery (Clinical Nursing Association [CNA], 2009). Managing the business of healthcare is a complex and multidimensional task. This research bridges the gap in healthcare between academic and practice, linking the theoretical

underpinnings to practical applications. The federal government has implemented policies and procedures to increase quality and decrease cost, which requires effective communication that cannot be attained in silo departments. This leadership governance structure has substantiated its ability to improve quality and support organizational objectives based on the opinions of hospital staff. Though there is much research to expand this subject with regards to this leadership structure, this research has provided an excellent foundation.

REFERENCES

Abrams, M. K., Nuzum, R., Zezza, M. A., Ryan, J., Kiszla, J., & Guterman, S. (2015, May 7). The Affordable Care Act's Payment and Delivery System Reforms: A Progress Report at Five Years. Retrieved April 24, 2018, from http://www.commonwealthfund.org/publications/issue-briefs/2015/may/aca-payment-and-delivery-system-reforms-at-5-years

Adler, P., & Adler, P. (1995). Theory & methods -- Learning from Strangers: The Art and Method of Qualitative Interview Studies by Robert S. Weiss. Contemporary Sociology, 24(3), 420.

Agar, M. (1980). The professional stranger: an informal introduction to ethnography / Michael H. Agar. New York: Academic Press.

Alameddine, M., Baroud, M., Kharroubi, S., Hamadeh, R., Ammar, W., Shoaib, H., & Khodr, H. (2017). Investigating the job satisfaction of healthcare providers at primary healthcare centres in Lebanon: A national cross- sectional study. Health & Social Care in the Community, 25(6), 1805–1816. https://doi.org/10.1111/hsc.12454

Allison, Brooke B. (2016). An Examination o Leader-Member Exchange And Team Effectiveness.

Andrew M. Pettigrew. (1990). Longitudinal Field Research on Change: Theory and Practice. Organization Science, 1(3), 267–292. https://doi.org/10.1287/orsc.1.3.267

Bang, H. (2011). Leader-member exchange in nonprofit sport organizations. Nonprofit Management & Leadership, 22(1), 85–105. https://doi.org/10.1002/nml.20042

Bazemore, Andrew, Green, Larry, Kamerow, Douglas, Nwando, Olayiwola, & Meyers, David. (2016). Starfield Summit Report Team Based Primary Care.

Bedell-Avers, K., Hunter, S. T., Angie, A. D., Eubanks, D. L., & Mumford, M. D. (2009). Charismatic, ideological, and pragmatic leaders: An examination of leader–leader interactions. The Leadership Quarterly, 20(3), 299–315. https://doi.org/10.1016/j.leaqua.2009.03.014

Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The Triple Aim: Care, Health, And Cost. Health Affairs, 27(3), 759–769. https://doi.org/10.1377/hlthaff.27.3.759

Blau, P. M. (1964). Exchange and Power in Social Life. Transaction Publishers.

Boies, K., & Howell, J. M. (2006). Leader–member exchange in teams: An examination of the interaction between relationship differentiation and mean LMX in explaining team-level outcomes. The Leadership Quarterly, 17(3), 246–257. https://doi.org/10.1016/j.leaqua.2006.02.004

Brockwell, P. J., & Davis, R. A. (2013). Time Series: Theory and Methods. Springer Science & Business Media.

Brunetto, Y., Shacklock, K., Bartram, T., Leggat, S. G., Farr-Wharton, R., Stanton, P., & Casimir, G. (2012). Comparing the impact of leader–member exchange, psychological empowerment and affective commitment upon Australian public and private sector nurses: implications for retention. International Journal of Human Resource Management, 23(11), 2238–2255. https://doi.org/10.1080/09585192.2011.616524

Brunetto, Y., Shacklock, K., Teo, S., Farr-Wharton, R., & Nelson, S. (2015). Nurses' supervisors, learning options and organisational commitment: Australia, Brazil and England. Journal of Nursing Management, 23(8), 1029–1038. https://doi.org/10.1111/jonm.12249

Casimiro, L. M., Hall, P., Kuziemsky, C., O'Connor, M., & Varpio, L. (2015). Enhancing patient-engaged teamwork in healthcare: an observational case study. Journal of Interprofessional Care, 29(1), 55–61. https://doi.org/10.3109/13561820.2014.940038

CDC. (2011). Vital Signs: Central Line--Associated Blood Stream Infections --- United States, 2001, 2008, and 2009. Retrieved June 12, 2016, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6008a4.htm

Channing, A., & DeVore, S. D. (2009). The value of value-based purchasing. Healthcare Financial Management: Journal Of The Healthcare Financial Management Association, 63(10), 40–42.

Christina M Surawicz, Lawrence J Brandt, David G Binion, Ashwin N Ananthakrishnan, Scott R Curry, Peter H Gilligan, … Brian S Zuckerbraun. (2013). Guidelines for Diagnosis, Treatment, and Prevention of Clostridium difficile Infections. The American Journal of Gastroenterology, 108(4), 478–498. https://doi.org/10.1038/ajg.2013.4

Chullen, C. L., Dunford, B. B., Angermeier, I., Boss, R. W., & Boss, A. D. (2010). Minimizing deviant behavior in healthcare organizations: the effects of supportive leadership and job design. Journal of Healthcare Management, 55(6), 381-397 17p.

Clausen, C., Lavoie- Tremblay, M., Purden, M., Lamothe, L., Ezer, H., & Mcvey, L. (2017). Intentional partnering: a grounded theory study on developing effective partnerships among nurse and physician managers as they co- lead in an evolving healthcare system. Journal of Advanced Nursing, 73(9), 2156–2166. https://doi.org/10.1111/jan.13290

Cliff, Barbara. (2012). Patient-Centered Care: The Role of Healthcare Leadership - ProQuest. Retrieved December 5, 2017, from

https://libproxy.uww.edu:3202/docview/1240824025?rfr_id=info%3Axri%2Fsid%3Aprimo

CMS. (2012a). Medical Reimbursement. Retrieved May 9, 2017, from http://www.healthcarebusinesstech.com/medical-reimbursement/

CMS. (2012b, March 26). Electronic Health Record. Retrieved October 1, 2018, from https://www.cms.gov/Medicare/E-Health/EHealthRecords/index.html

CMS. (2017a). Accountable Care Organizations (ACOs): General Information | Center for Medicare & Medicaid Innovation. Retrieved October 1, 2017, from https://innovation.cms.gov/initiatives/aco/

CMS. (2017b, October 31). Hospital Value-Based Purchasing. Retrieved April 24, 2018, from https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Hospital-Value-Based-Purchasing-.html

CNA. (2009). https://www.cna-aiic.ca/en. Retrieved August 21, 2018, from https://www.cna-aiic.ca/en

Coetzee, S. K., Klopper, H. C., Ellis, S. M., & Aiken, L. H. (2013). A tale of two systems—Nurses practice environment, well being, perceived quality of care and patient safety in private and public hospitals in South Africa: A questionnaire survey. International Journal of Nursing Studies, 50(2), 162–173. https://doi.org/10.1016/j.ijnurstu.2012.11.002

Colella, A., & Varma, A. (2001). The Impact of Subordinate Disability on Leader-Member Exchange Relationships. Academy of Management Journal, 44(2), 304–315. https://doi.org/10.2307/3069457

Cooper, R., & Foster, M. (1971). Sociotechnical systems. American Psychologist, 26(5), 467–474. https://doi.org/10.1037/h0031539

Crosby, F. (1976). A model of egoistical relative deprivation. Psychological Review, 83(2), 85–113. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0033-295X.83.2.85

Dansereau, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations. Organizational Behavior and Human Performance, 13(1), 46–78. https://doi.org/10.1016/0030-5073(75)90005-7

Dansereau, F., Yammarino, F. J., & Markham, S. E. (1995). Introduction: Leadership: The multiple-level approaches. The Leadership Quarterly, 6(3), 251–263. https://doi.org/10.1016/1048-9843(95)90009-8

Davies, A., Wong, C. A., & Laschinger, H. (2011). Nurses' participation in personal knowledge transfer: the role of leader-member exchange (LMX) and structural empowerment. Journal of Nursing Management, 19(5), 632–643. https://doi.org/10.1111/j.1365-2834.2011.01269.x

Davis, Karen, Stremikis, Kristof, Squires, David, & Schoen, Cathy. (2014). Mirror, Mirror on the Wall, 2014 Update: How the U.S. Health Care System Compares Internationally. Retrieved June 10, 2016, from http://www.commonwealthfund.org/publications/fund-reports/2014/jun/mirror-mirror

Delobelle, P., Rawlinson, J. L., Ntuli, S., Malatsi, I., Decock, R., & Depoorter, A. M. (2011). Job satisfaction and turnover intent of primary healthcare nurses in rural South Africa: a questionnaire survey. Journal of Advanced Nursing, 67(2), 371–383. https://doi.org/10.1111/j.1365-2648.2010.05496.x

Deluga, R. J. (1998). Leader-Member Exchange Quality and Effectiveness Ratings The Role of Subordinate-Supervisor Conscientiousness Similarity. Group & Organization Management, 23(2), 189–216. https://doi.org/10.1177/1059601198232006

Dey, I. (1999). Grounding grounded theory: guidelines for qualitative inquiry / Ian Dey. San Diego: Academic Press.

DHS. (2011). Quality Improvement in Healthcare: U.S. Department of Healht and Human Services Health Resources and Services Administration.

Dill, Alexander. (2015). What is Social Capital 2015 - A Review. ResearchGate. Retrieved from https://www.hks.harvard.edu/programs/saguaro/about-social-capital

Doty, Fryer, & Audet. (2012). The Role of Care Coordinators in Improving Care Coordination: The Patient's Perspective. JAMA.

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A Meta-Analysis of Antecedents and Consequences of Leader-Member Exchange Integrating the Past With an Eye Toward the Future. Journal of Management, 38(6), 1715–1759. https://doi.org/10.1177/0149206311415280

Eisenhardt, K. (1989). BUILDING THEORIES FROM CASE-STUDY RESEARCH. Academy Of Management Review, 14(4), 532–550. https://doi.org/10.2307/258557

Faden, R. R., Beauchamp, T. L., & King, N. M. P. (1986). A History and Theory of Informed Consent. Oxford University Press.

Farquharson, B., Allan, J., Johnston, D., Johnston, M., Choudhary, C., & Jones, M. (2012). Stress amongst nurses working in a healthcare telephone- advice service: relationship with job satisfaction, intention to leave, sickness absence, and performance. Journal of Advanced Nursing, 68(7), 1624–1635. https://doi.org/10.1111/j.1365-2648.2012.06006.x

Farr-Wharton, R., & Brunetto, Y. (2007). Organisational relationship quality and service employee acceptance of change in SMEs: A social exchange perspective. Journal of Management and Organization, 13(2), 114–125. https://doi.org/10.5172/jmo.2007.13.2.114

Finn, R., Learmonth, M., & Reedy, P. (2010). Some unintended effects of teamwork in healthcare. Social Science & Medicine, 70(8), 1148–1154. https://doi.org/10.1016/j.socscimed.2009.12.025

Firth-Cozens, J. (2004). Organisational trust: the keystone to patient safety. Quality & Safety in Health Care, 13(1), 56–61. https://doi.org/10.1136/qshc.2003.007971

Fllcek, Cassandra L. (2012). Communication: A Dynamic Between Nurses and Physicians. MEDSURG Nursing.

Folger, R., Rosenfield, D. D., & Robinson, T. (1983). Relative deprivation and procedural justifications. Journal of Personality and Social Psychology, 45(2), 268–273. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0022-3514.45.2.268

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.2307/3151312

Frampton, S., Guastello, S., & Brady, C. (2008). Patient-Centered Care Improvement Guide. | AHRQ Patient Safety Network. Retrieved December 7, 2017, from https://psnet.ahrq.gov/resources/resource/8661/patient-centered-care-improvement-guide

Frist, B. (2016). From Volume To Value: Achieving Bold Change In Our Healthcare Payment Systems. Retrieved September 11, 2017, from

http://www.forbes.com/sites/billfrist/2016/06/30/from-volume-to-value-achieving-bold-change-in-our-healthcare-payment-systems/

Gaal, S., van Den Hombergh, P., Verstappen, W., & Wensing, M. (2010). Patient safety features are more present in larger primary care practices. Health Policy, 97(1), 87–91. https://doi.org/10.1016/j.healthpol.2010.03.007

Gafà, M., Fenech, A., Scerri, C., & Price, D. (2005). Teamwork in healthcare organisations. Pharmacy Education, 5(2), 113–119. https://doi.org/10.1080/15602210500174474

Garson, D. G. (2016). Partial Least Squares: Regression and Structural Equation Models.

Gefen, D., & Straub, D. (2005). A Practical Guide To Factorial Validity Using PLS-Graph: Tutorial And Annotated Example. Communications of the Association for Information Systems, 16(1). Retrieved from http://aisel.aisnet.org/cais/vol16/iss1/5

Gerstner, C. R., & Day, D. V. (1997). Meta-Analytic review of leader–member exchange theory: Correlates and construct issues. Journal of Applied Psychology, 82(6), 827–844. https://doi.org/10.1037/0021-9010.82.6.827

Gibson, D., & Petrosko, J. (2014). Trust in leader and its effect on job satisfaction and intent to leave in a healthcare setting. New Horizons in Adult Education & Human Resource Development, 26(3), 3–19. https://doi.org/10.1002/nha3.20069

Glaser, B. G., & Anselm L. Strauss author. (1967). The discovery of grounded theory: strategies for qualitative research / Barney G. Glaser and Anselm L. Strauss. Chicago: Aldine PubCo.

Goetze CM. (1999). The relationships among inner and outer circle membership in nurse managers and leader-member exchange, self-esteem, and mutuality. Adelphi University.

Goode, V., Crego, N., Cary, M. P., Thornlow, D., & Merwin, E. (2017). Improving Quality and Safety Through Use of Secondary Data: Methods Case Study. Western Journal of Nursing Research, 39(11), 1477–1501. https://doi.org/10.1177/0193945916672449

Goold, S. D. (2002). Trust, Distrust and Trustworthiness. Journal of General Internal Medicine, 17(1), 79–81. https://doi.org/10.1046/j.1525-1497.2002.11132.x

Gould, D., Gaze, S., Drey, N., & Cooper, T. (2017). Implementing clinical guidelines to prevent catheter-associated urinary tract infections and improve catheter care in nursing homes: Systematic review. American Journal of Infection Control, 45(5), 471–476. https://doi.org/10.1016/j.ajic.2016.09.015

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. The Leadership Quarterly, 6(2), 219–247. https://doi.org/10.1016/1048-9843(95)90036-5

Graen, G., Novak, M. A., & Sommerkamp, P. (1982). The effects of leader—member exchange and job design on productivity and satisfaction: Testing a dual attachment model. Organizational Behavior and Human Performance, 30(1), 109–131. https://doi.org/10.1016/0030-5073(82)90236-7

Graen, G., & Schiemann, W. (1978). Leader–member agreement: A vertical dyad linkage approach. Journal of Applied Psychology, 63(2), 206–212. https://doi.org/10.1037/0021-9010.63.2.206

Hagood, Charles. (2017). Standardization of the Health Care Environment. Retrieved October 1, 2018, from http://www.pressganey.com/blog/standardization-of-the-health-care-environment

Hall, M. A., Camacho, F., Dugan, E., & Balkrishnan, R. (2002). Trust in the Medical Profession: Conceptual and Measurement Issues. Health Services Research, 37(5), 1419–1439. https://doi.org/10.1111/1475-6773.01070

Hemker, R. A., & Solomon, L. A. (2016). Building a Physician Culture for Healthcare Transformation: A Hospital's Leadership Challenge. Frontiers Of Health Services Management, 32(3), 3–14.

Henderson, D. J., Liden, R. C., Glibkowski, B. C., & Chaudhry, A. (2009). LMX differentiation: A multilevel review and examination of its antecedents and outcomes. The Leadership Quarterly, 20(4), 517–534. https://doi.org/10.1016/j.leaqua.2009.04.003

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A New Criterion for Accessing Discriminant Validity in Variance-based Structural Equation Modeling. Journal of the Academy of Marketing Science, (43(1)), 115–135.

Herdman, A. O., Yang, J., & Arthur, J. B. (2014). How Does Leader-Member Exchange Disparity Affect Teamwork Behavior and Effectiveness in Work Groups? The Moderating Role of Leader-Leader Exchange. Journal of Management. https://doi.org/10.1177/0149206314556315

Hooper, D. T., & Martin, R. (2008). Beyond personal Leader–Member Exchange (LMX) quality: The effects of perceived LMX variability on employee reactions. The Leadership Quarterly, 19(1), 20–30. https://doi.org/10.1016/j.leaqua.2007.12.002

Hughes, R. G. (2008). Nurses at the "Sharp End" of Patient Care. In R. G. Hughes (Ed.), Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality (US). Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK2672/

Johnston, M. P. (2014). Secondary Data Analysis: A Method of which the Time Has Come. Qualitative and Quantitative Methods in Libraries, 8.

Joseph W. Grubbs. (2000). Cultural imperialism: A critical theory of interorganizational change - ProQuest. Retrieved November 29, 2015, from http://libproxy.uww.edu:3254/docview/197591014/fulltextPDF?accountid=14791

Juliet M. Corbin author, & Anselm L. Strauss author. (2015). Basics of qualitative research: techniques and procedures for developing grounded theory / Juliet Corbin, International Institute for Qualitative Methodology, Anselm Strauss. (Fourth edition.). Los Angeles: SAGE.

Kacmar, K. M., Witt, L. A., Zivnuska, S., & Gully, S. M. (2003). The interactive effect of leader-member exchange and communication frequency on performance ratings. Journal of Applied Psychology, 88(4), 764–772. https://doi.org/10.1037/0021-9010.88.4.764

Käppeli, S. (1995). Interprofessional cooperation: why is partnership so difficult? Patient Education and Counseling, 26(1), 251–256. https://doi.org/10.1016/0738-3991(95)00755-O

Keating, N. L., Green, D. C., Kao, A. C., Gazmararian, J. A., Wu, V. Y., & Cleary, P. D. (2002). How are patients' specific ambulatory care experiences related to trust, satisfaction, and considering changing physicians? Journal of General Internal Medicine, 17(1), 29–39.

Kim, C. S., King, E., Stein, J., Robinson, E., Salameh, M., & O'Leary, K. J. (2014). Unit-based interprofessional leadership models in six US hospitals. Journal of Hospital Medicine, 9(8), 545–550. https://doi.org/10.1002/jhm.2200

Kock, N. (2014). Common method bias in PLS-SEM: A full collinearity assessment approach. Internation Journal of E-Collaboration, 11(4), 1–10.

Kock, N., & Lynn, G. (2012). Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations. Journal of the Association for Information Systems, 13(7). Retrieved from http://aisel.aisnet.org/jais/vol13/iss7/2

Kohn, L. T. (2001). To Err Is Human: Building a Safer Health System. Washington, DC, USA: National Academies Press.

Laschinger, H. K. S., Finegan, J., & Wilk, P. (2011). Abstract from the Academy of Management. Journal of Healthcare Management, 56(1), 81–81.

Laschinger, H. K. S., Purdy, N., & Almost, J. (2007). The impact of leader-member exchange quality, empowerment, and core self-evaluation on nurse manager's job satisfaction. The Journal Of Nursing Administration, 37(5), 221–229.

LeoRomero. (2015, December 3). @ThomasSander Talked to an editor who said I gave your definition undue weight; she/s right, but let it stay for nowpic.twitter.com/XtKtr5IdUk [Tweet]. Retrieved January 20, 2019, from https://twitter.com/LeoRomero/status/672444058430672896

Levina, N., & Ross, J. (2003). From the vendor's perspective: Exploring the value proposition in information technology outsourcing(1)(2). MIS Quarterly, 27(3), 331–364. https://doi.org/10.2307/30036537

Liden, R. C., Sparrowe, R. T., & Wayne, S. J. (1997). Leader-member exchange theory: The past and potential for the future. ResearchGate, 15. Retrieved from https://www.researchgate.net/publication/232504779_Leader-member_exchange_theory_The_past_and_potential_for_the_future

Lindeke LL, & Sieckert AM. (2005). Nurse-physician workplace collaboration. Online Journal of Issues in Nursing, 10(1), 11p-11p 1p.

Lindsey, Julianna. (2015). Implementing Physician Value-Based Purchasing in Your Practice: HM15 Session Analysis. Retrieved May 9, 2017, from http://www.the-hospitalist.org/hospitalist/article/122457/health-policy/implementing-physician-value-based-purchasing-your-practice

Locke, E. A. (1969). What is job satisfaction? Organizational Behavior and Human Performance, 4(4), 309–336. https://doi.org/10.1016/0030-5073(69)90013-0

López, A. X. S. P.-S. (2013, December 11). Advantages and disadvantages of secondary data collection nowadays. Retrieved April 10, 2018, from https://xaperezsindin.com/2013/12/11/advantages-and-disadvantages-of-secondary-data-collection/

Maslyn, J. M., & Uhl-Bien, M. (2001). Leader–member exchange and its dimensions: Effects of self-effort and other's effort on relationship quality. Journal of Applied Psychology, 86(4), 697–708. https://doi.org/10.1037/0021-9010.86.4.697

McDonald, Kathryn, Schultz, Ellen, Albin, Lauren, Pineda, Noelle, Lonhart, Julia, Sundaram, Vandana, … Davies, Sheryl. (2014). Care Coordination Measures Atlas.

McMains, Vanessa. (2016). Johns Hopkins study suggests medical errors are third-leading cause of death in U.S. Retrieved April 9, 2017, from http://hub.jhu.edu/2016/05/03/medical-errors-third-leading-cause-of-death/

Menz, M., & Menz, M. (201201). Functional Top Management Team Members. Journal of Management, 38(1), 45–80.

Merriam-Webster Dictionary. (1828). Definition of TEAMWORK. Retrieved April 5, 2018, from https://www.merriam-webster.com/dictionary/teamwork

Mundongo, T. H., Ditend, Y. G., Vancaillie, D., & Malonga, K. F. (2014). The assessment of job satisfaction for the healthcare providers in university clinics of Lubumbashi, Democratic Republic of Congo. The Pan African Medical Journal, 19, 265. https://doi.org/10.11604/pamj.2014.19.265.3138

Munro, Dan. (2015). U.S. Healthcare Spending On Track To Hit $10,000 Per Person This Year. Retrieved September 11, 2017, from https://www.forbes.com/sites/danmunro/2015/01/04/u-s-healthcare-spending-on-track-to-hit-10000-per-person-this-year/#763c970d6dea

Myers, S. A. . (2006). Using Leader-Member Exchange Theory to Explain Students' Motives to Communicate. Communication Quarterly, 54(3), 293–304.

Naidoo, L., Scherbaum, C., Goldstein, H., & Graen, G. (2011). A Longitudinal Examination of the Effects of LMX, Ability, and Differentiation on Team Performance. Journal of Business & Psychology, 26(3), 347–357. https://doi.org/10.1007/s10869-010-9193-2

Niepce, W., & Molleman, E. (1998). Work Design Issues in Lean Production from a Sociotechnical Systems Perspective: Neo-Taylorism or the Next Step in Sociotechnical Design? Human Relations, 51(3), 259–287. https://doi.org/10.1023/A:1016992403973

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. Journal of Organizational Behavior, 31(2/3), 463–479.

O'Leary, K. J., Wayne, D. B., Haviley, C., Slade, M. E., Lee, J., & Williams, M. V. (2010). Improving teamwork: impact of structured interdisciplinary rounds on a medical teaching unit. Journal Of General Internal Medicine, 25(8), 826–832. https://doi.org/10.1007/s11606-010-1345-6

Orlikowski, W. J. (1993). CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development. MIS Quarterly, 17(3), 309–340. https://doi.org/10.2307/249774

Portela Romero, M., Bugarín González, R., & Rodríguez Calvo, M. S. (2017). La cultura de seguridad del paciente en los médicos internos residentes de Medicina Familiar y Comunitaria de Galicia. Atención Primaria, 49(6), 343–350. https://doi.org/10.1016/j.aprim.2016.09.009

Pronovost, P. J., & Hudson, D. W. (2012). Improving healthcare quality through organisational peer-to-peer assessment: lessons from the nuclear power industry. BMJ Qual Saf, 21(10), 872–875. https://doi.org/10.1136/bmjqs-2011-000470

Rees, Susan. (2015). Unit Based Leadership Teams; UW Health at the University of Wisconsin Hospital and Clinics.

Resar, R., Griffin, FA., Haraden, C., & Nolan, TW. (2012). Institute for Healthcare Improvement: Using Care Bundles to Improve Health Care Quality. Retrieved August 20, 2018, from http://www.ihi.org:80/resources/Pages/IHIWhitePapers/UsingCareBundles.aspx

Rubin, H. J. (2012). Qualitative interviewing: the art of hearing data / Herbert J. Rubin, Irene S. Rubin. (Third edition.). Thousand Oaks, Calif: SAGE.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. Journal of Family Business Strategy, 5(1), 105–115. https://doi.org/10.1016/j.jfbs.2014.01.002

Scott, R. A., Oman, K. S., Makic, M. B. F., Fink, R. M., Hulett, T. M., Braaten, J. S., … Wald, H. L. (2014). Reducing indwelling urinary catheter use in the emergency department: a successful quality-improvement initiative. Journal of Emergency Nursing: JEN: Official Publication of the Emergency Department Nurses Association, 40(3), 237–244; quiz 293. https://doi.org/10.1016/j.jen.2012.07.022

Simmel, G., & Hughes, E. C. (1949). The Sociology of Sociability. American Journal of Sociology, 55(3), 254–261.

Song, H., Ryan, M., Tendulkar, S. A., Chien, A. T., Fisher, J., Martin, J., … Singer, S. J. (2015). Team Dynamics, Clinical Work Satisfaction, and Care Coordination Between Primary Care Providers. Academy of Management Proceedings, 2015(1), 13538. https://doi.org/10.5465/AMBPP.2015.71

Souba, W. W. (2004). New ways of understanding and accomplishing leadership in academic medicine. Journal of Surgical Research, 117(2), 177–186. https://doi.org/10.1016/j.jss.2004.01.020

Tangirala, S., Green, S. G., & Ramanujam, R. (2007). In the shadow of the boss's boss: Effects of supervisors' upward exchange relationships on employees. Journal of Applied Psychology, 92(2), 309–320. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0021-9010.92.2.309

The Commonwealth Fund. (2017). THE AFFORDABLE CARE ACT AT FIVE YEARS. Retrieved April 24, 2018, from http://www.commonwealthfund.org/ACAat5-delivery-reform

Trandel, Elizabeth. (2015). Advocating for dyad leadership at your organization? Use our slides. Retrieved July 9, 2016, from https://www.advisory.com/research/physician-executive-council/prescription-for-change/2015/03/dyad-leadership-slides

Tsai, T. C., Orav, E. J., & Jha, A. K. (2015). Patient satisfaction and quality of surgical care in US hospitals. Annals of Surgery, 261(1), 2–8. https://doi.org/10.1097/SLA.0000000000000765

Turner, Ralph. Leader-Leader Exchange & Leader-Member Exchange in Healthcare: Dyad Partnerships on Inpatient Units, Sustainable Results in Patient Safety and Job Satisfaction (2018).

Vazirani, S., Hays, R. D., Shapiro, M. F., & Cowan, M. (2005). Effect of a Multidisciplinary Intervention on Communication and Collaboration Among Physicians and Nurses. American Journal of Critical Care, 14(1), 71–77.

Vecchio, R. P. (1985). Predicting Employee Turnover from Leader-Member Exchange: A Failure to Replicate. Academy of Management Journal, 28(2), 478–485. https://doi.org/10.2307/256213

Visser, A., & Erby, L. (2014). Communication in healthcare: Lessons from diversity. Patient Education and Counseling, 96(3), 271–272. https://doi.org/10.1016/j.pec.2014.08.001

Webster Dictionary. (1828). Definition of TRUST. Retrieved April 5, 2018, from https://www.merriam-webster.com/dictionary/trust

Weeks, W. B., & Wadsworth, E. B. (2013). Addressing healthcare complexity. Healthcare Financial Management : Journal of the Healthcare Financial Management Association, 67(1), 120–122.

West, Michael, Amit, Kirsten, Loewenthal, Lola, Eckert, Regina, West. Thomas, & Lee, Allan. (2015). Leadership and leadership development in health care. Retrieved from https://www.kingsfund.org.uk/publications/leadership-and-leadership-development-health-care

Wong, C. A., & Laschinger, H. K. S. (2013). Authentic leadership, performance, and job satisfaction: the mediating role of empowerment. Journal of Advanced Nursing, 69(4), 947–959. https://doi.org/10.1111/j.1365-2648.2012.06089.x

Yin, R. K. (1984). Case study research: design and methods / Robert K. Yin ; foreword by Donald T. Campbell. Beverly Hills, Calif: Sage Publications.

Yin, R. K. (2014). Case study research: design and methods / Robert K. Yin. (Fifth edition.). Los Angeles: SAGE.

Zhang, X., & Fang, P. (2016). Job satisfaction of village doctors during the new healthcare reforms in China. Australian Health Review, 40(2), 225–233. https://doi.org/10.1071/AH15205

Zhou, L., Wang, M., Chen, G., & Shi, J. (2012). Supervisors' upward exchange relationships and subordinate outcomes: Testing the multilevel mediation role of empowerment. Journal of Applied Psychology, 97(3), 668–680. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/a0026305

Zhu, B., Gao, H., Zhou, X., & Huang, J. (2018). Anesthesia Quality and Patient Safety in China: A Survey. American Journal of Medical Quality, 33(1), 93–99. https://doi.org/10.1177/1062860617695615

Appendix A, Catheter Associated Urinary Tract Infection

CAUTI Prevention Bundle		
Objectives:	To provide the evidence-based interventions for appropriate use of indwelling urinary catheters to prevent catheter associated urinary tract infections (CAUTI)	
Intended use:	Care team members can compare and align their unit and service CAUTI prevention practices	
Questions:	Contact your unit based CAUTI Prevention Champion or Clinical Nurse Specialist	
Prevention Category	Action	
Hand Hygiene	Perform hand hygiene as appropriate.	
Insertion	Consider alternatives. Appropriate indications. Application of delegation protocols. Proper insertions technique including use of observer and checklist.	
Maintenance	Regular assessment for continued need. Catheter care twice per day. Closed drainage system. Unobstructed urine flow; bag below bladder, free from kinking, empty bag regularly. Maintain securement. Use of Health Line reports icon to monitor incidence of indwelling catheters and protocol use in real time.	
Removal	Remove 24/7 per indwelling Urinary Catheter Removal Delegation Protocol. Appropriate use of Bladder Management Delegation Protocol after removal. Timely removal.	
Urine Analysis and Urine Culture	Culture only if signs/symptoms present. Avoid reflex cultures. Rule out other causes of infection first.	
Patient engagement	Patient must be educated about the insertion and maintenance of the indwelling urinary catheter and alternatives. Patient is encouraged to ask if the catheter can come out. Discuss alternatives with the patient.	
Data and Measures: Interdisciplinary analysis of your patient population	Understand the definition of CAUTI Evaluate indicators and alternatives. Review maintenance. Removal timelines. CAUTI events.	Please contact the unit Nurse Manager for reports related to CAUTI prevention performance.

Appendix B, Central Vascular Access Device Maintenance Bundle

Adult Central Vascular Access Device (CVAD) Maintenance Bundle	
What is a Bundle?	A set of evidence-based interventions for a patient population that when implemented together, will result in significantly better outcomes than when implemented individually (Resar, Griffin, Haraden & Nolan, 2012).
Goal of Bundle:	To provide the evidence-based interventions for the maintenance of central lines to prevent and eliminate central line associated blood stream infections (CLABSIs).
Expectations:	Each clinician should use a bundle approach to help prevent CLABSIs. Each clinician who works with CVADs will have knowledge regarding use and maintenance of CVADs. Each clinician will document assessments and interventions in the clinical record.
Category	Action
Hand Hygiene	• Perform hand hygiene according to the healthcare organization's policy before touching any part of the CVAD or line set-up, including: o Intravenous tubing o CVAD ports o Insertion sites o CVAD dressings
Removal of Unnecessary CVADs	• The unit based clinical team will assess the necessity of each CVAD daily. Team members must advocate for the removal of the CVADs that are assessed as no longer required for care.
Site Assessment	• Each CVAD will be visually assessed and palpated (through intact dressing) every 8 hours. Assessments are documented in the patient's clinical record. • Site assessment includes: color, pain/tenderness, edema, exudates, and length of catheter protruding from the skin, integrity of external portion of the catheter, integrity of the dressing, and date of last dressing change.
Assessing CVADs	• Perform hand hygiene according to the healthcare organization's policy and don non-sterile gloves before accessing a CVAD. • Scrub needless connector (MicroClave) or other access ports with alcohol for 15 seconds and allow to dry for 15 seconds before each use. • Minimize accessing or opening any components of the line (e.g., tubing, catheter hub). • If CVAD is capped off, change needleless connector (MicroClave) at least weekly.
Flushing CVADs	• Flush all CVADs per flushing/locking of venous access devices (pediatric/adult, inpatient/ambulatory) in adult and pediatric patients: o Use normal saline .09% before and after each medication administration. o If not in use, flush and lock the line at least every 12 hours. Use appropriate solution for both the CVAD type and patient population. • If a catheter lumen becomes slow or sluggish to flush or is unable to draw blood, initiate the anticoagulation protocol (tPA) according to the clinical practice guideline, central venous access device occlusion (neonatal/pediatric/adult, inpatient/ambulatory).
Add-on Devices	• Limit the number of add-on devices (extensions, filters, stopcocks, etc.) for each line. • Change add-on devices with every IV tube change.

CHAPTER 3: ANTECEDENTS OF PHYSICIAN-NURSE DYAD PARTNERSHIP IN HEALTHCARE: AN EMPIRICAL STUDY

ABSTRACT

Healthcare organizations are changing their leadership structures from the Sociotechnical Systems (STS) theory of governance to the physician-nurse dyad partnership. Consequently, concepts and theories on the peer-to-peer, leader-leader exchange (LLX) and the leader-subordinate, leader-member exchange (LMX) models have become notably important in inpatient units. Across the United States, healthcare organizations have been implementing dyad partnerships (Kim et al., 2014) to meet national performance benchmarks of the Center for Medicaid and Medicare Services (CMS). This new leadership structure also supports healthcare organizations' efforts to improve patient care quality and safety. Although prior research studies have explored the dyadic implementations and their antecedents in a variety of contents, there exists a substantial gap in our understandings of the antecedents that lead healthcare organizations to select the physician-nurse dyad partnership model of governance. Therefore, this research utilized an exploratory case study to understand the antecedents (why and how) that lead to the implementation of this governance structure in a healthcare organization. Findings from this study will be beneficial to healthcare organizations seeking to implement the dyad partnership model.

Keywords: Leader-leader exchange, LLX, leader-member exchange, LMX, horizontal

mechanisms, administrative engagement, reimbursements, incentive pay, continuous improvement, hospital acquired infections, population health management, implementation

The U.S. healthcare system has been plagued with medical errors leading to fatalities for the last 15 years. According to Kohn (2001), medical errors were the fourth leading cause of death behind motor vehicle accidents, breast cancer, and AIDS. Fifteen years later, this U.S. statistic had not improved. McMains (2016) reported a study from Johns Hopkins University suggesting that 250,000 deaths, annually, were due to medical errors, the third leading cause of death behind heart disease and cancer. In contrast, in 2014, the U.S. median per capita expenditure for hospital services and drugs was 2.7 times greater than 11 other industrialized nations in the Organization for Economic Cooperation and Development (Davis, Stremikis, Squires, & Schoen, 2014). The same report also highlighted the U.S. healthcare system was last among the 12 industrialized nations in terms of quality, access, efficiency, equity, and outcomes (Davis et al., 2014). These are gripping statistics for a superpower nation such as the United States of America, which leads to the question: How can the United States spend 2.7 times more on healthcare than 11 industrialized nations and rank last in healthcare quality? These factors have led the U.S. healthcare system to undergo a riptide of change.

The federal government is the largest purchaser of healthcare in the United States, through the Center for Medicaid and Medicare Services (CMS), spending $3.207 trillion in 2016 (Munro, 2015). The federal government has been implementing innovative measures to improve the quality of healthcare organizations while simultaneously decreasing cost by incentivizing the best performers and penalizing those organizations that do not meet the quality initiatives. The Affordable Care Act of 2010 supported changes in the CMS reimbursement structure from one of quantity to quality, moving from a volume-based, fee for service model to a value-based, capitation (fee for total procedure, not individual services) payment model (Frist, 2016). This change has led to innovative methods of incenting organizations to improve quality by

decreasing mortality and readmission rates.

Healthcare organizations across the nation have been implementing new management structures, leadership models, and patient safety practices to improve quality and decrease operating expenses, which supports lowering healthcare cost to the consumers or patients. Hospitals have been establishing integrated teams to focus on improving patient safety and quality. They are changing their governance structures from the hierarchical socio-technical systems (STS) leadership structure to one that composes team integration, implementing the leader-leader exchange-physician and nurse dyad partners (LLX-PNDP) as unit based clinical leaders (UBCLs), a practice implemented by the University of Pennsylvania Health System (Pintar, 2011). Other notable healthcare organizations have also implemented this model of physician-nurse dyads, such as Northwestern Memorial Hospital in Chicago, IL and Emory University in Atlanta, GA (Kim et al., 2014).

There is literature that has examined the leader-leader exchange (LLX) and the leader-member exchange (LMX) theory of management in healthcare organizations. Some LMX studies have researched the dyadic relationships between nurse supervisors and their subordinates (Brunetto et al., 2012; Brunetto, Shacklock, Teo, Farr-Wharton, & Nelson, 2015; Davies, Wong, & Laschinger, 2011; Laschinger, Finegan, & Wilk, 2011), the nurse and physician relationships (Flicek, 2012; Lindeke & Sieckert, 2005), and the effect of LMX on the disability status of subordinates (Colella & Varma, 2001), communication frequency (Kacmar, Witt, Zivnuska, & Gully, 2003), and self-esteem (Goetze CM, 1999). Only a few studies have examined the effects of LLX in healthcare. For instance, Tangirala et al. (2007) utilized a healthcare setting with nurses to research the LLX moderation effects of the supervisor relationship with the employee; the authors theorized that the LMX has a stronger positive effect

on employees' attitudes toward the organization and its customers when the LLX is higher.

In recent years, the LMX theory of governance has been applied across multiple industries, with very limited research available on LLX. In healthcare, the dominating governance theory of study is transformational leadership (West et al., 2015). Transformational leadership has been seen as one of the antecedents to LMX (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Dulebohn et al. (2012) conducted a meta-analysis that reviewed the antecedents to LMX and found, after reviewing over 247 studies, there are 21 antecedents that influence LMX quality. Although prior works deal with the impacts of LLX and LMX in other settings, there is a dearth of literature on the antecedent factors that lead a healthcare organization to choose the LLX and LMX governance model.

This research study sought to answer two questions. First, why do healthcare leaders choose to implement the physician-nurse dyad governance structure? Second, how is the governance structure implemented? Drawing upon theoretical foundations and literature from LLX and LMX research, this research utilized an exploratory case study to examine the antecedent factors that influence leadership decisions in an AMC to implement the LLX and LMX governance model on inpatient units. Therefore, this study contributes to the LLX and LMX theory of governance by understanding the antecedents to choosing LLX and LMX in healthcare and discussing how the case organization implemented the governance structure. We chose a case organization that has migrated from the STS governance to LLX and LMX governance model in recent years. We utilized a semi-structured interview method to collect qualitative data, along with other secondary sources of information, such as reports and other documents.

This essay is structured as follows. In the next section, we provide a review of literature. This is followed by the explanation of the research background for the study. Then, we describe the method, case analysis, implementation of the PNDP governance structure, implications for research and practice and end with a summary.

Literature Review and Theoretical Background

Theories of Healthcare Leadership

West et al. (2015) conducted a systematic literature review of nursing leadership and patient outcomes that identified key articles that applied rigorous empirical studies; the authors found that transformational leadership theory was the most influential in guiding healthcare leadership research. Wong et al. (2013) found six out of nine articles stating explicit use of transformational leadership theory. The focus on transformational (and transactional) leadership was also identified in a systematic review performed by Gilmartin and D'Aunno (2007), which examined healthcare leadership from 1989 to 2005. Research studies in healthcare have provided strong support for transformational leadership theory, which identifies links to staff satisfaction, unit (or team) performance, organizational climate, and turnover intentions (West et al., 2015). From the previous reviews posted by the authors, it was evident that transformational leadership theory has played a dominant role in healthcare leadership.

Healthcare organizations have been historically governed by the hierarchical STS governance model. Sociotechnical systems designs the social and technical system in tandem so that they work smoothly together to create joint optimization (Cooper & Foster, 1971). It leaves autonomy to the lowest denominator in the work group, related to work pace and work methods (Oldham & Hackman, 2010). The autonomous groupings are formed among the professionals. For example, doctors may have groupings among specialty areas such as cardiology,

anesthesiology, oncology, and so forth, while for nurses it could be general versus critical care nurse. In addition, a dichotomy also exists between doctors and nurses, which creates communication boundaries. Communication boundaries in healthcare organizations can lead to misdiagnoses, unsafe healthcare practices, and further injuries to patients. Collaboration among medical professionals is paramount in healthcare organizations to ensure that care is safe and reliable. Clausen et al. (2017) introduced a substantive theory of intentional partnering in healthcare, which states that nurses' and physicians' professional agendas should include their interests and purposes for working with each other, serving as the starting point of intentional partnering. This theory explains how nurse and physician managers effectively align their professional agendas. (Clausen et al., 2017).

The Leader-leader Exchange Theory

The relationship between supervisors and their bosses is researched in LLX (Tangirala et al., 2007; Zhou, Wang, Chen, & Shi, 2012). This has led to the conclusion that the LLX relationship is built on the same principles as LMX: trust, respect, and obligation. However, independent research on LLX is limited. Tangirala et al. (2007) found that the LMX has a stronger positive effect on employees' attitudes toward the organization and its customers when LLX is higher. Bedell-Avers, Hunter, Angie, Eubanks, and Mumford (2009) took a qualitative and quantitative hybrid approach to assess the responses of Fredrick Douglas, W. E. B. Dubois, and Booker T. Washington to the same crisis during the same time period to gain an understanding of LLX relationship differentiation between charismatic, ideological, and pragmatic leaders. Zhou et al. (2012) identified that LMX mediates the positive relationship of LLX on subordinates' individual empowerment and that team empowerment and individual empowerment sequentially mediate the positive relationship between LLX and subordinates' job

satisfaction and job performance; the authors also found the indirect relationships of LMX with job satisfaction and job performance, through individual empowerment, are stronger when LLX is higher.

Herdman et al. (2014) researched how an LLX relationship moderates the mediated relationship between LMX differentiation, group-level teamwork, and team effectiveness. LLX and LMX theorize that subordinates in the high-quality relationships tend to have access to more resources than those in the low-quality relationships (Graen & Uhl-Bien, 1995; Maslyn & Uhl-Bien, 2001; Zhou et al., 2012). Herdman et al. (2014) utilized relative deprivation theory to rationalize the affective reactions of employees when confronted with the denial of resources available to themselves or others in their environment. The theory states that when individuals lack resources available to others, they experience a sense of deprivation that manifests in negative emotional and affective reactions (Crosby, 1976; Folger, Rosenfield, & Robinson, 1983). Crosby (1976) studied the effect of relative deprivation and found the experience and consequent emotional reaction to deprivation, is most pronounced when the denied resource is made more salient because it is possessed by others in their proximate environment. Folger et al. (1983) noted that within a group, when a valued resource is withheld from some individuals of the group with a weak or nonexistent justification, these individuals experience negative emotions and attitudes and a sense of detachment.

The Leader-member Exchange Theory

The LMX theory of leadership governance creates understanding of how supervisor interactions, beyond the formal authority role and decision autonomy, interact with employee attitudes and reciprocity motives to affect behavior (Dansereau, Yammarino, & Markham, 1995; Graen & Uhl-Bien, 1995). The LMX theory is the succession theory of vertical dyad linkage

(VDL) theory, which proposes that leaders develop distinctive types of exchange relationships with their subordinates (Herdman, Yang, & Arthur, 2014). Further development of LMX has examined the differentiation in relationship that leaders have with the members of their departments. The relationships formed can be in-groups or out-groups and have been further explained as relationships of either high- or low-quality, respectively (Liden, Sparrowe, & Wayne, 1997). The primary focus of LMX is on the leader-subordinate relationship that is based on the social exchange theory. Blau (1964, p. 4) stated, "The concept of social exchange directs attention to the emergent properties in interpersonal relations and social interaction." Social interactions that will (or will not) lead to returning the favor of good deeds creates (or does not create) social capital (Blau, 1964). The creation or non-creation of social capital is the basis of the high- or low-quality relationship between the leader and subordinate in the LMX theory of governance.

LMX research has also specified the importance of LMX relationships on team dynamics and effectiveness (Boies & Howell, 2006; Hooper & Martin, 2008). Few studies have examined the complexity of this relationship empirically. Herdman et al. (2014) studied the impact of LMX differentiation on group-level teamwork and subsequent team effectiveness, which was moderated by the relative quality of the leader's LLX. Naidoo, Scherbaum, Goldstein, and Graen (2011) researched the impact leader differentiation has on team performance and investigated whether such effects differ at different points in the team's lifecycle. Allison (2016) developed and tested a model of relations between LMX, perceived LMX variability, team behavioral processes, and emergent affective states on team effectiveness. The current research focused on healthcare organizations creating highly reliable teams to ensure the best possible care for patients. However, only a few prior empirical studies have examined how leader

differentiation of LMX, a main tenet of LMX theory, may affect vital team processes and emergent states required for successful team performance in healthcare settings.

Summary

Both LLX and LMX research have traditionally focused on the quality of the leader-leader and leader-subordinate relationship. The differentiation of the relationships established between leaders and their subordinates dictates how well they perform as a team (Henderson, Liden, Glibkowski, & Chaudhry, 2009). Herdman et al. (2014) revealed the moderation of LLX on LMX group and team dynamics through relative deprivation theory by identifying the following: the diminished value associated with a high-quality LMX relationship with a low-quality LLX boss results in consistent findings with relative deprivation, which states there will be a weaker adverse response to LMX differentiation within work groups under a low-LLX (leader-leader) condition; furthermore, there will be a shift in orientation of employees under this condition away from developing a high-quality relationship with the leader and more towards developing a high-quality relationship with coworkers. Herdman et al. (2014) demonstrated LLX is importance as a contextual variable by illustrating that higher levels of LLX strengthen the main effects of LMX on individual outcomes. Tangirala et al. (2007) and Zhou et al. (2012) demonstrated the importance of LLX as a contextual variable in shaping the group-level dynamics and outcomes. In healthcare, LMX has been primarily utilized to review the nurse supervisor and subordinate relationship (Brunetto et al., 2015; Chullen, Dunford, Angermeier, Boss, & Boss, 2010; Laschinger et al., 2011). Not much previous research has focused on understanding of the antecedent factors that drive the implementation of LLX and LMX governance model in healthcare settings.

Research Background

To address the research gap, this study focused on why and how a healthcare organization chooses to implement the LLX and LMX model of governance. In this section, we explore factors that could potentially lead to the decision to implement the LLX and LMX governance structure. These factors are based on extensive literature from both academics and practitioners, which led our research focus in the exploratory case study. In exploratory case studies it is important to have a priori theoretical framing but to keep an open mind about factors that might emerge during the case study (Yin, 2003). We subscribe to this methodology and present the key factors that might potentially influence hospital leadership to adopt the LLX and LMX governance model in four categories: management or leadership challenges, strategic factors, quality factors, and economics factors. However, to give some background to the research, we begin with a description of the context that is driving this change in healthcare settings. In the following discussion, we utilize physician-nurse dyad partnership and LLX and LMX governance model interchangeably.

Research Context: Affordable Care Act and its Impacts on Healthcare

The continuous decline of quality in the U.S. healthcare system, as demonstrated by the medical errors and deaths that have risen from 98,000 to 250,000 over a 15 year period (Kohn, 2001; McMains, Vanessa, 2016), served as an impetus for the Affordable Care Act (ACA) of 2010. The ACA not only focused on health insurance reform but also on three broad areas of testing new delivery models and spreading successful ones, encouraging the shift of healthcare reimbursements toward the value of care provided and developing resources for system-wide improvements (The Commonwealth Fund, 2017). This served as the catalyst for the Center for Medicaid and Medicare Services (CMS) to establish a strategy which focuses on improving the quality of care in hospitals' inpatient units.

The CMS strategy consist of the following initiatives: (a) incentives to improve care, (b) tying payment to value through new payment models, (c) changing how care is given through better teamwork, (d) better coordination across healthcare settings, (e) more attention to population health, and (f) putting the power of healthcare information to work (CMS, 2017). The CMS (2017) quality strategy goals were to promote a culture of safety by reducing inappropriate and unnecessary care and by preventing or minimizing harm in all settings. Furthermore, CMS also helps patients and their families be involved in their care decisions and promotes effective communication and coordination of care (CMS, 2017).

The hospital value-based purchasing (VBP) program is a CMS initiative that rewards acute-care hospitals with incentive payments for the quality care provided to Medicare beneficiaries (CMS, 2017). These VBP programs are powerful engines for improvement that can be used to promote top levels of quality in any hospital, regardless of size, location, or patient or payer mix (Channing & DeVore, 2009). This program affects payment for inpatient stays in more than 3,000 hospitals across the United States. The CMS rewards hospitals on the basis of the following: the quality of care provided to Medicare patients; how closely best clinical practices are followed; how well hospitals enhance patients' experiences of care during hospital stays; how well they perform on each measure compared to other hospitals' performance during a baseline period; and how much they improve their performance on each measure compared to their own performance during a baseline period (CMS, 2017).

In 2017, the VBP program placed 2% of total Medicare payments at risk to healthcare organizations, which equates to $2 billion annually (Tsai, Orav, & Jha, 2015). The program measures a hospital's performance in four domains with a relative weight of 25% each: safety, clinical care, efficiency and cost reduction, and patient- and caregiver-centered experience of

care and care coordination (CMS, 2017). To meet the safety and patient- and caregiver-centered experience of care and care coordination, to achieve the VBP program quality initiatives, and to maximize the purchasing incentive, healthcare organizations must create an environment that is conducive to an open two-way communication structure—the LLX and LMX governance structure.

In addition, the Accountable Care Organization (ACO) is an entity formed by healthcare providers, from primary care physicians and specialists to hospitals and post-acute care facilities, which agree to collectively take responsibility for the quality and total cost of care for a population of patients (The Commonwealth Fund, 2017). The program began in 2012, which establishes quality benchmark targets for ACOs to achieve by maintaining expenditures for their patient population below budget; if they achieve the benchmark, they receive half of the savings, with the remainder going to the program administrator (CMS; The Commonwealth Fund, 2017). In 2015, the Commonwealth Fund (2017) reported that more than 400 shared savings ACOs were serving nearly 7.2 million beneficiaries, or 14% of the Medicare population, of which 52 were able to meet quality-of-care benchmarks that yielded a total savings of $700 million. This nets $315 million back to the ACOs. In support of these efforts, the CMS changed their Medicare and Medicaid reimbursement structure from volume to value, which implemented innovative measures and benchmarks that healthcare organizations must address to receive the maximum reimbursement possible from the $3.2 trillion fund controlled by CMS. This can act as a powerful incentive for hospitals to implement the LLX and LMX model of governance.

The changes to federal healthcare policies instituted by the ACA have impacted the regulatory guidance to federal healthcare agencies, which leads to the agencies creating programs that influence healthcare organizations to change their operating models, addressing

the requirements of the new federal healthcare programs. The provisions of the ACA take aim at well-known shortcomings from the U.S. health system, from the inefficiency and high cost of the predominantly fee-for-service system to the extreme variability in quality of care patients receive from region to region (The Commonwealth Fund, 2017). Berwick, Nolan, and Whittington (2008) from the Institute of Healthcare Improvement in Cambridge, MA identified the ACA's guidance as the *triple aim*: improving the individual experience of care, improving the health of populations, and reducing the per capita costs of care for populations. Leaders in healthcare must now change their operating models to address the shift from a reimbursement system based on the volume of services provided to one based on the value of care and determine how they are going to fund investments in resources for systemwide improvements as they test the new models of healthcare delivery (The Commonwealth Fund, 2017).

The implications of the required changes have forced healthcare leaders to reconsider their strategic priorities that do not align with the quality goals established by the federal regulating agencies, which have the power to affect their economic status by limiting their reimbursements. We classified these elements as strategic, economic, and quality factors that serve as the catalyst to change for healthcare systems. From the individual patient perspective, the triple aim alludes to changing the U.S. healthcare system to care for patients respectfully (improving the individual patient experience), identifying the root cause of illness for patients in regions (improving the health in populations), and decreasing the cost of care for patients (reducing the per capita cost of care for populations; Berwick et al., 2008). We posited that healthcare organizations must change their leadership structures on inpatient units to support their change in strategic priorities (strategic factors) that do not align with the quality initiatives of the VBP, CMS, and the triple aim (quality factors) to avoid impacting their economic status

(economic factors) by limiting reimbursements from CMS and other federal regulating agencies.

Strategic Factors

Horizontal mechanisms. Quality considerations in healthcare settings, necessitated by the ACA, have implications for the means by which medical errors are monitored and rectified (Tsai et al., 2015). Several methods have been used in the past for managing medical errors. For instance, from the STS standpoint, medical errors are escalated up the vertical hierarchy, such as supervisors or committee groupings (Oldham & Hackman, 2010). However, post-ACA, the need to effectively and efficiently manage the medical errors has become a priority. In this regard, horizontal mechanisms can be a less costly alternative to vertical hierarchy for managing medical errors in hospitals (Brown, 1999). For instance, physicians themselves can utilize various techniques, such as root-cause analysis (RCA) to review the actions of their peers to determine if there were systematic failures that led to a medical error. The LLX-PNDP places a physician in a formal leadership role on the inpatient unit, which establishes the peer-to-peer accountability and gives the physician dyad partner the authority to question attending or resident physicians caring for patients admitted to the corresponding inpatient unit. The leader-leader support and trust developed out of mutual necessity and the construction of a shared responsibility between the physician and nurse strengthens the team authority as roles are formalized (Clausen et al., 2017). The physician-nurse dyad partnership establishes the physician leader for inpatient units, who can determine if an RCA council should review safety episodes that led to harming a patient. Therefore, as healthcare organizations need to more effectively and efficiently manage medical errors, it can influence healthcare leaders to implement the LLX and LMX governance structure.

Standardization of processes and procedures. As noted in earlier discussions, one of the goals of CMS is to ensure that quality indicators are met and maintained in hospitals (Kohn, 2001; McMains, 2016). Therefore, efforts to fight hospital acquired infections (HAI) become exceedingly important in terms of meeting quality expectations and receiving reimbursement. These efforts begin with standard operating processes and procedures that remove variability when treating patients with similar illness. The physician and nurse dyad partners utilize tools such as pre-established protocols (deciding to send samples to the lab) and standardized checklists (for daily shift changes). However, a hospital system requires an effective structural overlay in place (such as the LLX-PNDP) to lead huddles, review algorithms, and facilitate transition of care planning (Brown 1999); these steps ensure doctors and nurses agree with the plan of care for the patients on each shift. Formalizing the leadership structure creates the shared responsibility of ensuring standardized protocols are followed (Clausen et al., 2017). The authoritative roles of the PNDP on the inpatient unit build credibility with the inpatient unit staff, creating an LMX, leader-subordinate relationship of high-quality, which leads to strengthening the inpatient unit's teamwork, communication, trust, and care coordination. Therefore, the requirement to standardize processes and procedures to reduce variability across the healthcare organization could potentially influence healthcare leaders to implement the LLX and LMX governance structure.

Administration engagement. Zismer and Brueggemann (2010) defined the responsibilities of physician-nurse dyads versus administrators as detailed in Table 2.1. A governance model which fosters such partnership and engages the administrators, physicians, and nurses is viewed as being important in ambulatory, inpatient and surgical healthcare settings. As the need to increase the engagement of administrators in the quality improvement process

increases across the organization, it could potentially influence healthcare leaders to choose the LLX and LMX governance structure. The hierarchical STS governance structure stifles communication by establishing professional boundaries classified by position, medical specialty, and physician, nurse, or administrative roles. On the inpatient units, the doctors and nurses form separate autonomous groups, which hinders communication and care coordination on inpatient units, therefore muting the change process. Establishing the LLX-PNDP on inpatient units permeates the communication boundaries by placing the physician and nurse in positions of authority, demonstrating the ability to make communicable decisions in support of each other—daring to risk together (Clausen et al., 2017). Administrators make up one-third of the team in the LLX and LMX leadership model. Their involvement, while not critical for the dyad team in completing the daily mission, is critical to supporting the dyad team for enforcing disciplinary decisions. For instance, when policy or procedural violations are reported, the administrators are expected to enforce the procedures and rules. They also establish incentives for good performance and monitor the budget. This level of administrator involvement may be crucial in inpatient and ambulatory healthcare settings.

Table 2.1

Responsibilities of Physician-Nurse Dyads versus Administrators

Physician-Nurse Dyad	Administrator
Assuring quality	Financial management accounting and reporting systems and methods
Building the medical group practice culture	Operating and financial performance and ratio analysis and management
Encouraging teamwork among physicians and multidisciplinary care teams	Market share performance
Managing provider productivity	Competitor's strategy analysis
Managing the division of labor	Capital and resource consumption patterns, comparisons and investment models and management
Managing physician-driven clinical resource use	Performance scorecard (dashboard management) applications
Minimizing inappropriate practice style variation across providers	Labor relations management
Maximizing provider-driven patient satisfaction and customer service	Strategic planning and plan implementation
Providing for physician continuing education and skill building	Staff recruiting and staffing plan implementation
Encouraging clinical care innovation	Collaboration on resource and labor use issues across services, sites or divisions
	Supply chain management

Note: Zismer and Brueggemann (2010)

Population health management: Strategic imperative. Population health management ensures that patients, especially the chronically ill, get the right care at the right time, with the goal of avoiding unnecessary duplication of services and preventing medical errors (CMS, 2012). However, providing population health management requires a team effort between the physician, nurse (dyad), and the administrator. The team establishes the parameters, which the ACO identifies; the ACO then manages the population health morbidities and co-morbidities prevalent in their catchment area. Identifying the chronic health conditions dominating geographical regions is the basis for the health and wellness programs established by the ACO in community health centers and healthcare facilities (CMS, 2017). Healthcare organizations must change their leadership structures on inpatient units to support the changes in their strategic priorities (strategic factors) that do not align with the CMS changes in reimbursements from volume to value, which supports the population health triple aim strategic objective of reducing the per capita cost of care for populations (Berwick et al., 2008). The LLX-PNDP implementation on inpatient units provides communication support by constructing the shared responsibility to ensure the unit-based clinical team openly communicates all symptoms of illness amongst each other to begin the statistical amalgamation of information that identifies chronic illness of populations (Clausen et al., 2017). Therefore, the population health management requirements established by the ACA of 2010 could potentially influence healthcare leaders to implement the LLX and LMX governance structure.

Economic Factors

Decreased reimbursements. The ACA established the VBP medical reimbursement program to make high-quality care and cost efficiency top priorities, proposing to transform Medicare from a passive purchaser to an active purchaser of high-quality efficient care (CMS,

2012a). According to CMS (2012), the plan incorporates better use of medical technologies such as the electronic health record (EHR), encourages physicians and health providers with additional incentives to produce best care, allows consumers to make informed decisions about their care by allowing them to see information regarding care quality and cost, and helps support partnership for patients. Implementation of the LLX-PNDP on inpatient units constructs the shared responsibility for the physician and nurse to ensure the unit-based clinical team utilizes any tools implemented by the healthcare organization, like the EHR, to drive efficiency and make information about patient treatments readily available (Clausen et al., 2017). The PNDP team can ensure all metrics to monitor this performance are part of the team performance evaluation process. They are also responsible for ensuring complete transparency with the healthcare organization. This becomes imperative to the team's performance and the ability to improve the patient safety goals, which could influence healthcare leaders to implement the LLX and LMX governance structure.

Increased incentive pay. The Department of Health and Human Services (DHHS) set a goal of establishing a portion (percentage) of the Medicare payment to quality, or value, through alternative payment models, such as the ACO's bundled payment arrangements, by the end of 2018; the goal was for 50% of Medicare payments to be linked to these alternative payment models. Over 90% of the remaining traditional Medicare payment arrangements were expected tied to quality or value incentives by 2018 (Lindsey, 2015). According to Lindsey (2015), the new physician VBP program established the pay for performance that assesses both quality and cost with an aim for budget neutrality through quality tiering, which rewards high-quality and low-cost practices and penalizes for low-quality and high cost practices. The LLX-PNDP team, through mutual necessity and shared responsibility (Clausen et al., 2017), work in concert to

review transition of care planning procedures at each shift change to ensure quality measures, outlined in the plan of care, are consistently part of the daily patient care routine. Their transparent efforts portrayed to the unit-based clinical team support the open communication amongst the team, which enhances care coordination, teamwork, and trust (Graen & Uhl-Bien, 1995). Therefore, the new incentive program established by the DHHS under the guidance of the ACA could be a strong factor that potentially influences healthcare leaders to implement the LLX and LMX governance structure.

Population health management: Financials. The financial implications for healthcare organizations are substantial. The overall goal could lead the CMS to a set reimbursement, paid monthly, for each member of the ACO under CMS coverage, no matter how severe the medical diagnosis. For example, if ACO X covers 600,000 lives, with approximately 40% to 50% under CMS coverage and a monthly reimbursement rate of $300.00 per life covered, this would net a monthly payment of $72,000,000, which equals $864,000,000 annually. The average reimbursement from CMS for Medicare and Medicaid to level one trauma centers is 40% (CMS, 2012). The global payment could net an increase in average reimbursements; however, they are totally responsible for all medical issues with their beneficiaries. Treatments provided on inpatient units contribute to the care coordination of populations by consistent tracking of patient illness using the EHR. Implementing the LLX-PNDP on inpatient units creates the shared responsibility to serve an integral role in ensuring the right health and wellness standards are established and facilitates collaboration between the network of physicians, hospitals, and patients, which will help to reduce cost and errors (CMS, 2012a).

Quality Factors

Continuous improvement. Continuous improvement is an important quality initiative that is built around coordination of care activities between physicians and nurses. Such coordination is a complex process that requires intentional knowledge sharing and joint responsibility for patient care (Lindeke & Sieckert, 2005). In a healthcare climate constantly demanding efficiency, cost-effectiveness, quality improvement, and inter-professional collaboration, continuous improvement warrants re-examination because maximizing nurse-physician collaboration holds promise for improving patient care and creating satisfying work roles (Lindeke & Sieckert, 2005). The end goal is to develop mature, motivated healthcare professional teams by fostering self-awareness and preventing burnout. Implementing the LLX-PNDP on inpatient units supports this goal by establishing a formalized leadership team that, over time, creates the mutual respect, trust, and obligation built out of mutual necessity by daring to risk together and constructing shared responsibility (Graen & Uhl-Bien, 1995; Clausen et al., 2017). The transparent collaboration shared with the unit-base clinical team creates the shared responsibility amongst the staff, which improves care coordination, communication, teamwork, and trust—characteristics of the LMX theory of governance (Graen & Uhl-Bien, 1995). In the end, this team will collaboratively establish a variety of strategies to promote quality patient care and decrease the use of resources. Therefore, a strong need to promote continuous improvement on the inpatient units across the healthcare organization could potentially influence healthcare leaders to move away from STS model of governance to the LLX and LMX governance structure.

Hospital acquired infections (HAI). The efforts to improve quality by decreasing HAIs in the organization could potentially influence healthcare leaders to implement the LLX and LMX governance structure. Also known as a nosocomial infection, HAI is an infection that is

acquired in a hospital or other facility. Catheter urinary tract infections (CAUTI) and central line associated bloodstream infections (CLABSI) are just two of the many HAIs that can be contracted within healthcare organizations; both of these HAIs evolve from improper use of catheters. For instance, healthcare providers need to properly manage the use of catheters, reviewing the indwelling time for each catheter in every patient, to determine whether they should terminate or continue to use the catheter. As hospitals strive to prevent or reduce HAIs, changing their leadership structure to the LLX-PNDP on inpatient units supports their efforts by enforcing the change in strategic priorities that align with the quality initiatives of the VBP, CMS, and the triple aim. This support manifests itself with the unit-based clinical team through the PNDP's mutual necessity to openly display their shared responsibility to ensure the staff understands the organization's strategic priorities as they institute the inpatient unit governance to support the changes.

Implementation of the Leader-leader Exchange and Leader-member Exchange Governance Model

Understanding the need to create the PNDP structure is the first step in the implementation process. In addition to understanding the factors that could influence the formation of the LLX and LMX model of governance, we also review the implementation of the governance model. We present a brief general overview of the steps used in the implementation of LLX and LMX governance model.

Implementing the new structure requires support of the senior leadership staff in the C-suite, including chief nursing officer (CNO), chief medical officer (CMO), and vice presidents for human resources (VPHR) and quality (VPQ). The new PNDP-LLX structure on an inpatient unit creates the unit based clinical leaders (UBCL). The nurse's physician dyad partner's

position is titled the medical director for a specific unit. The new UBCL team receives training to orient the inpatient unit team to the new functional and cross-functional requirements. The core curriculum, interdisciplinary team development, and talent assessment dialogues establishes the shared leadership development challenge. The goal is to implement a high-quality leadership partner duo with the mission to increase patient quality and safety. Next, the CMO, CNO, and VPQ will coordinate with all UBCLs to establish policies and procedures to standardize practices across the organization.

The implementation of the new governance model is expected to involve a host of important decisions and milestones, in addition to significant changes in structure. Through our case study, we explored the implementation of the governance model in detail. Specifically, we reviewed aspects such as (a) how the new leader position will be established, (b) how the staffing selection takes place, (c) the appropriate training required, and (d) what processes and procedures must be developed.

Methodology

The case study method is preferred when why or how questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life-context (Yin, 1984). This study investigated why healthcare executives implement the dyad partnership and how they complete the transition. Yin (2003) depicted the explanatory case study as one with competing explanations and developing new ones. This study utilized semi-structured interviews and other available sources of information (such as documents and slideshow presentations) to conduct the case study research. The questions resembled guided conversations rather than structured queries (Yin, 2014). As described by Rubin (2012), a consistent line of inquiry was pursued, but the actual stream of

questions was fluid rather than rigid. Building the study in this format placed two responsibilities on the interviewer: following their own line of inquiry as reflected by case study protocol and asking the actual questions in an unbiased manner that also served the needs of the interviewer's line of inquiry (Yin, 2014). Case study interviews require the interviewer to operate on two levels at the same time: satisfying the needs of the interviewer's line of inquiry while simultaneously putting forth friendly and nonthreatening questions in an open-ended manner (Yin, 2014).

This research utilizes the case study method to build theory in a grounded and inductive fashion (Eisenhardt, 1989). The grounded theory approach was implemented in similar fashion as used by Levina and Ross (2003) and Orlikowski (1993) to develop theory from qualitative data. Grounded theory is a way of iteratively collecting and analyzing data in order to build first a substantive theory of a particular phenomenon and then a formal theory on its basis (Dey, 1999; Glaser, 1967; Levina & Ross, 2003; Myers, 2006). After identifying the research question, a review of the literature on PNDPs in healthcare organizations discovered there is no current theory that answers the research question. This work began with no theory under consideration and no hypothesis to test, only speculation of management and leadership challenges and strategic, economic, and quality factors, which is the basis for this kind of research (Eisenhardt, 1989). The study began by proceeding to select our case based on the concept of theoretical sampling so that we could best answer the question posed (Glaser & Strauss, 1967).

Furthermore, this research utilized the social capital theory to illustrate the leaders' change in relationship behaviors to the components of improvement in the organization (Lin, 1999). Social capital is defined as resources embedded in a social structure, which are accessed

or mobilized in purposive actions (Lin, 1999). According to Lin (1999), social capital contains three ingredients: resources embedded in a social structure, accessibility to such social resources by individuals, and use or mobilization of such social resources by individuals in purposive actions. This leads to social capital of three elements: structural (embeddedness), opportunity (accessibility), and action-oriented (use) aspects. We identified the elements of the employee engagement and leadership challenges as well as the three factors—strategic, economic, and quality—the PNDP leadership team affects.

Site Selection

The goal of this research was twofold: first, to understand why healthcare leaders choose to implement the PNDPs and second, to learn how they implement the new leadership structure in the healthcare organization. In order to accomplish this, the case study had to be a healthcare organization that: had implemented the PNDP leadership structure; had senior leaders and dyad partners who could describe why they decided to implement the new leadership structure and how they successfully completed the transition; was willing to openly discuss the positive and negative outcomes of the partnership; had a PNDP program that had been active long enough to demonstrate long-term outcomes, such as notable improvements in quality safety indicators of CAUTI, CLABSI, clostridium difficile infection (CDI), and the prevention measure of hand hygiene (HH); and had employee engagement survey results that illustrated improvement in job satisfaction. The case we selected satisfied all criteria. The case was revelatory or exemplar; therefore, multiple sites were not included in the study as this established research that defined why and how a healthcare organization implemented the PNDP leadership structure with proven outcomes (Yin, 1984). However, there remains ample opportunity for future studies at other healthcare organizations across the United States and abroad.

Data Collection and Analysis

The research utilized qualitative methods to understand the relationship between the physician and nurse on inpatient units, which established the UBCL. The UBCL led the inpatient unit staff and were two members of the unit based clinical team (UBCT). Data collection took place in the summer of 2018. It involved multiple techniques including semi-structured interviews, documentation, archival records, direct observation, published sources, flowcharts, algorithms, standardized checklists, and telephone interviews (Yin, 1984). The semi-structured interviews lasted from 50 to 70 minutes. Table 2.1 identifies the types of interviewees, their tenure in the healthcare profession and at the case healthcare organization, and the length of time they had served as dyad partners.

The site selected was a Midwestern AMC with an inpatient capacity of 600 beds or more. Five senior leaders who were involved with the leadership change participated in the study. The physicians and nurses were chosen based on their definitive formal roles as management partners leading an inpatient unit and had been identified as the dyad partners. They were able to demonstrate where they periodically came together to discuss clinical management issues such as program initiatives, budget, resource allocation, professional, and practice issues (Clausen et al., 2017). Senior leaders were those with the title of director, senior director, assistant chief nursing officer, medical director, executive director, or chief. These individuals were key stakeholders in the decision-making process or management of the PNDP program. If permission was given, the interviews were audiotaped to provide an accurate record. The questions focused on management and leadership challenges, and strategic, economic, and quality factors that prompted the senior leaders to implement the dyad partnership governance structure. The interviews were targeted, and the document collection focused on three dimensions of inquiry

described in Table 2.2. Each dimension was designed to assist in determining why the healthcare organization in the case implemented the PNDP structure. The last section of the inquiry turned its attention to how the case implemented the PNDP by targeting specific questions towards the executive leadership. The data collection was iterative: as data was collected, major themes were identified to guide further data collection, which then modified or built on prior themes and concepts (Glaser & Strauss, 1967).

Table 2.1

Interviewee Type and Tenure

Interviewee Type	Tenure in Healthcare	Tenure in Organization	Tenure as Dyad Partners
Executive Leadership			
Chief Executive Officer (CEO)	41	6	
Chief Nursing Executive (CNE)	41	7	
Chief Medical Officer (CMO)	28	8	
Chief Operations Officer (COO)	41	38 (7 as CMO)	
Chief Nursing Officer (CNO)	36	28 (7 as CNO)	
Dyad Partners (DP)			
DP Team 1; Physician Partner 1 (PPT1)	16	6	6
DP Team 1; Nurse Partner 1 (NPT1)	39	6	
DP Team 2; Physician Partner 2 (PPT2)	21	13	7
DP Team 2; Nurse Partner 2 (NPT2)	32	28	
DP Team 3; Physician Partner 3 (PPT3)	16	3	3
DP Team 3; Nurse Partner 3 (NPT3)	18	15	

Note. Tenure measured in years. DP Group 2 had worked as informal dyads for 6 years before the structure was formalized.

Table 2.2

Dimensions Guiding the Inquiry

Dimension	Description
Management/Leadership Challenges	The organizational climate with regards to communication, collaboration, teamwork, commitment to organizational goals; do professionals work in groups; the organization's policies on incentives or rewards and disciplinary procedures for negligent actions.
Strategic	Reasons behind implementing the dyad partnership structure; leadership's experience with different leadership structures; policy and procedure influence; peer to peer accountability; administration engagement; population health management influence.
Economic	Financial pressures from decreased government reimbursement from the Center for Medicare and Medicaid Services; improve the organization's ability to earn incentive pay from the government; population health pressures from the Affordable Care Act.
Quality	Increased pressures to reduce hospital acquired infections; efforts to increase collaboration, communication, and care coordination between the professional medical staff and nurses.

Pettigrew (1990) and Eisenhardt (1989) suggested that researchers break down data analysis into overlapping phases. Table 2.3 describes the analytical processes in complement with each level of output. Levina and Ross (2003) demonstrated how researchers start with a broad definition of the problem, which is sharpened through analysis of relevant literature, on-site data collection, and discussions with professional and academic colleagues. This is followed by an open-ended and generative discovery of main themes, patterns, and propositions from interview transcripts and case notes (Glaser & Strauss, 1967), which leads to additional data collection. Pettigrew (1990) referred to the level one output as analytical chronology, incorporating multiple levels of analysis; the next phase focused on the management and leadership challenges and strategic, economic, and quality factors of the case organization to write a diagnostic case (level two); the diagnostic case was then presented to the participating organization and feedback incorporated into the case analysis. This iterative process allowed for further development of the analytical framework (Levina & Ross, 2003).

Table 2.3

Data Analysis Phases

Case Write-Up Outputs	Application to the Case	Responsibilities
Level 1 (Analytical Chronology)	Detail description of the history of the healthcare organization's leadership structure, organizational challenges, complexity, patient safety issues, quality issues, and job satisfaction.	The write-up is based on the interviews conducted with the executive leadership and dyad partners.
Level 2 (Diagnostic Case)	Part 1: Focus on why the healthcare organization determined to implement the Physician Nurse Dyad Partnership leadership structure. Break the case down into key dimensions: (1) Management and leadership challenges (2) Strategic factors (3) Economic factors (4) Quality factors Part 2: Focus on how the healthcare organization implements the Physician Nurse Dyad Partnership leadership structure. (1) Selection of the dyad partners (2) Training for the dyad partners (3) Senior leadership involvement (4) Metrics utilized to measure outcomes (5) Changes in the quality of care provided on inpatient units (6) Overall satisfaction with the results of the new leadership structure	The worked consists of identifying broad themes in the case and the practical implications of the case to present to the participants. This is shared with the leaders and dyad partners of the case organization.

(Continued)

Case Write-Up Outputs	Application to the Case	Responsibilities
Level 3 (Interpretive or Theoretical Case)	In-depth inductive content analysis of the data from multiple sources. Preparation of analytical displays, for example, checklist matrices and causal diagrams (Miles & Huberman, 1984) to discover relations among subcategories. Reducing the number of emerging themes to develop theoretical clarity. Link to the broader literature dyad partnerships in healthcare, underlying theoretical themes, and how the dyads engaged the inpatient unit staffing (theory-based interpretation).	The content analysis exercise is independently performed and presented to the dissertation chair multiple times. Different versions of the interpretive case were discussed before reaching consensus.

Pettigrew (1990) implemented the final phase (level three output) as the phase to create an interpretive or theoretical case. Further interpretation of the narrative was developed in the prior phases and linked to conceptual ideas derived from the data and to wider theoretical debates in the literature (Levina & Ross, 2003). In this phase, the write-up was developed on content analysis techniques to develop analytical abstraction from multiple sources of data (Agar, 1980). Major conceptual themes were developed by the use of causal diagrams and checklist matrices to help discover relationships among concepts (Corbin & Strauss, 2015; Miles & Huberman, 1984).

The inductive generation of theory from data relies heavily on triangulation of different sources of evidence, which is a major strength of the case study research methodology (Yin, 1984). For Levina and Ross (2003), this led to stronger concept development in the inductive theory building. Furthermore, Clausen et al. (2017) generated a substantive theory of intentional partnering, which states that nurses' and physicians' professional agendas, including their interests and purposes for working with each other, serves as the starting point of intentional partnering. They intentionally align their professional agendas, which are fundamental to communicating effectively (Clausen et al., 2017). Finally, comparison of the grounded framework to various strategic literature was conducted, treating the literature as another data set and doing a comparative analysis as suggested by Glaser and Strauss (1967). Table 2.4 provides an example of why the organizational leadership decided to change the governance structure in the healthcare organization.

Table 2.4

Analytical Theme

Steps	Data
Analyze interview transcripts	Example of a quote that motivated the change in leadership structure: Chief Executive Officer: "The need to break down silos and keep it simple on inpatient units". Chief Nurse Executive: "Often, it was a siloed process [between physicians and nurses when making decisions on patient care] and those proposing standards were not always engaging the right stakeholders". Chief Operations Officer: "The issue with the previous structure was that the management was siloed and disjointed. Physicians and nurses seemed to be constantly at odds when trying to provide patient care". Chief Medical Officer: "The need to bread down silos on inpatient units led to the change in structure". Chief Nursing Officer: "There was no standard for MD and Nursing leads for each unit to meet—some met, and some did not".
Review how factors are affected by previous leadership structure	Looked for data supporting and extending the theme of the effect a siloed leadership structure has on the following: Management and leadership challenges Strategic factors Quality factors Economic factors
Create a data display in the form of a causal map	Figure 2.2 identifies the operational barriers to success through the senior leaders' and dyads' perspectives.
Use all evidence collected to confirm or reject the theme.	Created an interview matrix that aligned all feedback from senior leadership and dyad partners
Consolidate themes into distinct concepts	Concepts that appeared in the causal map were consolidated

(continued)

Steps	Data
Compare inductive concepts to existing theories, analyze and challenge linkages	Compared inductive themes to management theories: Socio-technical systems (STS) theory of management led to professional working groups and created silos or communication barriers. Leader-leader exchange (LLX) theory created peer-to-peer relationships at the management level that crossed professional groups. Leader-member exchange (LMX) theory of governance created leader-to-subordinate professional pairings that improved communication beyond the management level. Intentional pairing (IP) theory explains how physicians and nurse mangers align their professional agendas through the process of accepting mutual necessity, daring to risk, and constructing a shared responsibility.
The leader-leader & leader-member exchange theories; intentional partnering theory	The leader-leader and leader-member exchange theories serve as the theoretical underpinnings for the physician-nurse dyad partnership positive outcomes on inpatient units. Partnerships of high-quality are created over time through building mutual trust, respect, and obligation, which is established by the senior leaders' intentional partnering that leads to accepting mutual necessity, daring to risk together, and constructing a shared responsibility by being credible, earning trust, and safeguarding respect through effective communication (Clausen et al., 2017; Gran & Ulh-Bein, 1995).
Link to other theoretical and empirical themes	Linked this leader-leader exchange; leader-member exchange; and intentional partnering theories to other theories developed from data or literature, such as the social capital and grounded theory, by reviewing the impact of the PNDP on inpatient units through the perspective of senior leaders and dyad teams.

Data Sources

The PNDP leadership structure was implemented in the case organization in 2012. The semi-structured interviews were conducted with key senior leaders of the organization and three teams of dyad partners (see Table 2.1) who were, or are currently, employed by the organization during the decision, implementation, and maintenance phases of PNDP governance structure. The senior leaders were members of the leadership team who made the decision to implement the PNDP governance structure and are currently serving at the healthcare organization or were in their roles from the time of PNDP implementation until their departure. The interviewed participants consisted of the chief executive officer (CEO), chief nurse executive (CNE), chief operations officer (COO), chief medical officer (CMO), and chief nursing officer (CNO). The average time of service in the healthcare industry was 37.4 years, with an average of 17.6 years at the healthcare organization. Each member had served in his or her role for at least six years with 15 to 20 years of management experience. The average age was 57 years.

The dyad partners, teamed as the UBCLs, consisted of three physicians and three nurse managers. The teams were identified as dyad partners Team 1, Team 2, and Team 3. The partners were identified by the team and their roles: physician partner team 1 (PPT1), physician partner team 2 (PPT2), physician partner team 3 (PPT3); nurse partner team 1 (NPT1), nurse partner team 2 (NPT2), and nurse partner team 3 (NPT3). The nurse managers were females, whereas the medical mangers were male. The three physicians and two of the nurse managers had extended graduate degrees in management, such as an MBA. The average age for both professional groups was 48 years. The range of management experience was from 6 to 12 years for physicians and 10 to 20 years for nurses. NPT1 had a unique perspective on the PNDP leadership structure because the individual had been a dyad partner for over 39 years, 30 years at

a previous organization before joining the case organization.

Case Analysis: Why the Organization Changed Its Governance Structure

Figure 2.1 illustrates the type of leadership challenges on inpatient units that many healthcare organizations experience. Kim et al. (2014) identified six hospitals in the United States that have made this transition: Hospital of the University of Pennsylvania (triad: medical director, nurse manager, and quality improvement specialist); Northwestern Memorial Hospital (PNDP); Emory University Hospital (PNDP); University of Michigan Health System (PNDP); Christiana Care Health System (PNDP); and St. Joseph Mercy Health System/Integrated Health Associates (PNDP). The federal regulating agencies have created pressure on organizations to improve their quality with the change in the reimbursement structure from one based on quantity to quality (Frist, 2016).

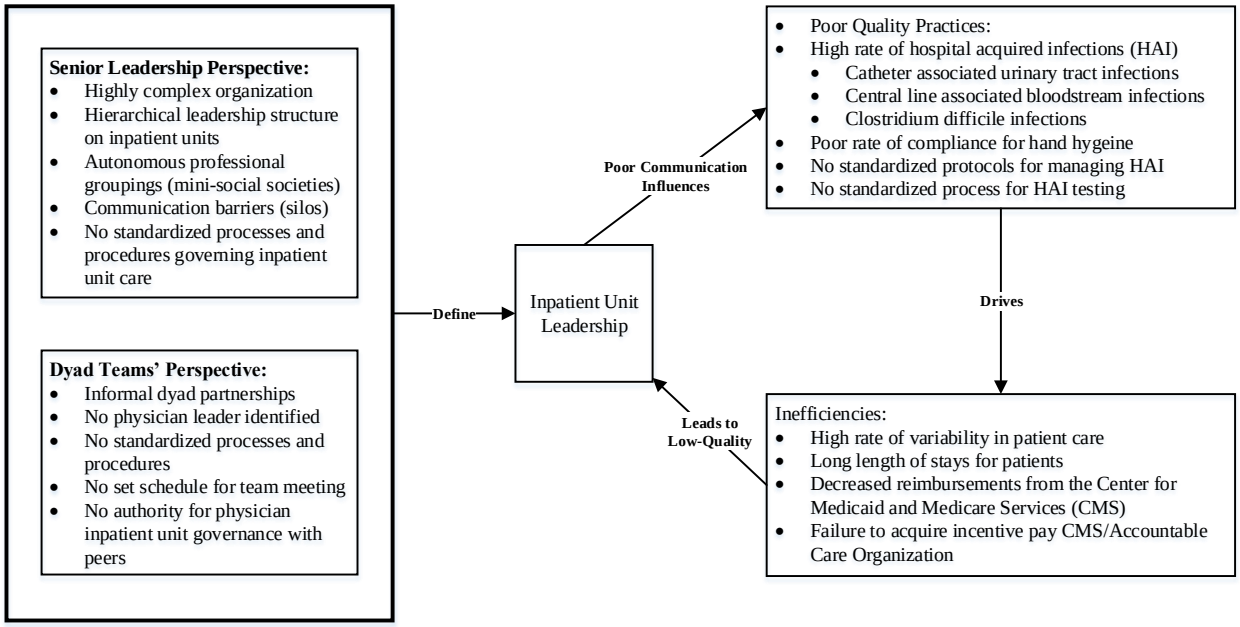


Figure 2.1. Inpatient unit leadership operating environment, pre-PNDP implementation.

Management and Leadership Challenges

In grounded theory, the basic social problem is the issue that is shared and resolved by the participants through the use of the basic social process (Clausen et al., 2017; Glaser & Strauss, 1967). The basic social process can take on multiple forms beginning from hierarchical considerations and power dynamics to the social construct of perceived beneficial or detrimental changes to the organization (Glaser & Strauss, 1967). From this theoretical perspective, the problem as defined by participants referred to the concept of silos stifling communication among professional groupings, which leads to poor patient care quality and decreased job satisfaction among the inpatient unit patient care staff.

Silo mindset and partnership. The CEO stated that the siloed disjointed mindset was one of the key reasons for changing the management structure:

> At the time the decision was made to pursue a new management structure, each of the departments and their leaders operated in silos. With all the changes in healthcare and the need to prove value, we needed to have the entire care team working together and not in silos.

Apart from breaking silos, the management structure needed change since the physicians and nurses appeared to be constantly at odds with each other in terms of providing patient care. They needed a multidisciplinary avenue for discussion and decision-making. Standardization of meeting agendas and expectations also became important criteria for changing the structure. The COO also mentioned that the older system was exceedingly frustrating for the providers and patients and the workflows were duplicated and out of sync, which made it very expensive. According to the CNO:

> There was no standard for medical doctor [MD] and Nursing leads for each unit to

> meet—some met, and some did not. This structure established the expectation for regular meetings, at least monthly. It also established the expectation for attendance at quarterly dyad meetings where all the days come together for information, education, and problem solving. Prior to the dyad structure, nursing and physician work was done in separate ways in terms of communication and implementation. The dyad structure has brought these closer together in a partnership versus individual work.

We followed up with the dyad teams regarding the reasons for establishing the PNDP governance model. To provide a brief background of the dyads: Team 1, NPT1, was not at the case organization during the implementation of the PNDP leadership structure. However, the individual served as a nurse manager at another organization for 30 years prior, which was organized in the PNDP leadership governance structure. PPT1 was not present for questions. Team 2, NPT2 and PPT2, were informally partnered to govern their inpatient unit seven years before the PNDP program was formalized. Team 3, NPT3 had a break in service at the case organization but since returning has been formally partnered with PPT3. PPT3 was not in a leadership role until arriving at the case unit. The individual was partnered with the former nursing director until PPT3 arrived; therefore, as a physician manager, PPT3 has always been formally partnered with a nurse manager.

We inquired about the teams' ability to meet and coordinate the inpatient unit goals before the PNDP leadership structure was formalized; the only team that could speak to their experiences was Team 2. PPT2 of Team 2 described being informal partners even before the dyad partnership was put in place:

> I was Clinical Services Chief for the division, and most of this inpatient unit was a lot smaller. We met a lot to work on issues, kind of because it was a natural partnership.

> We worked on a number of projects, and then when the dyad partnership, the program was started, then we were sort of formal dyad partners.

The informal structure had multiple stakeholders (physician, unit representative, nurse manager) participating in the various healthcare activities and decisions. However, the meetings were ad-hoc and did not follow any preset schedule. Therefore, while some teams fared better than others, most did not work well. According to PPT2:

> The partnerships didn't really become cohesive. The issue is, it was so informal, and it was even less formal on other units. People just get pulled into things. Because most of the doctors are paid to be doctors, and that's what they do, they take care of patients. They aren't really assigned in those administrative roles or are compensated in those administrative roles. Then you have the nurse manager, that's the person's [nurse] job, is to be on the unit. I think the buy-in from the physician was always going to be a lot less, because there's nothing clarified about their role expectations, or time, or compensation.

Healthcare organizations' leadership structure has historically been established among professional groupings. The structure forms in surgical specialties (orthopedics, neurology, cardiology); ancillary services (radiology, laboratory, pharmacy); support services (clinical engineering, environmental services, culinary and nutrition services); in professions (doctors, nurses, administrators); and across professional specializations (radiologist, cardiologist, nurse practitioners, specialty care nurses, general care nurses; (Turner, 2018). The supporting theory for this type of leadership structure is the STS theory. The STS theory of governance recognizes the importance of autonomy; STS aims to minimize the number of intergroup relations by decoupling the production process into independent units; this practice is related to the desirability in STS that people who perform closely-related tasks should be put in the same team

so that the team is responsible for what is called a whole task (Niepce & Molleman, 1998). This type of leadership establishes silos, creating communication barriers between professional groupings, and is not conducive to a collaborative work environment. Souba (2004, p. 177), Vice President for Health Affairs at Dartmouth College and Dean of Dartmouth Medical School since 2010, stated:

> Many of the challenges and problems that confront our hospitals today are so complex and unpredictable that it is practically impossible for one person to accomplish the work of leadership alone. More than ever, leadership will need to permeate all levels of the organization to include those people who have, in the past, viewed their job as having nothing to do with leadership.

Souba identified the need for collaborative leadership to support complex healthcare organizations by establishing a governance structure that involves staff who, historically, have not been part of the leadership team. The PNDP leadership model is theoretically supported by the LLX and LMX theory of governance. In paragraph 2.4, we demonstrated how this model breaks down communication barriers by strengthening group dynamics (Tangirala et al., 2007; Zhou et al., 2012) and building relationship based on mutual trust, respect, and obligation (Graen & Uhl-Bien, 1995).

Implementation: Social capital element of opportunity and accessibility. This leadership structure enhances the social capital created between the dyad partners as their relationship matures through the obligation of constructing shared responsibility, daring to risk together, and accepting mutual responsibility, which matures over time by becoming credible, earning trust, and safeguarding respect through effective communication (Clausen et al., 2017; Graen & Uhl-Bein, 1995). Creating the intentional partnering of the physician and nurse leaders

is a social capital element of opportunity (accessibility), by taking the opportunity to establish the expectations of mutual governance between the two accessible leaders.

The dyad teams (UBCLs) gave their opinions of how the formalized PNDP program has assisted them with facilitating their leadership program on inpatient units. According to NPT2:

> I think it really gives us structure or a venue to bring new initiatives. I think the success of implementing new initiatives is so interconnected between our disciplines. And in the past, I've seen things we try to do separate, but you don't really understand each other's perspectives.

Further review of the opportunity and accessibility of the two partners demonstrated their efforts to remove communication barriers by breaking through professional silos, which was identified as one of the primary reasons for changing the leadership structure. The new structure seemed to not only remove barriers to communication but also create expectations regarding the roles of physicians and nurses. According to PPT2, the nurses and physicians are in constant communication together with the patient. The physicians tend to listen to the nurses more since the nurses have all the information about the patient, being at their bedside. Interestingly, this changes the dynamic between nurses and physicians in that they become cooperative partners. PPT2 described the following:

> It's that trust and that expectation that you really need to work together. And that patients need to see that. I definitely think it's a big part of a lot of things that have contributed over the years. It goes up and down. But I think overall there's been a trend towards a lot more nursing-physician communication. An expectation that communication would happen, and I think that the dyad role is what has helped to move that forward.

PPT2 also lamented about the lack of training while in residency regarding the role of physicians. PPT2 stated that the physician should be the leader of the medical team, as opposed to it being a team effort. However, the boss mindset changed because of their involvement in the dyads. PPT2 stated:

> Nurses would call me with things, and that was the one-way communication. If they didn't have a question about potassium, or something else, we would barely ever talk. I wouldn't know who the nurse was. But creating that expectation that you really can't care for a patient well if you're not partnering equally with the nurse and recognizing that's what patients really want.

One of the hallmarks of a successful change is the buy-in from all stakeholders. Although the administration thought that the change in leadership was an effective way to break the silo mind-set, the core stakeholder—physicians—needed to be convinced of its utility. Interestingly, physicians were incredibly receptive to the changes as they can participate on par with the administrators in the planning process. This changes the power equation in the hospital, as physicians and administrators become equal stakeholders in the outcomes. According to NPT1:

> Yes, because they were part of the planning, the directors, the vice presidents, at the other organization were medical vice presidents and other vice presidents, it was divided into teams—Team 1, Team 2, Team 3, Team 4—and every team had an administrative vice president and a medical vice president. There were partnerships at that level, and then directors as medical and administrative directors. Because there was planning, that our physicians were involved at the highest levels to help with the strategy and the operationalizing it, yes, there was definite buy-in because they were part of the planning.

The formalized PNDP program has improved the ability for the partners to schedule meetings and coordinate unit goals. Different team members specifically mentioned that the flexibility in schedules and weekly meetings were important outcomes of the dyad partnership. One individual, NPT1, noted the following:

> I've been very fortunate that I've had three different dyad partners, and they've been hospitalists. There's some flexibility in their schedules, and we meet every week. PPT1 and I meet every week for half an hour, we have it on our calendars, and the beauty of scheduling it once a week is that if something interferes, if [PPT1] is on hospital service and just too busy with patient care, then it's okay to skip a week here and there. Sometimes our meetings are short, sometimes we spend more than half an hour, but the key for us was just getting a time on our calendars. Like today for instance, we meet every Wednesday at 1:30 to 2:00pm. Well today, he has all afternoon scheduled with the medical education programs; we didn't meet this afternoon. But [PPT1] stopped in yesterday afternoon and said, "Hey, is there anything we need to talk about, because I can't make our meeting?" I'm just super fortunate because [PPT1] is very engaged and [is] a strategic thinker. The impromptu meetings are invaluable, because if there's a patient safety net (PSN) that comes through that I need [PPT1s] help on, or a situation with a physician that again, I need [PPT1's] help or advice, [PPT1s] just right there. [PPT1s] very accessible.

We can conclude that the organization's efforts to break through professional silos among the staff on inpatient units to improve communication was a primary reason for implementing the PNDP leadership structure. It affects the quality and financial incentives as shared by the CEO, "It is my belief that when communication is improved and the incentives are shared, the quality

of care is improved. This structure improved communication across professional boundaries of physicians and nurses." As stated by the CMO, "We as a healthcare organization needed to improve team-based care and communication, which would improve our process and procedures. The new leadership structure supports these efforts as they are instrumental with emphasizing the change and supporting leadership rounding."

The methodology of intentional partnering the two leaders is the organization implementing the social capital element of opportunity. There is no human healthcare without communication (Visser & Erby, 2014). Healthcare operates in the realms of the complicated and complex for several reasons: first, healthcare delivery does not have a defined set of ingredients because different patients have different DNA structures that lead to different treatment plans; second, bad outcomes may manifest themselves disproportionately to the scope of medical intervention and may occur at a future time with permanent consequences; and third, a patient may be responsible for a portion of the cost of care but the value of care provided may not correspond with its price (Weeks & Wadsworth, 2013). The senior leaders and dyad teams expressed their opinions on how the siloed professional groupings stifled communication, which enhanced this complicated and complex environment. It also hindered their ability to strategically align with the goals of the organization to improve quality. The inability to improve quality could lead to inefficient practices as the federal government, through a change in the reimbursement structure, is driving organizations to improve quality by placing some of their refunds in jeopardy.

Strategic Factors

Horizontal mechanisms. The ACA of 2010 established a quality strategy that focused on improving the quality of care in a hospital's inpatient unit, which consisted of the following

initiatives: (a) incentives to improve care, (b) tying payment to value through new payment models, (c) changing how care is given through better teamwork, (d) better coordination across healthcare settings, (e) more attention to population health, and (f) putting the power of healthcare information to work (CMS, 2017). The CNO of the case organization stated, "The Affordable Care Act showed that change was not only necessary but was upon us. Implementing the physician dyad structure was one way to make change in a collaborative team way."

Implementation: Horizontal mechanisms and the social capital element of action-oriented or use. The CNO was alluding to the collaborative, team approach that required an organizational change in the strategic plan for patient care to comply with the new programs established by the ACA. Organizations develop strategic plans to establish action-oriented goals and objectives that improve organizational performance. The methodology of implementing the social capital element of action-oriented or use through changing the leadership structure to the PNDP model of governance supported the organizational changes to the strategic plan driven by the ACA. On the inpatient units, it was important for the dyad leaders to understand the ACA's effect on the organization's strategic plan. According to NPT1:

> It was the ACA and also work on the strategic plan. At the other organization, they were very methodical about developing a strategic plan same as this organization. You have this strategic plan from the top—these are the big goals and the big strategies, growth, etc.—for the organization. I was cardiovascular service line. What are your strategies going to be to grow your markets and to increase staff retention, and all those important things to improve your outcomes that we needed to improve. It filtered down to that I needed to partner very strongly with those physicians to be able to engage everybody in the service line, not just nursing because I was a nurse. It was very methodical, very

plan-full how it all trickled down to the staff. And then, sure enough, staff would have action plans to support. We did a lot together, myself and my medical partners.

Population health management: Strategic and financial imperative. The federally monitored programs, the ACO and the VBP programs, were implemented by the CMS. They changed the focus of healthcare providers from programs of quantity, healthcare reimbursements based on the number of patients cared for, to one of quality, healthcare reimbursements based on the number of successful outcomes for the patients in their care (Channing & DeVore, 2009). The ACO began in 2012, which established quality benchmarks targets for ACOs to achieve by maintaining expenditures for their patient populations below budget; if they achieve the benchmark, they receive half of the savings, with the remainder going to the program administrator, CMS (The Commonwealth Fund, 2017).

The ACO's focuses on population health management, which ensures that patients, especially the chronically ill, get the right care at the right time with the goal of avoiding unnecessary duplication of services and preventing medical errors (CMS, 2012). The overall goal could lead the CMS to establish a global payment system that reimburses healthcare organizations for the total number of beneficiaries covered under their healthcare plans. The senior leaders did not have the opinion that population health management led to the PNDP implementation. The CNE stated, "Population health management did not necessarily lead to the dyad structure, but it was an influence. It made us think about how to coordinate post discharge care." Similar, the CMO stated, "No, it [population health management] did not lead to the leadership structure change. It has led us to implement new quality indicator management procedures, policies, and protocols, but it did not lead to the implementation of the dyad partnership."

Population health management is all inclusive of patient care management. It begins upon admission and continues throughout the patient's follow on appointments. To properly execute this type of program, both inpatient and outpatient leaders must be able to follow the patient's history of care. This means involving the inpatient unit leaders with discussing the care while the patient is admitted and after they are discharged. According to PPT2:

> I think it's probably actually a missed opportunity. I think that the dyads know about a lot of patients and examples of admissions that could be managed better. The dyads really haven't been involved. A lot of the ACO work has been done on the outpatient side and with complex case management. There's a group in the emergency room [ER] that works on some of the readmissions, but the dyads really haven't been involved in that at all. That is kind of a missed opportunity.

Standardization of processes and procedures. One of the goals of the CMS is to ensure that quality indicators are met and maintained in hospitals (Kohn, 2001; McMains, 2016). For healthcare organizations to achieve this goal, they must establish policies and procedures that standardize testing protocols for HAIs and the management and maintenance of catheter utilization. Improving team-based care and communication improves processes and procedures. The CEO stated:

> The process and procedures were complicated, inconsistent, and not standardized because both the physician and nurses worked in silos. Often, they would complete their development separate from each other. This also included patient education materials, changes to the medical record, etc. The new leadership structure made it easier to coordinate clinical policies and procedures.

Implementation: Standardization of processes and procedures and the social capital

element of action-oriented or use. Healthcare operates in the realms of the complicated and complex because the customer—the patient—is complicated and complex (Weeks & Wadsworth, 2013). No body chemistry, deoxyribonucleic acid (DNA), or genome matches identically. This contributes to the complications with regards to diagnosing illness that is inherently different for each patient. The standardization of processes and procedures helps promote a culture of safety and high reliability in healthcare by standardizing the use of protocols to diagnose patients, which minimizes the complications of treatment (Hagood, 2017). Implementing the PNDP governance structure on inpatient units establishes a leadership team with the shared responsibility of ensuring the standardized protocols are followed (Clausen et al., 2017). This is an action-oriented or use aspect of social capital that is enhanced with the intentional partnering of a physician and nurse leader (Clausen et al., 2017). NPT1 shared:

> It's been great because when we have an event, if we have a CAUTI or a CLABSI or a CDI, the medical partners assist in reviewing the episode. They help support the algorithms and the protocols that we have established; that's very helpful. PP1 is very involved with the medical education program, and our unit has all the GM [graduate medical] services on it. [PP1] will take information back to the residents and help educate them about why. "You skipped this step and this algorithm, and now unfortunately, we've identified a CDI, and if we had used the algorithm, we wouldn't have. We wouldn't have sent that sample because it wasn't really indicated." It's really collaborative and good discussions. Our inpatient unit doesn't have a lot of CAUTIs or CLABSIs. We do have, unfortunately, CDIs, but when we do, again, it's very collaborative to review and to discuss root cause and what we could have done differently.

Administration engagement. Some healthcare organizations establish their partnership programs as triads, a leadership triangular relationship between the physician, nurse, and an administrator (Hemker & Solomon, 2016). The means building trust with physicians to move from a win-lose mentality toward a focus on achieving common solutions (Hemker & Solomon, 2016). According to the case organization's CEO:

> The [was a] need to break down silos and keep it simple on inpatient units. The triad model with the administrators was not officially put in place because of administrators rotating responsibilities and the turnover, so we left the administrator roles flexible so any administrator could support any inpatient unit, at any given time.

Implementation: Administration engagement and the social capital element of structural or embeddedness. Administrators are elements of the organizational leadership structure. Their support during the change of an organization's leadership model is imperative to its success. The administrator's role with the PNDP leadership team enhances the social capital element of structural or embeddedness. The CEO does not prohibit the administrators from being involved with the efforts to improve the quality of care on inpatient units but rather identifies the need to maintain flexibility in the role to ensure an administrator is always available to support administrative initiatives, such as leadership rounding as well as attending quarterly dyad meetings. The CMO stated:

> Yes, administrators are engaged, especially with the implementation of team-based leadership rounding which consist of one nurse, a physician leader, and an administrator. It takes place weekly. The administrators support the dyad teams but are not part of the dyads.

Administrative leaders' team with the PNDPs on inpatient units to serve as the primary

representative of senior leaders and support the PNDP efforts to govern inpatient units by ensuring their strategic goals and objectives are aligned with the organizational goals and objectives. They establish operating budgets and perform reconciliations. The PNDPs have the primary responsibility of administering disciplinary actions when negligent actions have been confirmed by the unit staff and also praising and rewarding exceptional care and positive patient care behaviors. Administrators support, or carry out, the disciplinary actions for inappropriate actions or behaviors and establish incentives and present rewards for achieving target benchmarks and exceptional performance (Hemker & Solomon, 2016). NPT1 stated:

> From a nursing standpoint, I think it's great. I think the nursing leadership at all levels is very supportive. When I look at the dyads, we have quarterly meetings, the administrators like the Chief Nursing Officer and the directors are there, as well as the Chief Medical Officer. I think they support us by keeping the partnership in front of us. Little reminders, like the senior nursing director I report to, they may ask just as her standard work, "Have you engaged your dyad partner in this?" Or, "How is this working for you?" It's not in a "I can't figure that out for myself" kind of way, it's in a collaborative and just saying it out loud to make sure you're all thinking about how you're going to involve your dyads. It's very supportive because she's worked it into her standard work. It's just what we do here.

In conclusion, the strategic factors of horizontal mechanisms, the standardization of processes and procedures, and administration engagement provided strong influence for the organization to change the leadership structure to the PNDP model of governance. The population health management, strategic imperative, and financials did not have an impact on their decision.

Economic Factors

Decreased reimbursements and increased incentive pay. The VBP medical reimbursement program was established as a derivative of the ACA to drive high-quality care and cost efficiency by incorporating the use of the EHR; to encourage physicians and health providers with additional incentives to produce best care; to allow consumers to make informed decisions about their care by allowing them to see information regarding care quality and cost; and to help support partnership for patients (CMS, 2012). It also established a pay for performance program with physicians that assesses both quality and cost with an aim for budget neutrality through quality tiering, which rewards high-quality and low-cost practices (Lindsay, 2015). We inquired of the senior leaders whether they felt the VBP influenced their decision to implement the PNDP leadership structure. They agreed that the program influenced improving patient care quality on inpatient units because of the requirement to report quality metrics, which highlights the importance of improving the quality of care. However, they did not have the opinion that it was a primary catalyst for implementing the PNDP governance structure. According to the CEO:

> The ACA led to initiatives including the value-based purchasing where reimbursement ultimately would be connected to the provision of high-quality care at the lowest cost. We knew that to make sure this happened, as we were coordinating our care, we needed to have our clinical leadership closely working together to provide the best patient experience, but this was not a major thought while implementing the dyad partnership structure.

The EHR is an electronic version of a patient's medical history that is maintained by the provider over time and may include all of the key administrative clinical data relevant to that

person's care under a particular provider, including demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports (CMS, 2012). The EHR has mixed reviews from senior leadership and dyad teams. Like the VBP program, it influences healthcare by improving the ability to monitor quality safety indicators, but the reviews of the program from the senior leaders and the dyad partners demonstrates the EHR has been accepted by the nursing staff and sporadically utilized by the physicians. The CMO indicated:

> Implementation of the EHR is complex and I am not sure it has helped overall. Some physicians adapt to the EHR easily, some do not. Certain portions of the EHR are easy to use, others are difficult. The nursing staff has become experts at utilizing the system. I think it hinders communication between the physician and nurses.

The EHR automates access to information and has the potential to streamline the clinician's workflow; the EHR also can support other care-related activities directly or indirectly through various interfaces, including evidence-based decision support, quality management, and outcomes reporting (CMS, 2012). The EHR can improve patient care by: reducing the incidence of medical error by improving the accuracy and clarity of medical records; making the health information available; reducing duplication of tests; reducing delays in treatment; keeping patients well informed to make better decisions; and reducing medical errors by improving the accuracy and clarity of medical records (CMS, 2012). From the dyad's perspective, the EHR has intermittent functionality for patient care as some services are more useful than others and physicians do not share identical portals with nurses. Tenure doctors and nurses appreciated the face-to-face discussions required with the old medical charts that were scribed by each, which necessitated constant discussions between the physicians and nurses about the patient care plan.

The senior leaders and dyad partners did not have the opinion that the EHR influenced their decision to implement the PNDP leadership structure. PPT2 stated:

> No, in some ways, is a negative. If you're old enough to think back to writing in the chart, it forced more face-to-face communication on the unit and things can become more impersonal with the doctor in their workroom [working in Epic] and the nurse is on the floor. There's a lot of added efficiencies, too, but in terms of communication, it was a promise of the EMR [Electronic Medical Record], but there's nowhere in the EMR that nurses and doctors look at the same thing. Nurses, they look at everything in a different format, so I don't know what they see. They don't know what I see and it's not a very useful tool. Sticky notes are useful, but the hospitalists are probably the only ones that use them. Everybody has written in dramatically different ways now utilizing EPIC. That doesn't help with any kind of standardization or ability to properly diagnose patients. I think things need to be dictated in a standardized way.

We concluded that the senior leaders and dyad teams do not share the opinion that the economic factors of decreased reimbursement and increased incentive pay through the VBP program influenced the decision to implement the PNDP governance model. However, the senior leaders of the organization are acutely aware of the financial penalties that the CMS could levy against the organization if they did not improve the quality of care they provided. The economic pressures created by the federal regulators through the implementation of the ACA require healthcare organizations to focus on quality by incentivizing high-quality and low-cost performance and penalizing low-quality and high cost. Decreased reimbursements and increased incentive pay can influence the organization’s efforts to improve the quality of care on inpatient units. The senior leaders and dyad partners identified that it did influence the way care is

provided on the inpatient units through the reporting requirement for quality and safety indicators, which the EHR standardizes and provides a viable way to consolidate the reports and make them easily accessible. The COO stated, "The requirement to reporting quality safety indicators help drive efficiency and accuracy, which also helps reduce the likelihood of medical errors." This leads to the assumption that the VBP program supports quality initiatives, which leads to healthcare organizations becoming more efficient.

Quality Factors

Continuous improvement and hospital acquired infections. Improving quality in healthcare drew attention in the industry when federal agencies responsible for monitoring and distributing healthcare reimbursements through Medicare and Medicaid changed their basis of compensating healthcare organizations from quantitative to qualitative (Frist, 2016). Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvements in healthcare services and the health status of targeted patient groups (Department of Health and Human Services [DHS], 2011). Continuous improvement is an important quality initiative, which revolves around the coordination of care activities between physicians and nurses. Quality was another primary reason for the leadership structure change in the case organization, according to the CEO.

> Quality was the most important reason for implementing the dyad partnership on the inpatient units. The time was quickly coming when we knew we would be judged on our quality and potentially paid based on quality. Our patients were our most important customers and they had an expectation that when they came to our hospital, they would receive the best quality.

The CNO seconded this and stated:

> One of the expectations is that dyads review metrics for their unit and develop plans for metrics not meeting targets. Dashboards are reviewed at least weekly when senior leadership rounding takes place. There are quality and financial metrics that influence the way care is provide on inpatient units. The new leadership structure has supported monitoring these metrics by making them part of their standard meeting review. More of the dyads review errors regularly and understand the importance of looking at errors as system errors. Many of the dyads also participate in mini-root cause analysis [RCA] with each HAI such as CAUTI, CLABSI, and CDI.

The consensus from senior leaders was the quality issues identified by the CMS (2012) evolved around HAIs such as CAUTI, CLABSI, and CDI. Other notable conditions preventable in healthcare organizations are falls and surgical site infections. Federal regulating authorities establish the metrics that will be utilized to measure the aforementioned HAIs. All the senior leaders contribute the ability to properly manage the HAIs with the implementation of PNDP leadership structure through regularly scheduled unit meetings and leadership rounding programs.

Implementation: Continuous improvement and hospital acquired infections and the social capital element of action-oriented or use. Reducing HAI's is one of the key quality initiatives from the federal regulating agencies, CMS and DHS. The standardization of process and procedures established protocols for efficiently managing HAIs. The PNDP leaders utilized these protocols to strengthen the social capital element of action-oriented or use in their efforts to reduce HAI's by using the protocols to establish inpatient unit procedures and reviewing instances where the protocols were not adhered to by the unit staff. A primary responsibility of the dyad partners is to support each other when enforcing quality improvement initiatives with

the inpatient unit staff. Two leaders, carrying one voice with regards to quality improvement, have a positive impact on the unit's ability to achieve quality benchmark targets. NP2 stated:

> Huge. I mean, our unit is a complex unit. Sometimes you have to say, could this CLABSI have been prevented? Sometimes it's acknowledging, well, we can't take care of all sick people. Well, that's not an option. We're going to have those sorts of things. But having that relationship [PNDP], we have not had a CAUTI in 2018. In 2013 and 2014, we had nine CAUTIs. Partnering with PPT2, partnering with all the physicians, we have now gone two years without a CAUTI. That was really partnering with PPT2 coming to our unit council meetings every month, "Okay, how are we going to get better on I's and O's [patients' intakes and outtakes for laboratory testing and analysis], how are we going to get better on daily waits? How are we going to get better?" So, we can convince the physicians to get these Foleys [catheters] out, because we don't need the Foleys.

Another respondent, NPT3, explained:

> [An example] early on that we worked on together was rolling out the CDI algorithm, nurses were going to be doing something new. We were asking them to review an algorithm before testing and if it didn't meet the algorithm, we needed to have a conversation. Because sometimes the nurse had given stool softeners, and the physicians didn't know. Well, there was a lot of opportunity for there to be disagreements between physicians and nurses, because why are you [nurses] questioning my [doctors] order? So, it allowed us to work on that upfront and say, "Hey, this is a new process going out, how do we make sure that everybody is aware that this is an algorithm that is going to be evaluated?" And really approach it as a team rather than one group of individuals doing

it and then having pushback from another group.

In conclusion, the quality factors of continuous improvement and HAIs were a primary catalyst that led the case organization to change their leadership.

Implementation: How the Organization Changed Its Governance Structure

The senior leaders demonstrated their understanding of the need to implement the PNDP leadership structure. Figure 2.2 outlines the perspectives of the senior leaders and dyad teams on what needed to be accomplished to implement the program and the expected changes they should witness, such as these outlined by the CEO:

> Experience in inpatient units and the specialty of the units; outstanding leaders who are able to build teams and develop them. [Leaders] with an understanding of the basis of finances; quality management and lean six sigma was some of our management qualities we looked for when choosing leaders.

Training was an important component of implementing the dyad partnership on inpatient units. Previous training for the ambulatory dyads had formed a basis from which to start. The partners received financial and operations management training, quality improvement, team development, and leadership training. Monthly meetings were held for the first three years, which was later established as quarterly dyad training. The successful implementation required the engagement of all senior leaders. The CEO stated:

> All senior leaders were involved in the implementation, but the Chief of Staff, VP of Quality, and Nurse Executive were the most involved. They reached out to other organizations and gathered data; performed research of the structure; established protocols for the dyads to report up to senior leadership; and monitored the

implementation process.

Program implementation outcomes were measured by reviewing the changes in quality and improvement in inpatient unit communication. Quality and communication were identified as two of the primary catalysts to change the leadership structure on inpatient units. The CEO stated:

> The [quality safety indicators] drastically improved. The only way this was accomplished is through the enhanced communication of the dyad partners.

The CMO agreed, stating:

> The dyad teams have enhanced quality safety indicators, patient satisfaction, mortality rates, and readmission rates. The type of quality safety indicators is [sic] CAUTI, CLABSI, and CDI. Improvements in reduction of HAI's are some other notable changes since the dyad partnership implementation.

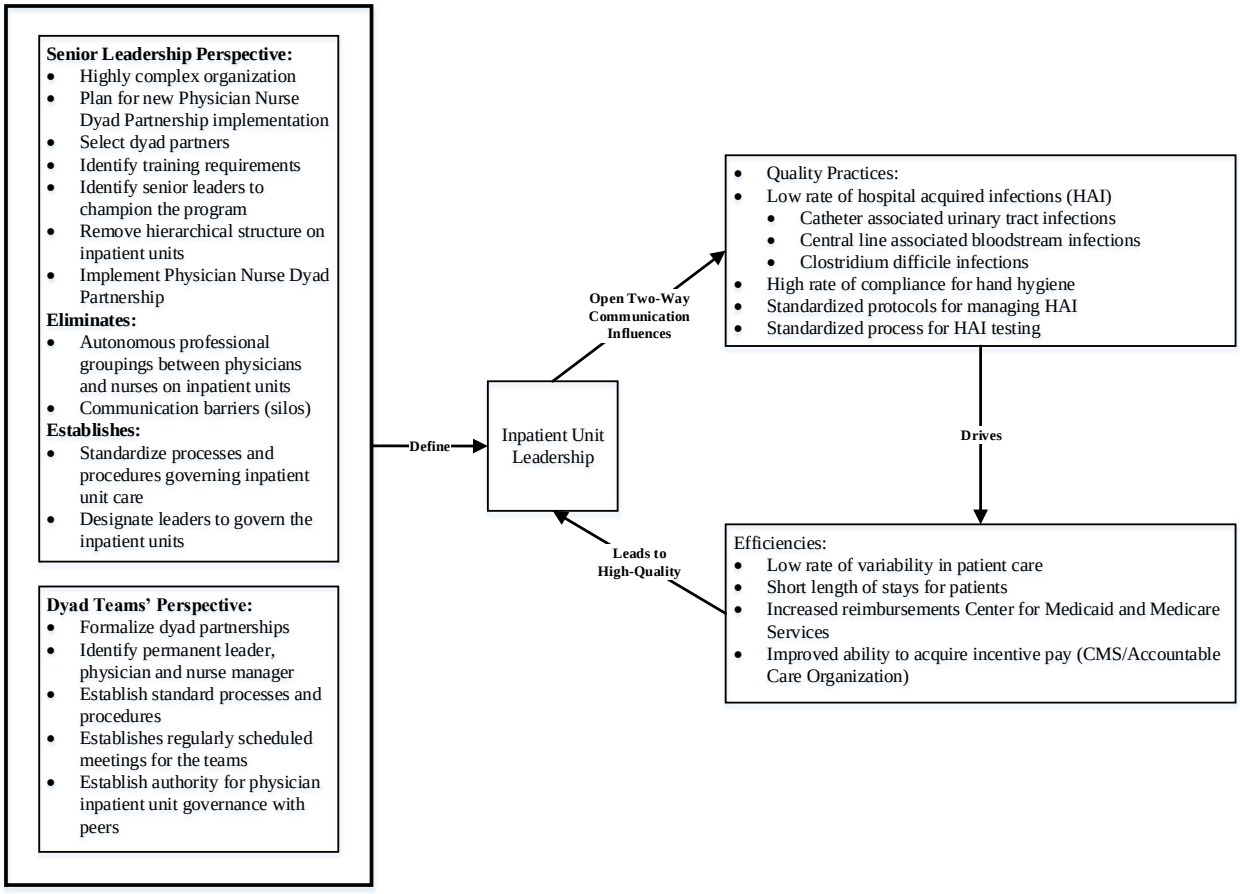


Figure 2.2. Inpatient unit operating environment, post-Physician Nurse Dyad Partnership implementation.

Lastly, we asked each senior leader if they were pleased with the results of the new leadership model. The CEO was highly satisfied; the CNE was incredibly pleased with the model but noted that some dyad partners were more engaged than others, which the system CMO would be addressing; the COO felt the organization was highly satisfied with the dyad partnership on the inpatient units and believed the structure promotes collaboration, comradery, and accountability from the physicians and nurses; the CMO was moderately satisfied and felt they could always do better; and last, the CNO stated, "Yes, but it is a journey and we are continually evaluating and improving."

The dyad partners were the key constituents of the new leadership structure. Their compliance to the program relies on their ability to trust the process. Trusting the process is indicative of their ability to, over time, create the necessary mutual trust, respect, and obligation for each other (Graen & Uhl-Bien, 1995). Their intention to align their professional agendas through the processes of accepting mutual necessity, daring to risk together, and constructing a shared responsibility, which is made possible by being credible, earning trust, and safeguarding respect, is fundamental to communicating effectively (Clausen et al., 2017). According to NPT1:

> I couldn't do this work without them. I could not do this work without a medical partner. It would be next to impossible, and especially at the director level. When I was a director, I felt like I was in step with the department chairs. It was a really good situation. Here, I'm very fortunate because I've had three different dyad partners, and they didn't stop being dyad partners because they didn't like the role, it was just because they had other opportunities to do more or different things in the organization. I've been lucky, because I've had really high level, very collaborative, respectful partners, so I've

had it easy, because it just works really well.

Similarly, PPT2 stated:

> Well, I think it's been a very good. We have gotten a lot done over the years and really moved the needle on specific quality initiatives. Ultimately what you're moving is the culture of the unit and the culture of working together as a team to achieve the same goals. I like working with NP2 because we've developed trust for over the years. If NP2 and I disagree or [NP2] does something I don't care for, I know it's still coming from good intent and I trust that so we can talk about it. Sometimes things are going great and sometimes they're not, but we really hope to make a difference.

NPT3 noted:

> I can say from my perspective, I would not want to be without a dyad partner. And I think it's also important that you have a really good communication structure set up. I've set up my own communication structure, so beyond our communication structure, you must have a partner. Now we're talking about onboarding new people and how we want to make sure that we're in sync with each other and not duplicating but making sure everything's covered. I think that's still evolving.

Finally, PPT3 stated, "Yeah, I think if you want to guarantee ineffectiveness, lack of communication, inability to affect change, yeah, don't have a dyad. It's a pretty good formula to do that".

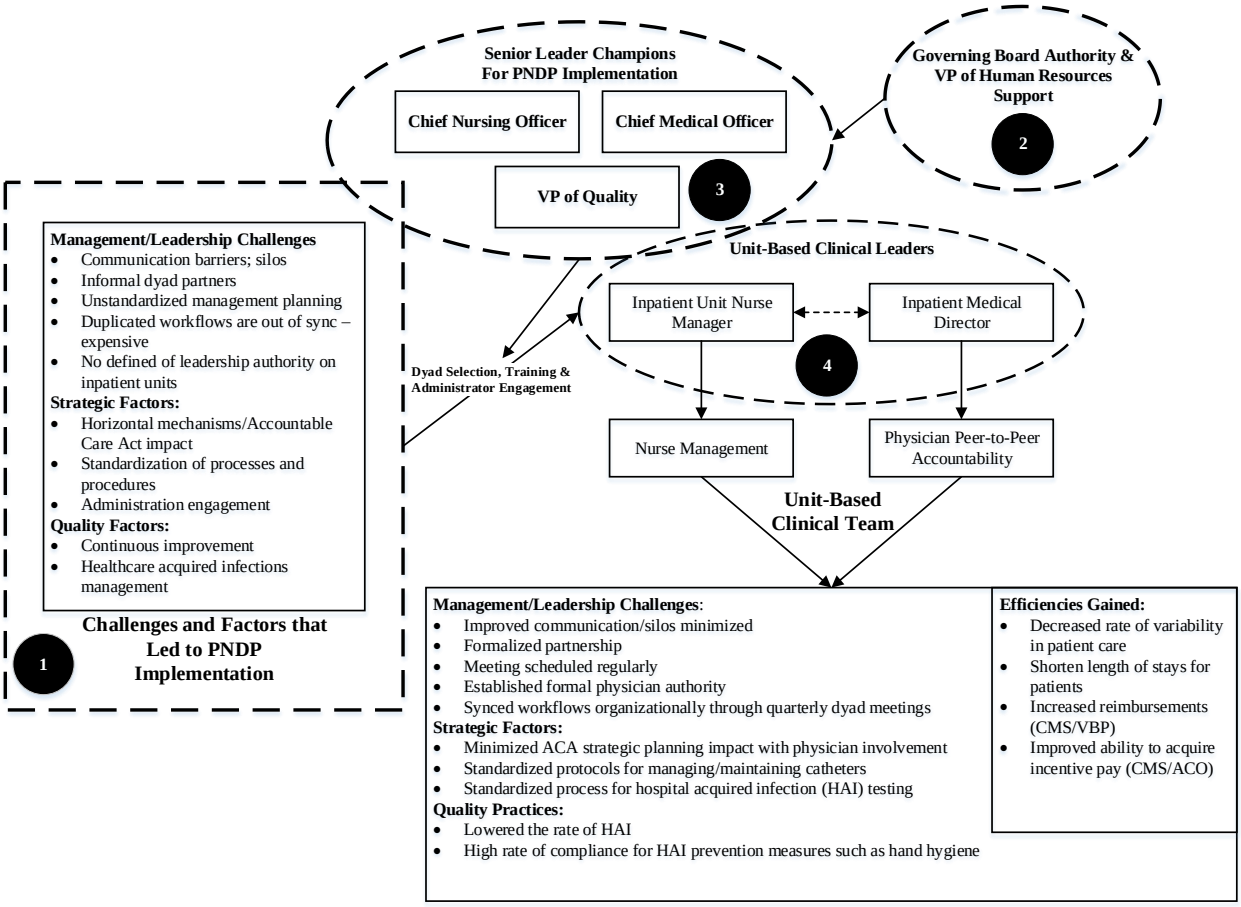


Figure 2.3. Physician Nurse Dyad Partnership implementation structural overlay.

Discussion and Implications

Physician Nurse Dyad Partnership Implementation

Findings from the case study identified why and how a healthcare organization changed their leadership to the PNDP governance structure. Figure 2.3 depicts a planning process for how the case organization implemented the PNDP leadership structure. First, (note the highlighted number) using information gathered from the semi-structured interviews, the senior leaders identified their management and leadership challenges and strategic and quality factors that led them to the decision to change their leadership structure. Second, the CEO and supporting staff briefed the organization's governing board authority for their approval and support to change the inpatient leadership structure. It is important to gain the board's approval and support when initiating a structural change across the organization that could possibly have a positive or negative impact on financial performance. Once the board voted their approval, the CEO engaged the vice president of human resources and the rest of the human resources department to assist the senior leaders with selecting the senior leader champions who led the implementation process—the CNO, CMO, and vice president of quality (VPQ). They also assisted the program champions in selecting the dyad partners and establishing the training program. Third, the program champions identified the dyad partners, established the training process and schedule, and engaged other administrative leaders to support the program. For the fourth and final step in the implementation process, the dyad partners (UBCLs) engaged their inpatient unit staff (UBCT). As the partnership matured over time (Graen & Uhl-Bien, 1995), the management and leadership challenges and strategic and quality factors improved, which positively impacted the organization's ability to capitalize on quality and efficiency goals.

The case organization's successful implementation of the program was facilitated by

selecting the right partners, providing the necessary training, establishing time for the partners to meet, establishing quarterly organization-wide dyad training to share best practices, and ensuring administrators were engaged with the program. The satisfaction expressed by the senior leaders and the admiration purveyed by each partner, for each other and the program, was an indicator of success for the PNDP implementation.

Why the Case Organization Implemented the Physician Nurse Dyad Partnership Governance Structure

The theoretical underpinnings for the PNDP leadership model are the LLX and LMX theories of governance and the intentional partnering theory. The aforementioned theories are predicated on mature partnerships that create mutual trust, respect, and obligation for the organizational goals through mutual necessity, shared responsibility, and daring to risk together, which is facilitated by communicating effectively (Clausen et al., 2017; Graen & Uhl-Bien, 1995; Tangirala et al., 2007). Furthermore, the social capital theory elements of structural and embeddedness, opportunity and accessibility, and action-oriented and use serve as the methodology base for the factors that the senior leaders and dyad partners determined were catalysts to change the leadership structure.

We determined that the senior leaders and dyad partners shared the opinion that three primary issues led to the change in leadership structure: the need to improve communication by removing professional silos between the physician and nurses; the strategic factors of horizontal mechanisms, the standardization of processes and procedures, and administration engagement; and the requirement from federal regulating agencies to improve quality.

Management and leadership challenges. The semi-structured interviews with the senior leaders and dyad partners exemplified how they experienced silo professional groupings, which

stifled communication and enhanced the complicated and complex healthcare environment—a primary reason for changing the leadership model in the inpatient units. The silos hindered the ability of inpatient unit leaders to strategically align inpatient unit goals with the goals of the organization. The inability to improve quality could have led to decreased reimbursements from the CMS, as the federal government changed the reimbursement structure to improve quality by placing a percentage of refunds in jeopardy.

The organization needed a multidisciplinary avenue for discussion and decision-making. Standardization of meeting agendas and expectations also became important criteria for changing the structure. The hierarchical leadership structure, experienced before the change, limited the nurses' ability to make independent decisions with regards to patient treatments. If it was not written in the doctor's orders, the nurses needed to receive confirmation before any testing or modifications to prescribed medications were administered. This could lead to a delay in prescribing the appropriate treatment for patients, which could prolong the healing process and increase patients' lengths of stay. When organizational structure factors support the care process and enable teamwork, nurses are more satisfied with their jobs and patients receive higher-quality care (Hughes, 2008). When teams function well and organization structure factors support their work, outcomes are better. The effectiveness of individuals and teamwork depend upon leadership, shared understanding of goals and individual roles, effective and frequent communication, having shared governance, and being empowered by the organization (Hughes, 2008). Implementing the PNDP leadership structure of governance supports organizational goals to achieve the work environment.

Strategic factors. The strategic factors of horizontal mechanisms, the standardization of processes and procedures, and administration engagement were other elements of influence to

change leadership structure, but the strategic factor of population health management, strategic imperative, and financials did not have an impact on the decision. The horizontal mechanisms consisted of the ACA of 2010 implementation, which influenced federal regulating agencies to change their method of reimbursing healthcare organizations on a basis of improved quality over the quantity of patients treated; federal regulating agencies such as the CMS and DHS creating programs such as the VBP, which rewards healthcare organizations with incentive payments for the quality of care provided; and the ACO sharing savings with the acute care facilities for becoming efficient in their ability to treat patients (CMS, 2012). These programs led healthcare leaders to realize they had to change their strategic plans to align with the strategic goals and objectives of the federal regulating agencies.

The standardization of processes and procedures aligned with the CMS goal to ensure quality indicators were met and maintained in hospitals. The requirements of this goal led the case organization to standardize processes and procedures across the organization for testing protocols of HAI's and the management and maintenance of catheters. The PNDP implementation supported improving this process by ensuring inpatient unit staff adhered to the standardized protocols.

Administration engagement across the organization is a necessity when a healthcare organization changes their leadership structure on inpatient units. Administrators establish the unit operating budgets, perform reconciliations, uphold or carry out disciplinary actions, establish incentives, and present rewards for personal achievements as well as for the units' ability to achieve performance benchmarks. Their support on inpatient units demonstrates senior leadership's commitment to the PNDP and the organization's commitment to improvement. The case organization recognized their inter-professional and intra-professional collaboration

through multidisciplinary teams that increased system resilience (Hughes, 2008). Changing their leadership structure to the PNDP model of governance supported the changes in their strategic plans by involving nurses and physicians in the planning process. It also supported the standardization of processes and procedures by ensuring the UBCTs adhered to the testing protocols for HAI's and catheter management. The administrators' engagement demonstrated the organization's commitment to change.

Quality factors. Most of the recent efforts to improve the quality of healthcare have aimed to reduce defects in the care of patients at a single site of care in all six dimensions identified by the Institute of Medicine: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (Berwick et al., 2008). The CMS (2012) established three linked goals to guide U.S. healthcare organizations in their efforts to improve the overall spectrum of healthcare called the triple Aim: improving the individual experience of care, improving the health of populations, and reducing the per capita cost of care for populations.

The case organization identified the quality factors of continuous improvement and HAIs as two of the primary catalysts that led the case organization to change their leadership. The quality and safety of care are associated with various factors within systems, organizations, and their work environments; the combinations of these influence the type of quality of safety and care provided (Hughes, 2008). Continuous improvement is an important quality initiative, which revolves around the coordination of care activities between physicians and nurses. The continuous improvement of quality in healthcare organizations depends on the ability to continuously improve on decreasing HAI's. When teams function well and organization structure factors support their work, outcomes are better; the effectiveness of individuals and teamwork depends upon leadership, shared understanding of goals and individual roles, effective and

frequent communication, shared governance, and empowerment by the organization (Hughes, 2008). Implementing the PNDP leadership structure establishes a method of monitoring the inpatient unit's staff performance to ensure they adhere to the standardized protocols for minimizing the HAI's and managing the use of catheters. This leads to an improvement in quality safety indicators, which positively impacts patient safety.

Economic factors. The senior leaders and dyad teams noted economic factors of decreased reimbursements and increased incentive pay did not influence their decision to implement the PNDP governance model. The federal programs that established the economic factors are the VBP and ACO. These programs link the decreased reimbursements and increased incentive pay to acute care organizations' ability to improve quality and increase efficiency in their methods of providing patient care. The senior leaders of the organization were acutely aware of the financial penalties that the CMS could levy against the organization if they did not improve the quality of care. They were also aware of the amount of shared savings they could achieve if they became more efficient in their patient care treatment by reducing length of stay for patients, minimizing readmissions, and decreasing radiological and laboratory testing orders. As noted by the senior leaders and dyad partners, "it [the shared savings program] did influence the way care is provided on the inpatient units through the reporting requirement for quality and safety indicators." This led to the assumption that the VBP program and ACO support quality initiatives, which drove the case healthcare organization to change their leadership structure to align with the quality initiatives. However, the economic factors alone did not influence the organization's decision to implement the PNDP model of governance.

Limitations

This study does have some limitations. First, the results are limited with regards to

generalizability across other healthcare organizations as this case study only pertains to one midwestern AMC. Second, the semi-structured interview process asks for information based on recollection of events. Although we triangulated the results from multiple sources, there may be gaps in the recollection of interviewees.

Implications for Research

In this study, we have contributed to the LLX and LMX theories of leadership, as well as supported the substantive theory of intentional partnering proposed by Clausen et al. (2017). We performed this task by identifying a case organization that had exemplary performance improving quality safety indicators after changing their leadership structure to the PNDP governance model on inpatient units (Yin, 2014). The healthcare organization transitioned from the hierarchical STS theory of leadership; we did not examine the total effect this leadership model had on the organization beyond the siloed autonomous groupings that had an adverse effect on organizational communication. A further understanding of an organization's effectiveness and ineffectiveness in providing quality healthcare pre-PNDP implementation would benefit future researchers.

A byproduct of the LLX and LMX governance model is the social capital created among the dyad partners and unit staff. Social capital is defined as resources embedded in a social structure, which are accessed or mobilized in purposive actions (Lin, 1999). This study demonstrated the purposive actions by each of the senior leaders and dyad teams, which led to strengthening the elements of the social capital as required by each factor. Extending this research to understand its effect on job satisfaction would be beneficial to healthcare organizations. Studies have demonstrated that improving collaboration and communication between nurses and physicians enhances satisfaction among nurses, physicians, and patients,

increases quality of care, and reduces costs (Vazirani, Hays, Shapiro, & Cowan, 2005). To contextualize those concepts in a study of this nature would be beneficial to healthcare organizations.

Clausen et al. (2017) established a theory of intentional partnering, which explains why and how nurse and physician managers align their professional agendas. More research on understanding how to build a functional professional partnership in a healthcare organization would benefit the industry. The limited generalizability of this study lends itself to future research; other studies could expand the scope beyond midwestern hospitals to national and international healthcare organizations. This research was based in a large, 600 plus beds AMC; research could also be expanded to rural healthcare facilities. Smaller, rural healthcare organizations experience leadership, quality, safety, and patient satisfaction problems the same as large AMCs.

One interesting discovery from this research is the overwhelming consensus from the senior leaders and dyad teams that the population health initiatives did not influence their decision to change their leadership structure on inpatient units. The ACA (2010) targets improving the health of populations by policy guidance for healthcare organizations to implement the ACO. Healthcare organizations across the country are implementing ACOs; however, the focus is not improving inpatient acute care quality but improving health and wellness of populations through the ambulatory care setting. This is understandable as the ambulatory setting is nestled in the communities of the populations they serve. The hospital's inpatient unit setting is for acute care. However, the total spectrum of care revolves around both inpatient and outpatient. PPT2 from dyad Team 2 noted:

> I think it's probably actually a missed opportunity. I think that the dyads know about a lot of patients and examples of admissions that could be managed better. The dyads really haven't been involved. A lot of the ACO work has been done on the outpatient side and with complex case management.

The senior leaders did acknowledge that population health quality initiatives did increase their focus on improving patient care quality by placing a percentage of their reimbursements and shared savings in jeopardy if quality benchmarks were not achieved. This transcends the organization's inpatient and outpatient services. Though the population health program did not influence their decision to change the leadership structure, it increased their acuity to improving quality.

While we did not develop formal propositions or mathematical models, future research could benefit from such formalization as well as drawing on recent advancements of the theory of intentional partnering established by Clausen et al. (2017). Some formal questions to be answered include: Can intentional partnering transcend healthcare organizations to other industries? How effective is intentional partnering in ambulatory or clinic settings? If intentional partnering is established and physicians receive additional pay for assuming a leadership role in the healthcare organization, should the nurse leaders receive additional compensation as well?

Implications for Practice

Since the publication of the Institute of Medicine's "To Err is Human" (Kohn, 2000), millions of dollars of research funds from the Agency of Healthcare Research and Quality and the Robert Wood Johnson Foundation have been devoted to building the evidence base in patient

safety research (Hughes, 2008). Federal regulating agencies have implemented programs to align with the efforts of the Institute of Medicine to improve the individual experience of care, improve the health of populations, and reduce the per capita cost of care for populations (Berwick et al., 2008). Healthcare organizations have been adjusting their strategic plans to align with the programs established by the federal regulating agencies to attain the benefits of the programs and avoid the penalties for not meeting the quality and patient experience benchmarks established by the programs. The case organization realized that to improve their strategic planning process they must change their leadership structure from one that is hierarchical in nature to a team-based approach. This study provided evidence-based solutions to assist healthcare organizations who are seeking a leadership structure that permeates communication boundaries between nurses and physicians, includes physicians in the strategic planning process, and earns their commitment to attaining the organization's goals and objectives.

This study is beneficial to any healthcare organization; size is not relevant. To gain an understanding of why and how a change in leadership governance transpired provides a conceptual basis to begin their transition. The perceptions of senior leaders guiding a healthcare organization to a successful leadership change, measured by improved quality safety indicators, can provide valuable insight to any healthcare organization seeking to improve performance. Healthcare organizations' governing boards are seeking transformational leaders to implement their strategic initiatives. The focus on transformational (and transactional) leadership were identified in a systematic review performed by Gilmartin and D'Aunno (2007); the authors examined healthcare leadership from 1989 to 2005, identifying studies in healthcare that provided strong support for transformational leadership theory that links to staff satisfaction, unit (or team) performance, organizational climate, and turnover intentions. Transformational leaders

implementing the PNDP governance structure can compel the organization to high levels of performance with regards to patient safety and job satisfaction.

In summary, this study bridges the gap between academia and practice by providing the theoretical basis for practical solutions of issues to resolve in healthcare. It provides valuable insight from senior leaders and dyad partners of what worked well and what did not work well. Hughes (2008) spoke of a healthcare environment where patients are cared for with complex interactions among many factors, such as the disease process itself, clinicians, technology, policies, procedures, and resources; when these complex factors interact, harmful and unanticipated outcomes can occur. Avoiding further harm to patients by any means necessary is top priority of the case organization. The CMO and CNO of the case organization were not willing to rest with their current success. They identified their satisfaction with the leadership change as a step in the right direction but acknowledged their organization can perform better. The CMO indicated being "Moderately satisfied. We can always do better. Our patients deserve excellence and we are not excellent, yet." The CNO stated, "Yes [to the program satisfaction], but it is a journey and we are continually evaluating and improving."

This is an example of transformational leaders implementing and championing a new leadership structure on inpatient units that will improve teamwork and communication. The healthcare industry is hungry for high reliable organizations that function daily under high levels of complexity and hazards with successful patient outcomes and efficiency (Hughes, 2008). Highly reliable organizations have procedures and attributes that make errors visible to those working in the system so that they can correct them before causing harm to others (Hughes, 2008). The case organization is a candidate for a highly reliable healthcare organization.

CHAPTER 4: CONCLUDING REMARKS

The U.S. healthcare system ranks first in cost per capital expenditure for hospital services and drugs, costing 2.7 times more than 11 other industrialized nations, according to the Organization for Economic Cooperation and Development (Davis et al., 2014). However, the U.S. healthcare system ranks last among the same industrialized nations in terms of quality, access, efficiency, equity, and outcomes (Davis et al., 2014). The poor quality of healthcare in the U.S. is indicated by the increasing number of deaths due to medical errors. In 2001, medical errors accounted for more than 98,000 deaths, the fourth leading cause behind motor vehicle accidents, breast cancer, and AIDS (Kohn, 2001). Fifteen years later, medical errors were the third leading cause of death, accounting for more than 250,000 deaths, the third leading cause behind heart disease and cancer (McMains, 2016). The federal government realized this phenomena must be addressed, enacting the Affordable Care Act of 2010 with an aim to resolve underlying problems in how healthcare is delivered and paid for by testing new models of healthcare delivery, shifting from a reimbursement system on the basis of volume of services provided to one based on the value of care, and investing in resources for system wide improvement (Abrams et al., 2015).

This dissertation sough to understand how one healthcare organization changed their leadership structure to enhance the ability to facilitate change across the system to support aligning strategic priorities with the goals and objectives of the federal regulating agencies. Historically, healthcare systems' governance structures have been organized in the hierarchical Sociotechnical systems (STS) theory of leadership, which governs on the basis of autonomous groups creating communication barriers amongst professionals (Niepce & Molleman, 1998). This is not conducive for highly complex and matrixed organizations such as healthcare.

The case organization implemented the physician-nurse dyad partnership on inpatient units to permeate communication barriers of the hierarchical STS governance structure. Dyad partnerships, which evolve from the VDL theory (Dansereau et al., 1975), are prevalent in all industries, such as manufacturing, technology, hospitality and customer service, and so forth. These partnerships focus on the leader and subordinate relationships and how they form in the work place. Graen and Uhl-Bein (1995) expanded the dyad partnership to the leader-member exchange theory of governance, which states that over time leader-subordinate relationships become one of high- or low-quality depending on the level of mutual trust, respect, and obligation created in the relationship. There have been many studies that review the effect of leader-member exchange (LMX) in healthcare (Brunetto et al., 2012; Colella & Varma, 2001; Davies et al., 2011; Flicek, 2012; Kacmar et al., 2003; Laschinger, Purdy, & Almost, 2007; Lindeke & Sieckert, 2005; Wong & Laschinger, 2013).

The case organization placed two leaders in the dyad partnership roles, the medical director (physician) and unit nursing director (nurse), on inpatient units, thereby creating the physician-nurse dyad partnership, which formed the unit-based clinical leaders. This is different from the LMX leader-subordinate theory as it created a peer-to-peer relationship that, in theory, is the leader-leader exchange model of governance. There has not been much literature that has reviewed this role in healthcare. Tangirala et al. (2007) performed a study with nurses to understand how leader-leader exchange (LLX) moderates LMX and found that when LLX is high, supervisor relationships with employees are more positive; LMX has a stronger positive effect, which leads to employees' attitudes toward the organization and customers being more positive. We found that the case organization implemented the LLX-physician nurse dyad partnership (PNDP) unit-based clinical leaders on inpatient units to manage LMX unit-based

clinical teams, which places the LLX-PNDP as the leader component and the LMX unit-based clinical team as the subordinate component. Over time, as the unit-based clinical leaders create the mutual trust, respect, and obligation between them and the unit-based clinical team, this leads to LLX-PNDP unit based clinical leaders (UBCL) of high quality, positively moderating the LMX UBCTs. Furthermore, the theory of intentional partnering states PNDPs can improve quality and safety of healthcare systems through mutual necessity, daring to risk together, and constructing a shared responsibility (Clausen et al., 2017). We triangulated three methods—two were quantitative and one was qualitative—of evaluating the case organization's historical data and performed semi-structured interviews with senior leaders and dyad teams, which presented the following results from the intentional partnering of the PNDPs.

Essay 1 utilized quantitative methods to evaluate two sets of secondary data to substantiate if the case organization's implementation of the PNDP governance structure on inpatient units impacted job satisfaction and patient safety. We utilized SmartPLS to evaluate the first data set, an employee engagement survey, through which the employees' perceptions of the PNDP governance structure was reviewed. We found the employees' perceptions (dependent variable) of the PNDP leadership teams had a positive impact on the social capital of care coordination, communication, teamwork, and trust (mediating variables), and the employees perceived that the mediating variables had a positive impact on job satisfaction and patient safety (independent variables), except for trust on patient safety. The control variable of years of service led to an insignificant indirect relationship with trust and patent safety. Other control variables were employees, managers, and physicians. Furthermore, the employees perceived that senior leadership and organization support served as antecedents to their perceptions. This confirms the first method of evaluation and apex in the triangulation.

The second method in Essay 1 consisted of a time series analysis. We utilized SPSS, Version 24, linear regression, to evaluate a historical data set of quality safety indicators to determine if catheter associated urinary tract infection (CAUTI), central line associated bloodstream infection (CLABSI), clostridium difficile infection (CDI) and the prevention measure of hand hygiene (HH), improved over time in correlation with the maturity of the PNDP implementation. Each quality safety indicator had compiled data of 40 to 92 points, which were months of observations, leading to over five years of information. We established a 48-month maturation period for the PNDP implementation, which occurred January 2012. We found significant support at the .000 level for the quality safety indicators that all significantly improved since the implementation of the PNDP governance structure on inpatient units. The maturation period was significantly supported, as evidenced in Figures 1.8, 1.10, 1.12, and 1.14, which depict the minimum number of non-compliant observations after 48 months of maturation. This confirmed the second method and apex in the triangulation.

The third method of analysis is found in Essay 2 of this dissertation. We sought to understand why the case organization decided to implement the PNDP governance model and how they proceeded to execute the implementation. This research involved a qualitative semi-structured interview empirical study. We did not develop a formal proposition or mathematical methods during this study. The case healthcare organization we selected was revelatory or exemplar in their implementation, sustaining, and execution of the PNDP on inpatient units, therefore allowing this study to establish a blueprint for other healthcare organizations to follow (Yin, 1984). Semi-structured interviews were conducted with the chief executive officer (CEO), chief nurse executive (CNE), chief operations officer (COO), chief medical officer (CMO), and chief nursing officer (CNO), all senior leaders who participated in the decision process to change

the structure, and three dyad partnership teams. We found that they decided to change their leadership model on inpatient units because of management and leadership challenges and strategic and quality factors. Management and leadership challenges consisted of permeating communication barriers, formalizing the partnership structure, standardizing management planning, and defining leadership authority on inpatient units. Strategic factors were horizontal mechanisms and the ACA impact; standardization of processes and procedures; and administration engagement. Quality factors were continuous improvement and healthcare acquired infection management. Figure 2.3 identifies how the case organization proceeded to execute the change.

An interesting finding of our research was the senior leadership and dyad teams did not have the opinion that population health management influenced their decision to execute the leadership structure change. This is a key component of change the ACA focuses on through the implementation of the accountable care organization (ACO). The senior leadership acknowledged that population health leads the team to focus on quality but felt it did not lead the organization to change the leadership structure.

All senior leaders were satisfied with the PNDP governance model, as they acknowledge without this change the communication barriers would stifle any progress towards improving quality, which has drastically improved since implementing the PNDP model of governance. The dyad teams were adamant that they would not want to be in a healthcare leadership role without a dyad partner. This confirms the third method and apex in the triangulation (see Figure 1.0).

The research question for this dissertation was: Do the changes implemented by healthcare organizations increase patient safety, quality, and job satisfaction? The significance of the three methods, thereby confirming the triangulation, answered the research question in the affirmative. Highly reliable healthcare organizations are trendsetting with proven methodologies for improving quality, job satisfaction, and patient safety (Pronovost & Hudson, 2012). The case organization demonstrated their ability to improve patient quality, safety, and job satisfaction, predicated with the change in how they take care of patents in the acute care setting. The organization would serve as an excellent candidate for a highly reliable healthcare organization.

REFERENCES

Abrams, M. K., Nuzum, R., Zezza, M. A., Ryan, J., Kiszla, J., & Guterman, S. (2015, May 7). The Affordable Care Act's Payment and Delivery System Reforms: A Progress Report at Five Years. Retrieved April 24, 2018, from http://www.commonwealthfund.org/publications/issue-briefs/2015/may/aca-payment-and-delivery-system-reforms-at-5-years

Adler, P., & Adler, P. (1995). Theory & methods -- Learning from Strangers: The Art and Method of Qualitative Interview Studies by Robert S. Weiss. *Contemporary Sociology*, *24*(3), 420.

Agar, M. (1980). *The professional stranger: an informal introduction to ethnography / Michael H. Agar*. New York: Academic Press.

Alameddine, M., Baroud, M., Kharroubi, S., Hamadeh, R., Ammar, W., Shoaib, H., & Khodr, H. (2017). Investigating the job satisfaction of healthcare providers at primary healthcare centres in Lebanon: A national cross- sectional study. *Health & Social Care in the Community*, *25*(6), 1805–1816. https://doi.org/10.1111/hsc.12454

Allison, Brooke B. (2016). An Examination o Leader-Member Exchange And Team Effectiveness.

Andrew M. Pettigrew. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organization Science*, *1*(3), 267–292. https://doi.org/10.1287/orsc.1.3.267

Bang, H. (2011). Leader-member exchange in nonprofit sport organizations. *Nonprofit Management & Leadership*, *22*(1), 85–105. https://doi.org/10.1002/nml.20042

Bazemore, Andrew, Green, Larry, Kamerow, Douglas, Nwando, Olayiwola, & Meyers, David. (2016). *Starfield Summit Report Team Based Primary Care*.

Bedell-Avers, K., Hunter, S. T., Angie, A. D., Eubanks, D. L., & Mumford, M. D. (2009). Charismatic, ideological, and pragmatic leaders: An examination of leader–leader interactions. *The Leadership Quarterly*, *20*(3), 299–315. https://doi.org/10.1016/j.leaqua.2009.03.014

Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The Triple Aim: Care, Health, And Cost. *Health Affairs*, *27*(3), 759–769. https://doi.org/10.1377/hlthaff.27.3.759

Blau, P. M. (1964). *Exchange and Power in Social Life*. Transaction Publishers.

Boies, K., & Howell, J. M. (2006). Leader–member exchange in teams: An examination of the interaction between relationship differentiation and mean LMX in explaining team-level outcomes. *The Leadership Quarterly*, *17*(3), 246–257. https://doi.org/10.1016/j.leaqua.2006.02.004

Brockwell, P. J., & Davis, R. A. (2013). *Time Series: Theory and Methods*. Springer Science & Business Media.

Brunetto, Y., Shacklock, K., Bartram, T., Leggat, S. G., Farr-Wharton, R., Stanton, P., & Casimir, G. (2012). Comparing the impact of leader–member exchange, psychological empowerment and affective commitment upon Australian public and private sector nurses: implications for retention. *International Journal of Human Resource Management*, *23*(11), 2238–2255. https://doi.org/10.1080/09585192.2011.616524

Brunetto, Y., Shacklock, K., Teo, S., Farr-Wharton, R., & Nelson, S. (2015). Nurses' supervisors, learning options and organisational commitment: Australia, Brazil and England. *Journal of Nursing Management*, *23*(8), 1029–1038. https://doi.org/10.1111/jonm.12249

Casimiro, L. M., Hall, P., Kuziemsky, C., O'Connor, M., & Varpio, L. (2015). Enhancing patient-engaged teamwork in healthcare: an observational case study. *Journal of Interprofessional Care, 29*(1), 55–61. https://doi.org/10.3109/13561820.2014.940038

CDC. (2011). Vital Signs: Central Line--Associated Blood Stream Infections --- United States, 2001, 2008, and 2009. Retrieved June 12, 2016, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6008a4.htm

Channing, A., & DeVore, S. D. (2009). The value of value-based purchasing. *Healthcare Financial Management: Journal Of The Healthcare Financial Management Association*, *63*(10), 40–42.

Christina M Surawicz, Lawrence J Brandt, David G Binion, Ashwin N Ananthakrishnan, Scott R Curry, Peter H Gilligan, … Brian S Zuckerbraun. (2013). Guidelines for Diagnosis, Treatment, and Prevention of Clostridium difficile Infections. *The American Journal of Gastroenterology*, *108*(4), 478–498. https://doi.org/10.1038/ajg.2013.4

Chullen, C. L., Dunford, B. B., Angermeier, I., Boss, R. W., & Boss, A. D. (2010). Minimizing deviant behavior in healthcare organizations: the effects of supportive leadership and job design. *Journal of Healthcare Management, 55*(6), 381-397 17p.

Clausen, C., Lavoie- Tremblay, M., Purden, M., Lamothe, L., Ezer, H., & Mcvey, L. (2017). Intentional partnering: a grounded theory study on developing effective partnerships among nurse and physician managers as they co- lead in an evolving healthcare system. *Journal of Advanced Nursing*, *73*(9), 2156–2166. https://doi.org/10.1111/jan.13290

Cliff, Barbara. (2012). Patient-Centered Care: The Role of Healthcare Leadership - ProQuest. Retrieved December 5, 2017, from

https://libproxy.uww.edu:3202/docview/1240824025?rfr_id=info%3Axri%2Fsid%3Aprimo

CMS. (2012a). Medical Reimbursement. Retrieved May 9, 2017, from http://www.healthcarebusinesstech.com/medical-reimbursement/

CMS. (2012b, March 26). Electronic Health Record. Retrieved October 1, 2018, from https://www.cms.gov/Medicare/E-Health/EHealthRecords/index.html

CMS. (2017a). Accountable Care Organizations (ACOs): General Information | Center for Medicare & Medicaid Innovation. Retrieved October 1, 2017, from https://innovation.cms.gov/initiatives/aco/

CMS. (2017b, October 31). Hospital Value-Based Purchasing. Retrieved April 24, 2018, from https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Hospital-Value-Based-Purchasing-.html

CNA. (2009). https://www.cna-aiic.ca/en. Retrieved August 21, 2018, from https://www.cna-aiic.ca/en

Coetzee, S. K., Klopper, H. C., Ellis, S. M., & Aiken, L. H. (2013). A tale of two systems—Nurses practice environment, well being, perceived quality of care and patient safety in private and public hospitals in South Africa: A questionnaire survey. *International Journal of Nursing Studies*, *50*(2), 162–173. https://doi.org/10.1016/j.ijnurstu.2012.11.002

Colella, A., & Varma, A. (2001). The Impact of Subordinate Disability on Leader-Member Exchange Relationships. *Academy of Management Journal*, *44*(2), 304–315. https://doi.org/10.2307/3069457

Cooper, R., & Foster, M. (1971). Sociotechnical systems. *American Psychologist*, *26*(5), 467–474. https://doi.org/10.1037/h0031539

Crosby, F. (1976). A model of egoistical relative deprivation. *Psychological Review*, *83*(2), 85–113. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0033-295X.83.2.85

Dansereau, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations. *Organizational Behavior and Human Performance*, *13*(1), 46–78. https://doi.org/10.1016/0030-5073(75)90005-7

Dansereau, F., Yammarino, F. J., & Markham, S. E. (1995). Introduction: Leadership: The multiple-level approaches. *The Leadership Quarterly*, *6*(3), 251–263. https://doi.org/10.1016/1048-9843(95)90009-8

Davies, A., Wong, C. A., & Laschinger, H. (2011). Nurses' participation in personal knowledge transfer: the role of leader-member exchange (LMX) and structural empowerment. *Journal of Nursing Management*, *19*(5), 632–643. https://doi.org/10.1111/j.1365-2834.2011.01269.x

Davis, Karen, Stremikis, Kristof, Squires, David, & Schoen, Cathy. (2014). Mirror, Mirror on the Wall, 2014 Update: How the U.S. Health Care System Compares Internationally. Retrieved June 10, 2016, from http://www.commonwealthfund.org/publications/fund-reports/2014/jun/mirror-mirror

Delobelle, P., Rawlinson, J. L., Ntuli, S., Malatsi, I., Decock, R., & Depoorter, A. M. (2011). Job satisfaction and turnover intent of primary healthcare nurses in rural South Africa: a questionnaire survey. *Journal of Advanced Nursing*, *67*(2), 371–383. https://doi.org/10.1111/j.1365-2648.2010.05496.x

Deluga, R. J. (1998). Leader-Member Exchange Quality and Effectiveness Ratings The Role of Subordinate-Supervisor Conscientiousness Similarity. *Group & Organization Management*, *23*(2), 189–216. https://doi.org/10.1177/1059601198232006

Dey, I. (1999). *Grounding grounded theory: guidelines for qualitative inquiry / Ian Dey.* San Diego: Academic Press.

DHS. (2011). Quality Improvement in Healthcare: U.S. Department of Healht and Human Services Health Resources and Services Administration.

Dill, Alexander. (2015). What is Social Capital 2015 - A Review. ResearchGate. Retrieved from https://www.hks.harvard.edu/programs/saguaro/about-social-capital

Doty, Fryer, & Audet. (2012). The Role of Care Coordinators in Improving Care Coordination: The Patient's Perspective. *JAMA.*

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A Meta-Analysis of Antecedents and Consequences of Leader-Member Exchange Integrating the Past With an Eye Toward the Future. *Journal of Management*, *38*(6), 1715–1759. https://doi.org/10.1177/0149206311415280

Eisenhardt, K. (1989). BUILDING THEORIES FROM CASE-STUDY RESEARCH. *Academy Of Management Review*, *14*(4), 532–550. https://doi.org/10.2307/258557

Faden, R. R., Beauchamp, T. L., & King, N. M. P. (1986). *A History and Theory of Informed Consent*. Oxford University Press.

Farquharson, B., Allan, J., Johnston, D., Johnston, M., Choudhary, C., & Jones, M. (2012). Stress amongst nurses working in a healthcare telephone- advice service: relationship with job satisfaction, intention to leave, sickness absence, and performance. *Journal of Advanced Nursing*, *68*(7), 1624–1635. https://doi.org/10.1111/j.1365-2648.2012.06006.x

Farr-Wharton, R., & Brunetto, Y. (2007). Organisational relationship quality and service employee acceptance of change in SMEs: A social exchange perspective. *Journal of Management and Organization*, *13*(2), 114–125. https://doi.org/10.5172/jmo.2007.13.2.114

Finn, R., Learmonth, M., & Reedy, P. (2010). Some unintended effects of teamwork in healthcare. *Social Science & Medicine*, *70*(8), 1148–1154. https://doi.org/10.1016/j.socscimed.2009.12.025

Firth-Cozens, J. (2004). Organisational trust: the keystone to patient safety. *Quality & Safety in Health Care*, *13*(1), 56–61. https://doi.org/10.1136/qshc.2003.007971

Fllcek, Cassandra L. (2012). Communication: A Dynamic Between Nurses and Physicians. *MEDSURG Nursing*.

Folger, R., Rosenfield, D. D., & Robinson, T. (1983). Relative deprivation and procedural justifications. *Journal of Personality and Social Psychology*, *45*(2), 268–273. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0022-3514.45.2.268

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.2307/3151312

Frampton, S., Guastello, S., & Brady, C. (2008). Patient-Centered Care Improvement Guide. | AHRQ Patient Safety Network. Retrieved December 7, 2017, from https://psnet.ahrq.gov/resources/resource/8661/patient-centered-care-improvement-guide

Frist, B. (2016). From Volume To Value: Achieving Bold Change In Our Healthcare Payment Systems. Retrieved September 11, 2017, from

http://www.forbes.com/sites/billfrist/2016/06/30/from-volume-to-value-achieving-bold-change-in-our-healthcare-payment-systems/

Gaal, S., van Den Hombergh, P., Verstappen, W., & Wensing, M. (2010). Patient safety features are more present in larger primary care practices. *Health Policy*, *97*(1), 87–91. https://doi.org/10.1016/j.healthpol.2010.03.007

Gafà, M., Fenech, A., Scerri, C., & Price, D. (2005). Teamwork in healthcare organisations. *Pharmacy Education*, *5*(2), 113–119. https://doi.org/10.1080/15602210500174474

Garson, D. G. (2016). *Partial Least Squares: Regression and Structural Equation Models*.

Gefen, D., & Straub, D. (2005). A Practical Guide To Factorial Validity Using PLS-Graph: Tutorial And Annotated Example. *Communications of the Association for Information Systems*, *16*(1). Retrieved from http://aisel.aisnet.org/cais/vol16/iss1/5

Gerstner, C. R., & Day, D. V. (1997). Meta-Analytic review of leader–member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, *82*(6), 827–844. https://doi.org/10.1037/0021-9010.82.6.827

Gibson, D., & Petrosko, J. (2014). Trust in leader and its effect on job satisfaction and intent to leave in a healthcare setting. *New Horizons in Adult Education & Human Resource Development*, *26*(3), 3–19. https://doi.org/10.1002/nha3.20069

Glaser, B. G., & Anselm L. Strauss author. (1967). *The discovery of grounded theory: strategies for qualitative research / Barney G. Glaser and Anselm L. Strauss.* Chicago: Aldine PubCo.

Goetze CM. (1999). *The relationships among inner and outer circle membership in nurse managers and leader-member exchange, self-esteem, and mutuality*. Adelphi University.

Goode, V., Crego, N., Cary, M. P., Thornlow, D., & Merwin, E. (2017). Improving Quality and Safety Through Use of Secondary Data: Methods Case Study. *Western Journal of Nursing Research*, *39*(11), 1477–1501. https://doi.org/10.1177/0193945916672449

Goold, S. D. (2002). Trust, Distrust and Trustworthiness. *Journal of General Internal Medicine*, *17*(1), 79–81. https://doi.org/10.1046/j.1525-1497.2002.11132.x

Gould, D., Gaze, S., Drey, N., & Cooper, T. (2017). Implementing clinical guidelines to prevent catheter-associated urinary tract infections and improve catheter care in nursing homes: Systematic review. *American Journal of Infection Control*, *45*(5), 471–476. https://doi.org/10.1016/j.ajic.2016.09.015

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*(2), 219–247. https://doi.org/10.1016/1048-9843(95)90036-5

Graen, G., Novak, M. A., & Sommerkamp, P. (1982). The effects of leader—member exchange and job design on productivity and satisfaction: Testing a dual attachment model. *Organizational Behavior and Human Performance*, *30*(1), 109–131. https://doi.org/10.1016/0030-5073(82)90236-7

Graen, G., & Schiemann, W. (1978). Leader–member agreement: A vertical dyad linkage approach. *Journal of Applied Psychology*, *63*(2), 206–212. https://doi.org/10.1037/0021-9010.63.2.206

Hagood, Charles. (2017). Standardization of the Health Care Environment. Retrieved October 1, 2018, from http://www.pressganey.com/blog/standardization-of-the-health-care-environment

Hall, M. A., Camacho, F., Dugan, E., & Balkrishnan, R. (2002). Trust in the Medical Profession: Conceptual and Measurement Issues. *Health Services Research*, *37*(5), 1419–1439. https://doi.org/10.1111/1475-6773.01070

Hemker, R. A., & Solomon, L. A. (2016). Building a Physician Culture for Healthcare Transformation: A Hospital's Leadership Challenge. *Frontiers Of Health Services Management*, *32*(3), 3–14.

Henderson, D. J., Liden, R. C., Glibkowski, B. C., & Chaudhry, A. (2009). LMX differentiation: A multilevel review and examination of its antecedents and outcomes. *The Leadership Quarterly*, *20*(4), 517–534. https://doi.org/10.1016/j.leaqua.2009.04.003

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A New Criterion for Accessing Discriminant Validity in Variance-based Structural Equation Modeling. *Journal of the Academy of Marketing Science*, (43(1)), 115–135.

Herdman, A. O., Yang, J., & Arthur, J. B. (2014). How Does Leader-Member Exchange Disparity Affect Teamwork Behavior and Effectiveness in Work Groups? The Moderating Role of Leader-Leader Exchange. *Journal of Management*. https://doi.org/10.1177/0149206314556315

Hooper, D. T., & Martin, R. (2008). Beyond personal Leader–Member Exchange (LMX) quality: The effects of perceived LMX variability on employee reactions. *The Leadership Quarterly*, *19*(1), 20–30. https://doi.org/10.1016/j.leaqua.2007.12.002

Hughes, R. G. (2008). Nurses at the "Sharp End" of Patient Care. In R. G. Hughes (Ed.), *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD): Agency for Healthcare Research and Quality (US). Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK2672/

Johnston, M. P. (2014). Secondary Data Analysis: A Method of which the Time Has Come. *Qualitative and Quantitative Methods in Libraries*, 8.

Joseph W. Grubbs. (2000). Cultural imperialism: A critical theory of interorganizational change - ProQuest. Retrieved November 29, 2015, from http://libproxy.uww.edu:3254/docview/197591014/fulltextPDF?accountid=14791

Juliet M. Corbin author, & Anselm L. Strauss author. (2015). *Basics of qualitative research: techniques and procedures for developing grounded theory / Juliet Corbin, International Institute for Qualitative Methodology, Anselm Strauss.* (Fourth edition.). Los Angeles: SAGE.

Kacmar, K. M., Witt, L. A., Zivnuska, S., & Gully, S. M. (2003). The interactive effect of leader-member exchange and communication frequency on performance ratings. *Journal of Applied Psychology*, *88*(4), 764–772. https://doi.org/10.1037/0021-9010.88.4.764

Käppeli, S. (1995). Interprofessional cooperation: why is partnership so difficult? *Patient Education and Counseling*, *26*(1), 251–256. https://doi.org/10.1016/0738-3991(95)00755-O

Keating, N. L., Green, D. C., Kao, A. C., Gazmararian, J. A., Wu, V. Y., & Cleary, P. D. (2002). How are patients' specific ambulatory care experiences related to trust, satisfaction, and considering changing physicians? *Journal of General Internal Medicine*, *17*(1), 29–39.

Kim, C. S., King, E., Stein, J., Robinson, E., Salameh, M., & O'Leary, K. J. (2014). Unit-based interprofessional leadership models in six US hospitals. *Journal of Hospital Medicine*, *9*(8), 545–550. https://doi.org/10.1002/jhm.2200

Kock, N. (2014). Common method bias in PLS-SEM: A full collinearity assessment approach. *Internation Journal of E-Collaboration, 11(4),* 1–10.

Kock, N., & Lynn, G. (2012). Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations. *Journal of the Association for Information Systems*, *13*(7). Retrieved from http://aisel.aisnet.org/jais/vol13/iss7/2

Kohn, L. T. (2001). *To Err Is Human: Building a Safer Health System*. Washington, DC, USA: National Academies Press.

Laschinger, H. K. S., Finegan, J., & Wilk, P. (2011). Abstract from the Academy of Management. *Journal of Healthcare Management*, *56*(1), 81–81.

Laschinger, H. K. S., Purdy, N., & Almost, J. (2007). The impact of leader-member exchange quality, empowerment, and core self-evaluation on nurse manager's job satisfaction. *The Journal Of Nursing Administration*, *37*(5), 221–229.

LeoRomero. (2015, December 3). @ThomasSander Talked to an editor who said I gave your definition undue weight; she/s right, but let it stay for nowpic.twitter.com/XtKtr5IdUk [Tweet]. Retrieved January 20, 2019, from https://twitter.com/LeoRomero/status/672444058430672896

Levina, N., & Ross, J. (2003). From the vendor's perspective: Exploring the value proposition in information technology outsourcing(1)(2). *MIS Quarterly*, *27*(3), 331–364. https://doi.org/10.2307/30036537

Liden, R. C., Sparrowe, R. T., & Wayne, S. J. (1997). Leader-member exchange theory: The past and potential for the future. *ResearchGate*, *15*. Retrieved from https://www.researchgate.net/publication/232504779_Leader-member_exchange_theory_The_past_and_potential_for_the_future

Lindeke LL, & Sieckert AM. (2005). Nurse-physician workplace collaboration. *Online Journal of Issues in Nursing*, *10*(1), 11p-11p 1p.

Lindsey, Julianna. (2015). Implementing Physician Value-Based Purchasing in Your Practice: HM15 Session Analysis. Retrieved May 9, 2017, from http://www.the-hospitalist.org/hospitalist/article/122457/health-policy/implementing-physician-value-based-purchasing-your-practice

Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, *4*(4), 309–336. https://doi.org/10.1016/0030-5073(69)90013-0

López, A. X. S. P.-S. (2013, December 11). Advantages and disadvantages of secondary data collection nowadays. Retrieved April 10, 2018, from https://xaperezsindin.com/2013/12/11/advantages-and-disadvantages-of-secondary-data-collection/

Maslyn, J. M., & Uhl-Bien, M. (2001). Leader–member exchange and its dimensions: Effects of self-effort and other's effort on relationship quality. *Journal of Applied Psychology*, *86*(4), 697–708. https://doi.org/10.1037/0021-9010.86.4.697

McDonald, Kathryn, Schultz, Ellen, Albin, Lauren, Pineda, Noelle, Lonhart, Julia, Sundaram, Vandana, … Davies, Sheryl. (2014). *Care Coordination Measures Atlas*.

McMains, Vanessa. (2016). Johns Hopkins study suggests medical errors are third-leading cause of death in U.S. Retrieved April 9, 2017, from http://hub.jhu.edu/2016/05/03/medical-errors-third-leading-cause-of-death/

Menz, M., & Menz, M. (201201). Functional Top Management Team Members. *Journal of Management*, *38*(1), 45–80.

Merriam-Webster Dictionary. (1828). Definition of TEAMWORK. Retrieved April 5, 2018, from https://www.merriam-webster.com/dictionary/teamwork

Mundongo, T. H., Ditend, Y. G., Vancaillie, D., & Malonga, K. F. (2014). The assessment of job satisfaction for the healthcare providers in university clinics of Lubumbashi, Democratic Republic of Congo. *The Pan African Medical Journal*, *19*, 265. https://doi.org/10.11604/pamj.2014.19.265.3138

Munro, Dan. (2015). U.S. Healthcare Spending On Track To Hit $10,000 Per Person This Year. Retrieved September 11, 2017, from https://www.forbes.com/sites/danmunro/2015/01/04/u-s-healthcare-spending-on-track-to-hit-10000-per-person-this-year/#763c970d6dea

Myers, S. A. . (2006). Using Leader-Member Exchange Theory to Explain Students' Motives to Communicate. *Communication Quarterly*, *54*(3), 293–304.

Naidoo, L., Scherbaum, C., Goldstein, H., & Graen, G. (2011). A Longitudinal Examination of the Effects of LMX, Ability, and Differentiation on Team Performance. *Journal of Business & Psychology*, *26*(3), 347–357. https://doi.org/10.1007/s10869-010-9193-2

Niepce, W., & Molleman, E. (1998). Work Design Issues in Lean Production from a Sociotechnical Systems Perspective: Neo-Taylorism or the Next Step in Sociotechnical Design? *Human Relations*, *51*(3), 259–287. https://doi.org/10.1023/A:1016992403973

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. *Journal of Organizational Behavior*, *31*(2/3), 463–479.

O'Leary, K. J., Wayne, D. B., Haviley, C., Slade, M. E., Lee, J., & Williams, M. V. (2010). Improving teamwork: impact of structured interdisciplinary rounds on a medical teaching unit. *Journal Of General Internal Medicine*, *25*(8), 826–832. https://doi.org/10.1007/s11606-010-1345-6

Orlikowski, W. J. (1993). CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development. *MIS Quarterly*, *17*(3), 309–340. https://doi.org/10.2307/249774

Portela Romero, M., Bugarín González, R., & Rodríguez Calvo, M. S. (2017). La cultura de seguridad del paciente en los médicos internos residentes de Medicina Familiar y Comunitaria de Galicia. *Atención Primaria*, *49*(6), 343–350. https://doi.org/10.1016/j.aprim.2016.09.009

Pronovost, P. J., & Hudson, D. W. (2012). Improving healthcare quality through organisational peer-to-peer assessment: lessons from the nuclear power industry. *BMJ Qual Saf*, *21*(10), 872–875. https://doi.org/10.1136/bmjqs-2011-000470

Rees, Susan. (2015). *Unit Based Leadership Teams; UW Health at the University of Wisconsin Hospital and Clinics.*

Resar, R., Griffin, FA., Haraden, C., & Nolan, TW. (2012). Institute for Healthcare Improvement: Using Care Bundles to Improve Health Care Quality. Retrieved August 20, 2018, from http://www.ihi.org:80/resources/Pages/IHIWhitePapers/UsingCareBundles.aspx

Rubin, H. J. (2012). *Qualitative interviewing: the art of hearing data / Herbert J. Rubin, Irene S. Rubin.* (Third edition.). Thousand Oaks, Calif: SAGE.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, *5*(1), 105–115. https://doi.org/10.1016/j.jfbs.2014.01.002

Scott, R. A., Oman, K. S., Makic, M. B. F., Fink, R. M., Hulett, T. M., Braaten, J. S., … Wald, H. L. (2014). Reducing indwelling urinary catheter use in the emergency department: a successful quality-improvement initiative. *Journal of Emergency Nursing: JEN: Official Publication of the Emergency Department Nurses Association*, *40*(3), 237–244; quiz 293. https://doi.org/10.1016/j.jen.2012.07.022

Simmel, G., & Hughes, E. C. (1949). The Sociology of Sociability. *American Journal of Sociology*, *55*(3), 254–261.

Song, H., Ryan, M., Tendulkar, S. A., Chien, A. T., Fisher, J., Martin, J., … Singer, S. J. (2015). Team Dynamics, Clinical Work Satisfaction, and Care Coordination Between Primary Care Providers. *Academy of Management Proceedings*, *2015*(1), 13538. https://doi.org/10.5465/AMBPP.2015.71

Souba, W. W. (2004). New ways of understanding and accomplishing leadership in academic medicine. *Journal of Surgical Research*, *117*(2), 177–186. https://doi.org/10.1016/j.jss.2004.01.020

Tangirala, S., Green, S. G., & Ramanujam, R. (2007). In the shadow of the boss's boss: Effects of supervisors' upward exchange relationships on employees. *Journal of Applied Psychology*, *92*(2), 309–320. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/0021-9010.92.2.309

The Commonwealth Fund. (2017). THE AFFORDABLE CARE ACT AT FIVE YEARS. Retrieved April 24, 2018, from http://www.commonwealthfund.org/ACAat5-delivery-reform

Trandel, Elizabeth. (2015). Advocating for dyad leadership at your organization? Use our slides. Retrieved July 9, 2016, from https://www.advisory.com/research/physician-executive-council/prescription-for-change/2015/03/dyad-leadership-slides

Tsai, T. C., Orav, E. J., & Jha, A. K. (2015). Patient satisfaction and quality of surgical care in US hospitals. *Annals of Surgery*, *261*(1), 2–8. https://doi.org/10.1097/SLA.0000000000000765

Turner, Ralph. Leader-Leader Exchange & Leader-Member Exchange in Healthcare: Dyad Partnerships on Inpatient Units, Sustainable Results in Patient Safety and Job Satisfaction (2018).

Vazirani, S., Hays, R. D., Shapiro, M. F., & Cowan, M. (2005). Effect of a Multidisciplinary Intervention on Communication and Collaboration Among Physicians and Nurses. *American Journal of Critical Care*, *14*(1), 71–77.

Vecchio, R. P. (1985). Predicting Employee Turnover from Leader-Member Exchange: A Failure to Replicate. *Academy of Management Journal*, *28*(2), 478–485. https://doi.org/10.2307/256213

Visser, A., & Erby, L. (2014). Communication in healthcare: Lessons from diversity. *Patient Education and Counseling*, *96*(3), 271–272. https://doi.org/10.1016/j.pec.2014.08.001

Webster Dictionary. (1828). Definition of TRUST. Retrieved April 5, 2018, from https://www.merriam-webster.com/dictionary/trust

Weeks, W. B., & Wadsworth, E. B. (2013). Addressing healthcare complexity. *Healthcare Financial Management : Journal of the Healthcare Financial Management Association*, *67*(1), 120–122.

West, Michael, Amit, Kirsten, Loewenthal, Lola, Eckert, Regina, West. Thomas, & Lee, Allan. (2015). *Leadership and leadership development in health care*. Retrieved from https://www.kingsfund.org.uk/publications/leadership-and-leadership-development-health-care

Wong, C. A., & Laschinger, H. K. S. (2013). Authentic leadership, performance, and job satisfaction: the mediating role of empowerment. *Journal of Advanced Nursing*, *69*(4), 947–959. https://doi.org/10.1111/j.1365-2648.2012.06089.x

Yin, R. K. (1984). *Case study research: design and methods / Robert K. Yin ; foreword by Donald T. Campbell.* Beverly Hills, Calif: Sage Publications.

Yin, R. K. (2014). *Case study research: design and methods / Robert K. Yin.* (Fifth edition.). Los Angeles: SAGE.

Zhang, X., & Fang, P. (2016). Job satisfaction of village doctors during the new healthcare reforms in China. *Australian Health Review*, *40*(2), 225–233. https://doi.org/10.1071/AH15205

Zhou, L., Wang, M., Chen, G., & Shi, J. (2012). Supervisors' upward exchange relationships and subordinate outcomes: Testing the multilevel mediation role of empowerment. *Journal of Applied Psychology*, *97*(3), 668–680. http://dx.doi.org.libproxy.uww.edu:2048/10.1037/a0026305

Zhu, B., Gao, H., Zhou, X., & Huang, J. (2018). Anesthesia Quality and Patient Safety in China: A Survey. *American Journal of Medical Quality*, *33*(1), 93–99. https://doi.org/10.1177/1062860617695615

APPENDIX

Structured Interview Excerpts

What were the primary reasons for changing the leadership structure?

Silo mindset and partnership was a primary reason as stated by the following:

CNE: Often times, it was a siloed process [between the nurses and physicians when making decisions on patient care] and those proposing standards were not always engaging the right stakeholders. We needed a venue—multidisciplinary for discussion and decision making.

CMO: The need to break down silos on inpatient units led to the change in structure.

COO: The issues with the previous structure was that the management was siloed and disjointed. Physicians and nurses seemed to be constantly at odds when trying to provide patient care. This was very frustrating for the providers and patients. It was also very expensive for the organization as workflows were duplicated and out of sync.

PPT3: At a large AMC they're very complex organizations. I hadn't worked in one of this size and complexity before, so to partner with NPT3 and with the previous nurse director I found the fact that I got to partner with my natural counterpart in leadership. Very helpful, just for an educational standpoint, to give me guidelines on policy, how things work, and the structure of things. It helped me, I think, become more effective at my job and know how to navigate the institution.

PPT3: I think I relied on them [nurses] for a lot of guidance, that would be one. To have that natural communication, to know how actions on one side affect the actions on the other and vice versa, really, there's no other avenue to create that form of communication or knowledge acquisition than with [NPT3]; [NPT3] sees everything that happens…. I know as much as I can about the doctors I work with. I have much more limited information, but to share that between

us, it gives you much more perspective and knowledge of not only what works well in a unit, [but also] what's not working well. NPT3 brings stuff to me that maybe the physicians are doing that aren't really working well for the nurses, and a lot of times that can be around patient safety issues; nurses are seeing actions or systems that physicians are doing which they think are not in the best patient's interest. And, I would say vice versa, although I think it's less common that we notice something that nurses are doing that needs correction. But what is common, we'll come up with ways which we want to change care, and I think going to nurses, getting their buy-in is invaluable. Having regular meetings, if we didn't have that, the way life goes, we wouldn't meet. It would be a lot of hallway conversations. You probably put out fires rather than think strategically. It'd be more reactive than proactive, and I think the more we sit and talk, we can think through solutions or things that we want to change.

NPT3: I would agree on everything you [PPT3] said. I think it really gives us structure or a venue to bring new initiatives. I think the success of implementing new initiatives is so interconnected between our disciplines. There was a lot of opportunity for there to be disagreements between physicians and nurses because the physicians would ask, "Why are you questioning my order?" It allowed us to work on that upfront and say, "Hey, this is a new process going out. This is how we make sure that everybody is aware that this is an algorithm that is going to be evaluated." We approach it as a team rather than one group of individuals doing it and then having pushback from another group.

What were the horizontal mechanisms?

PPT3: We had to think about the implications [for] each of our groups, exchange those perceptions, and then champion [those] amongst each other. We had to be organized and have our own stuff ready. That kind of collaboration, to initiate something which affected both

groups, required close communication between nurses and doctors.

PPT2: The reporting of our metrics, [required by the ACA] was big. Everyone saw that when we had negative reports about our metrics, it became a high priority for the organization. Yes, when CMS started reporting them [through the ACA enactment] nationally and everybody knew where we were at, that was one of the things that jump-started the dyad program. Also, the financial incentives shifted where the institution was investing resources. The reporting of metrics that came along with the Affordable Care Act. I think that there has been an increasing push towards an understanding of capitated care. The Affordable Care Act probably moved the needle in that direction, so people know what that means financially for the institution.

NPT3: I had never thought of it that way.

PPT3: Yes, I do think that they view the dyad as a potent vehicle for championing efficiency, delivering cost savings, from waste walks to improvement boards. I think they see it as a tool. I don't mean a tool as in they are manipulating us, but I think they see it as an effective method to achieving cost savings and efficiencies.

Implementation: Horizontal Mechanisms and the Social Capital Element of Action-Oriented or Use

NP2: I would have to echo that because there's a lot of repeat offenders [readmitted patients] that we could better manage with our outpatient program or a more complex plan where it's more streamlined when the patient is admitted. I could see it really working well. People are admitted, discharged, and readmitted for a different illness and we must reinvent the wheel, start all over again. The growth of the population led us to start meeting and discussing how we were going to discharge the patients.

PPT2: We started with one and now we are up to six scheduled meetings to discuss patient discharge.

NP2: Just having that, you must have leaders on the floor, we must be constantly be looking at our overall span of control.

Standardization of Processes and Procedures

CMO: We as a healthcare organization needed to improve team-based care and communication, which would improve processes and procedures. The new leadership structure supports these efforts as they are instrumental with emphasizing the change and supporting leadership rounding.

Administration Engagement

CNE: We have an executive sponsor and we openly discuss stakeholders. The environment was sometimes hostile when we first started with a we-versus-them mentality. Now, there is much more focus on alignment and open dialogue than before.

COO: Administrators are engaged in the new leadership model. They have supported this model by participating in the committees to advance their strategic goals and by conducting morning huddles with the clinical teams.

CNO: Our leaders [administrators] know about the dyad structure and use this group to move work forward. Several have come to the dyad meetings, quarterly, to present important information or ask for input. There have been differences in administrative engagement. We are now clear on what we expect from the dyads and can push the work and decision making down to that level.

Decreased Reimbursements and Increased Incentive Pay

CNE: The VBP program put the spotlight on the need to focus on cost, quality, and care—the

triple aim. One could not exist at the expense of the other. However, I do not think it was a motivator in the decision to implement the dyad leadership program.

COO: VBP has influenced the way care is provided on the inpatient units by placing a greater priority on expenses. We are constantly trying to find more efficient ways to staff units and save medical supplies. It wasn't part of the planning process for the leadership change.

CNO: The shared savings program [VBP] has influenced the way care is provided on the inpatient units by meeting metrics, which are reviewed during the standard meetings as well. This was an influence on quality the VBP had, but it was not considered when implementing the dyad partnership.

NPT1: I think it probably did, because if your strategy is to improve the health of the populations we serve and if it's to be more efficient as we do that, then having partnerships where you build collaboration and really that interdisciplinary understanding of each other, I would think strategically it make a lot of sense, but I am not sure it was part of the thought process when implementing the partnership model.

Decreased Reimbursements and Increased Incentive Pay

CEO: A common computerized EHR now means all members of the care team have access to information about the patient. No longer do members of the team need to make telephone calls to others. There is greater coordination and the [patient care] handoffs are made easier.

CNE: The EHR has improved access from a system perspective, but it has essentially become a CYA [cover your authority] repository of information at the local level. It does not tell the whole picture. It is set up by discipline, not by an amalgamation of what's occurring across all disciplines.

Continuous Improvement and Hospital Acquired Infections

CMO: Quality was the most important reason for implementing the dyad partnership on the inpatient units.

CNO: I would say the quality considerations were by far the strongest driver in the decision to implement the dyad partnership. To meet quality targets, we knew we needed to get the MDs' on board, and this was one of our ways to do that.

COO: Physician-nurse teamwork is critical in providing patient-centered, high-quality care. Both must have equal desire to achieve quality through best practice and common-sense approaches that embrace continuous improvement.

CNE: Nursing was trying to improve quality and the physicians weren't at the table. It was difficult to move initiatives forward without buy-in from the attendees and medical residents. We weren't improving quality fast enough in the siloed model. CMS was penalizing organizations financially who were not above benchmark. We were harming patients.

CEO: Most of the improvement initiatives, during the time I observed, were around work environment, coordination of care, and improved communication. With this structure, the foundation was built upon, which to thrive in a managed care environment. There was enhanced support for medical error and near misses reporting, both because of the structure but also the anonymous report to a centralized repository. Medical errors and near-misses were opportunities for improvement, so we enhanced transparency, while at the same time keeping the reporting anonymous.

CNE: Improvement initiatives that have been applied since the dyad implementation are: the organizational way, following the Virginia Mason's map for improvement which led to a

different root cause analysis process—more timely and actionable; we reconfigured the Patient Safety Council established quarterly dyad meetings; implemented QlikView data sharing program; established algorithms for CDI, CAUTI, CLABSI, falls, and surgical site incisions to decrease errors in care; and improvement projects. They have improved the quality of care. The metrics are examined by all team members and corrective action plans are interprofessional.

CMO: Some improvement initiatives are: greater attention to HH and prevention of HAI's [and] increasing the user of order sets, which are protocols for physicians ordering test to see if patients have a HAI when symptoms present themselves. The dyads have supported this effort. Metrics that influence the way care is provided on the inpatient unit are length of stay, incident complications, and patient satisfaction. The dyad has supported this through dyad meetings and scorecard monitoring.

PPT2: A lot of these quality measures are asking for reasonably dramatic change in behavior of doctors and nurses. The nurses love PICC [peripherally inserted central catheter] lines because they can draw [the patient's] blood from them and they can do everything, it's the greatest thing. When I trained, PICC line and Foley were the greatest thing [sic] since sliced bread. To make that change at unit level, I think it really required getting nursing to own it. Because nursing is at the bedside all the time. Nursing sees all the orders, nursing must put in the Foley. But for nursing to own it, they needed support from the physicians that they would listen to the nurses, learn from the guidelines that are put together, and that took some time. That took some of the leadership at the higher levels making clear how serious this was and then a lot of the leadership on the unit level. Then to sustain it, again, it takes that nursing ownership of it. A new doctor comes in who comes from somewhere where this isn't done, they don't get onboarding necessarily to learn the policies and procedures on the inpatient units. But you've got that back

stop from nursing. In a respectful, collaborative way, they question the need for catheters, but if it becomes a more difficult conversation then you can bring in the physician dyad.

PPT3: We come up with care initiatives, care delivery ideas that's [sic] reflective of medical literature, and to implement them you need a natural partner. You can't just willy-nilly amend it on one side. It [change] can't just come from one group without the collaboration of the other. I think it's just a nice engine for a coherent, organized change, and I think we look to each other for that. We are really kicking it up a notch lately with this improvement board that you [NPT3] introduced.

Implementation: How the Organization Changed Its Governance Structure

CNE: It started in primary care and we learned a lot from the structure before expanding it to inpatient care. The chosen leaders were the assigned nursing leaders and medical directors.

CMO: We worked to find good management partners.

CNO: The ambulatory dyads were started first, so this structure was a natural next step for us. The MD in Quality was a strong proponent for the dyad structure and led this work. The current nurse managers and medical directors of the inpatient units were chosen to fill roles as dyad partners or an interested physician.

CEO and COO: We made sure the partners had financial management, operations management, quality improvement, team development, and leadership training.

CNE and CNO: Monthly meetings were held for the first three years, so all dyads were on the same page. The meeting has since gone to quarterly.

CMO: Dyad training sessions and quarterly meetings to discuss best practices on inpatient units.

CNE and CNO: The dyad model was approved by the CEO. The accountable VP's for the

specific areas then assured that the dyads were getting the data and information they needed for their improvement work. The CMO, VP of nursing for inpatient, and the VP of Quality set the agenda for the meetings and educational sessions.

CMO: The VP of Quality and CNO have been intimately involved [selected champions of the program] and pulled in other senior leaders around the facility to support their efforts. They were involved by leading the training sessions, rounding on the patient units daily, and regularly meeting with the dyads.

CNE: We have made significant improvements in all metrics except surgical site infections. This is a strategic area of focus for the year. We will be successful with the already proven communication between the dyads.

COO: I can attest to the improvement of our quality safety indicators over the past four to five years; they have all improved. This would not have been possible without the improved leadership teams.

CNO: Quality, patient experience, and financial metrics for the inpatient units have improved. I credit this to the dyad teams.