NATIONAL INQUIRY OF CLINICAL NURSE LEADERSHIP IN THE OPERATING ROOM ENVIRONMENT

By

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Abstract

This study describes the clinical nurse leadership skills of operating room nurses. Despite intense focus on patient safety cultures, two of the top ten reported sentinel events to the Joint Commission from 2012 – 2014 occurred in the surgical environment: unintended retention of foreign objects and wrong patient, wrong site, wrong procedure surgery. With leadership identified as a significant root cause for operating room error, no research exists to support evidence based practice specific to clinical nurse leadership at the bedside of the patient. This descriptive, correlational study will provide information regarding clinical nurse leadership within the operating room environment. This study will draw on the conceptual model of staff nurse clinical leadership by Chavez and Yoder to hypothesize the relationship amongst the variables of interest: (1) clinical nurse leadership competency, (2) certification in operating room specialty, (3) organizational culture, and (4) years of operating room experience. The hypothesis for this study is that clinical nurse leadership competency will be greater in operating room nurses within Magnet accredited institutions or specialty certification or greater than ten years of operating room experience. The Leadership Practice Inventory® tool will be used to evaluate clinical nurse leadership in operating room nurses. This is the first study to examine clinical nurse leadership skills of nurses in the operating room environment. Findings may provide evidence to support leadership training for operating room nurses making safety decisions that are essential to preventing patient errors.

Dedication

To my Family,

Thank you for every word of encouragement and thank you for believing in me.

To my Colleagues,

Let us change the world!

In Appreciation

To my committee members, Dr. Gayle Petty, Dr. Ronald Hickman and Ms. Rebecca Patton for their advice, direction, and expertise.

To the faculty at CWRU: Frances Payne Bolton School of Nursing for inspiring me to do great things.

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Chapter 1

Introduction

Despite enormous quality and safety improvement initiatives over the past 25 years, life threatening patient care errors continue in the operating room environment. Currently, literature supports a relationship between clinical nurse leadership at the bedside and improved patient outcomes (Bohmer, 2013; Blumenthal, 1996; Chavez & Yoder, 2015; Endacott & Westley, 2014; Hobgood et al, 2010; Paull, Deleeux, Wolk, Paige, Neily & Mills, 2013; Robertson et al., 2010). The purpose of this research is to examine which components of clinical nurse leadership are present in operating room (OR) nurses (RN) and to identify any relationships amongst (1) clinical nurse leadership attributes (clinical ability, effective communication, relational coordination, innovation, change management); (2) specialty certification (certified nurse operating room); (3) organizational culture; and (4) years of operating room experience.

Background

The Institute of Medicine (IOM) released the historic report, To Err is Human: Building a Safer Health System, which revealed the prevalence of medical errors in the United States in 1999. The IOM has attributed 44,000 – 98, 000 patient deaths annually to preventable medical errors (1999). The report findings created repercussions throughout the entire healthcare industry. Medical errors were found to be commonplace, under reported, and preventable. The IOM identified the most common errors to be adverse drug reactions, transfusion errors, surgical injuries, wrong site surgery, suicide, restraint-related injury, falls, burns, pressure ulcers, and mistaken identities (1999). The inpatient areas found to be most dangerous with the highest error rates with significant consequences are the intensive care unit, the operating room, and the emergency department (1999).

Over the past 25 years, enormous change has ensued within the healthcare industry and United States government. National focus centers on the discussion of what a preventable medical error is along with how to improve the quality of care to prevent unintentional patient harm. The National Quality Forum was created as a national partnership of stakeholders to collaborate and strategize on healthcare quality issues. In 2002, the National Quality Forum issued a list of 28 "never events" (see Appendix A) (NQF, 2008). Never events are medical errors that are considered preventable and should never happen. The Institute for Healthcare Improvement (IHI), an organization for national quality improvement, focuses heavily on dissemination of best practices in quality improvement. In 2004, the IHI began the 100,000 Lives Campaign and 5 Million Lives Campaign to share best practice in quality with U.S. hospitals (IHI, 2015). In 2005, the American Association of Critical Care Nurses (AACN) partnered with VitalSmarts® to conduct a survey of healthcare professionals regarding critical conversations and medical error issues. The findings were alarming. Of the 1700 healthcare professionals surveyed, 84% had observed dangerous shortcuts in patient care and only 10% had spoken up and confronted the issue (Maxfield, Grenny, McMillan, Patterson, & Switler, 2005). Seven critical areas of concern were identified: broken rules, mistakes, lack of support, incompetence, poor teamwork, disrespect, and micromanagement (2005). Soon after in 2007, the Centers for Medicare & Medicaid Services (CMS) recognized 8 hospital acquired conditions as preventable and implemented a non-payment policy for these issues (Hader, 2015).

The national spotlight on patient safety continued to direct political, governmental, and healthcare industry quality reform. By 2008, the Joint Commission followed the lead of the CMS and instituted mandatory reporting and analysis of sentinel events. The Joint Commission defines a sentinel event as "an unexpected occurrence involving death or serious physical or psychological injury, or risk thereof" to include any "process variation for which a recurrence

would carry a significant chance of a serious adverse outcome" (The Joint Commission, 2014). At the same time, a systematic review of eight research studies was conducted and found the overall incidence of inpatient adverse events to be 9.2% in a review of greater than 74,000 patient records (de Vries, Ramrattan, & Smorenbutg, 2008). Despite the national focus, medical errors continued to plague the healthcare system (2008).

The Association of Operating Room Nurses (AORN) collaborated with the AACN and VitalSmarts® in 2010 to evaluate communication breakdowns in intensive care units and operating rooms. The result was a groundbreaking report, *The Silent Treatment: Why Safety Tools and Checklists Aren't Enough to Save Lives*. A survey was conducted of 6500 nurses to reveal that safety tools and nurses did not consistently address dangerous shortcuts, incompetence, and disrespect (Maxfield, Greeny, Lavandero, & Groah, 2010). The results of this research demonstrated that transformation was needed in organizational cultures to improve safety and quality patient care. Two national excellence award programs took the lead in recognizing evidence based practice and innovations in patient care, The Magnet Recognition Program® and The Beacon Award of Excellence®. On the political front, President Barack Obama successfully passed the Patient Protection and Affordable Act into law on March 23, 2010. This comprehensive healthcare reform has a goal to provide more access to quality, affordable health insurance while simultaneously decreasing the growth of the U.S. federal budget spending on healthcare (HHS, 2015).

Arduous scrutiny of the healthcare system related to quality care, positive outcomes, and fiscal responsibility are the new normal in healthcare delivery systems. In 2011, the CMS made available data and statistics for healthcare systems on the Hospital Compare website. This consumer oriented website provides information on hospital quality metrics to allow comparison of outcomes to make informed decisions when selecting care providers (CMS, 2008). The Joint

Commission continues to gather data on sentinel events and in 2014 found errors in perioperative services to remain in the top three reported sentinel event categories for 2012, 2013, and 2014 (2014).

The significance of this timeline of events is directly related to envisioning the future of nursing and healthcare (See Appendix B). The IOM Future of Nursing report (2010) describes the vital role nurses take on the frontlines of patient care outcomes. The IOM identifies numerous barriers to be overcome in order to position nurses to lead healthcare change. A committee created in collaboration with the Robert Wood Johnson Foundation (RWJF) is working towards recommendations for action for the future of nurse practice. Two crucial messages from this committee specifically relate to safe care in perioperative nursing practice: 1) Nurses should practice to the full extent of their education and training and 2) Nurses should be full partners, with physicians and other healthcare professionals, in redesigning healthcare in the United States (2010). This timeline of events demonstrates the need for leadership skill development to empower frontline nurses to intervene when patient safety is threatened.

Current Operating Room Cultures

Despite intense focus on patient safety cultures, two of the top ten reported sentinel events to the Joint Commission from 2012 – 2014 occurred in the operating room environment: unintended retention of foreign objects and wrong patient, wrong site, wrong procedure surgery (2014). The Joint Commission defines a sentinel event as "an unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof. Serious injury specifically includes loss of limb or function. The phrase 'or risk thereof' includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome" (2014). Root cause analysis of the top ten sentinel events found the top three overall factors consistently contributing to errors from 2012 - 2014 to be human factors, leadership, and communication

(The Joint Commission, 2014). Examination of the root causes specific to intra-operative sentinel events (retained foreign objects and wrong site surgery) identified leadership subcategories - organizational culture, complaint resolution, leadership collaboration, standardization, integration of services, inadequacy and non-compliance with policy and procedure, performance improvement and nursing leadership – as the number one reason for these errors over a ten-year period (2004 – 2010).

Leadership from organizational administration has not improved outcomes significantly related to these safety issues as demonstrated in quality reporting data (see Appendix C). Between 2004 and June 2014, The Joint Commission documented 8275 reported sentinel events (2014). Of these events, 5466 occurred in the hospital setting with 4984 resulting in patient death and 801 in loss of function (2014). Sentinel events totaled 901 in 2012 with the decline in 2013 to 887 which is a mere 1.5% improvement overall. Statistics revealed that 35% of the total reported sentinel events for this ten-year period occurred in the perioperative setting: 104 anesthesia events, 823 operative complications, 932 retained foreign bodies, and 1072 wrong patient/site/procedures (2014). Important to recognize is that sentinel event data comes from reported events which raises the question as to how many sentinel events are not reported.

Preventing Patient Care Errors

Research identifies bedside nurse engagement, clinical nurse leadership and nurse vigilance as key to patient protection from errors (Albanese, et al., 2010; Bartzak, 2010; Herlehy, 2011; Institute of Medicine, 2004; Johnson & Kimsy, 2012; Leach, Myrtle, & Weaver, 2011; Sprayberry, 2014; Tregunno et al., 2009). Clinical nurse leaders promote a culture of high quality care at point of service through emotionally intelligent nurse leadership. Emotionally intelligent (EI) nurse leadership encompasses eight competencies that directly influence organizational culture and patient outcomes: developing others, teamwork, collaboration,

organizational awareness, building of bonds, visionary leadership, respect, and open communication (Akerjordet & Severinsson, 2008). EI nurse leaders demonstrate self-control, constructive behaviors, and adaptability in the face of criticism and/or hostile environments (2008). Nurse leadership for patient safety may be demonstrated at all levels of care to create a patient centric environment.

Few research studies have been conducted to examine the complex, dynamic and challenging OR environment with a clinical nurse leader. No research has been found exclusive to the clinical nurse leadership skills at the surgical patient bedside. Comparative studies related to the OR environment have focused more on quality initiatives, team dynamics and communication rather than the clinical nurse leadership skills inherent to successful patient outcomes.

Purpose

The purpose of this scholarly project is to examine which clinical nurse leadership competencies are present in operating room nurses and to determine any relationships amongst clinical nurse leadership attributes. The variables of interest include (1) clinical nurse leadership competency (clinical ability, effective communication, relational coordination, innovation, change management); (2) certification in the operating room specialty; (3) organizational culture; and (4) years of operating room experience.

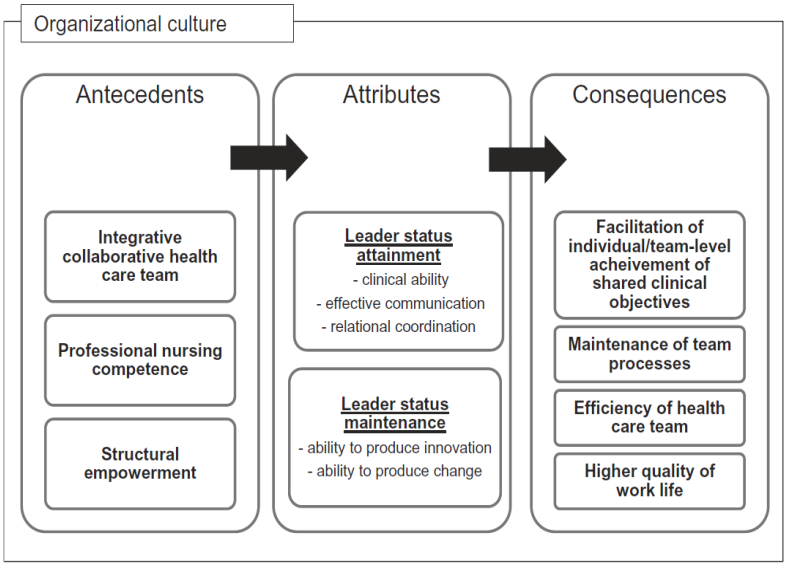
This study will address the following questions: (1) What is the magnitude of clinical nurse leadership in operating room nurses; (2) Are there differences in clinical nurse leadership when compared by specialty certification status; (3) Are there differences in clinical nurse leadership when compared by organizational characteristics; and (4) Are there differences in clinical nurse leadership when compared by years of operating room experience?

Staff Nurse Clinical Leadership Conceptual Framework

Staff nurse clinical leadership. A concept analysis provides a clear outline of the antecedents, attributes, and consequences of staff nurse clinical leadership (SNCL) (Chavez and Yoder, 2015).

E. C. Chávez et al. Clinical Leadership: A Concept Analysis

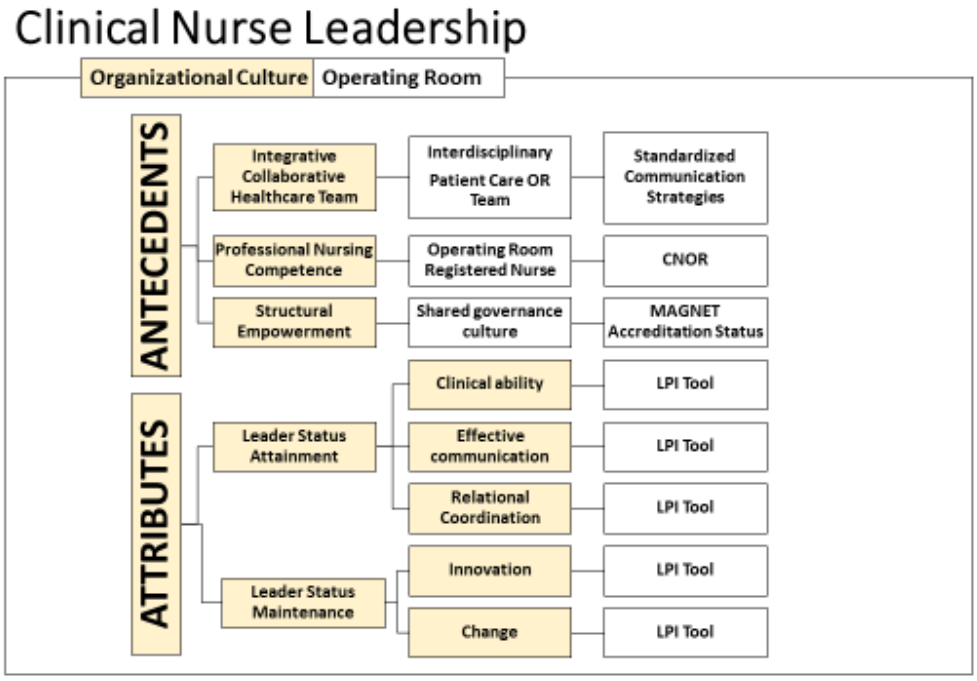
Figure 1. Antecedents, Attributes, and Consequences of Staff Nurse Clinical Leadership in a Hospital Clinical Unit Environment



Within the organizational culture, integrative collaborative health care teams, professional nursing competence and structural empowerment influence the defining attributes of SNCL (2015). Leadership status attainment (clinical ability, effective communication, relational coordination) and leadership status maintenance (produce innovation and change) attributes directly affect achievement of clinical shared objectives, team processes, efficiency, and high quality work lives (2015) (see Appendix D).

Operating room clinical nurse leadership. This study will draw on the conceptual model of staff nurse clinical leadership (concept analysis) by Chavez and Yoder (2015) to hypothesize the relationship amongst the variables of interest: (1) clinical nurse leadership (clinical ability, effective communication, relational coordination, innovation, change

management); (2) certification in the operating room specialty; (3) organizational culture; and (4) years of operating room experience.

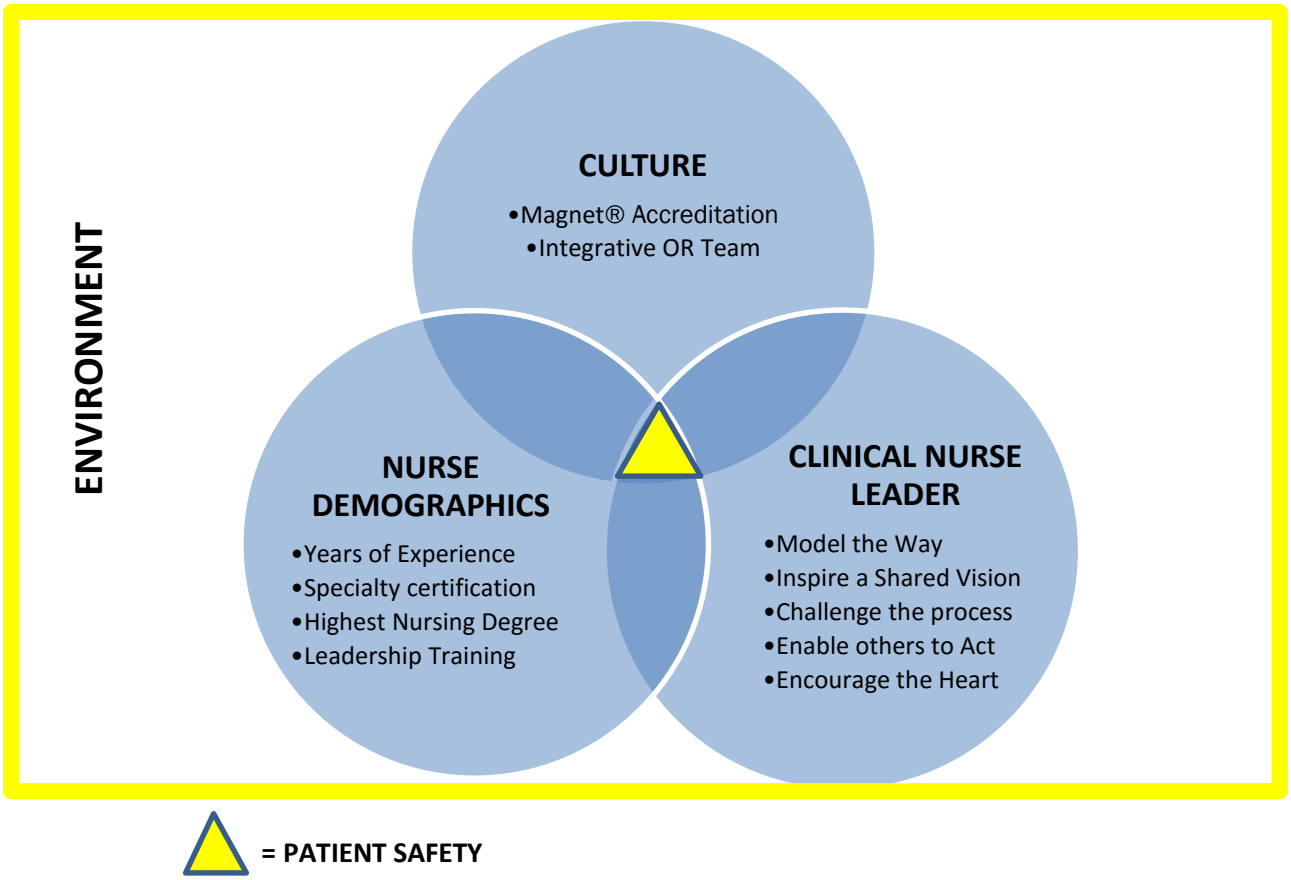


This diagram shows the antecedents and attributes of the study variables when superimposed on Chavez and Yoder's Staff Nurse Clinical Leadership Model (2015) (see Appendix E). Within the organizational culture of the operating room, bedside nurse clinical leadership is defined. Antecedents of OR RN clinical nurse leadership include: an integrative, collaborative OR team (surgeon, anesthesia, scrub, circulator, assistant), professional competence of the OR RN, and the shared governance structure of the operating room culture. Attributes are divided into two categories with the following variables: (1) leader status attainment defined by clinical ability, effective communication skills, relational coordination and (2) leader status maintenance defined by innovation and change management skills. Consequences of the antecedents and attributes may be either positive or negative related to OR patient safety, OR team processes, OR procedure and team efficiency, and OR RN quality of work life satisfaction. This research will focus on the attributes and antecedents that describe

clinical nurse leadership at the bedside. The consequences for clinical nurse leadership (efficiency, quality, and patient outcomes) are not discussed within in this study.

Study Model

For the purposes of this study, the following model is proposed to examine the variables of interest (see Appendix F). The model illustrates where culture, nurse demographic characteristics, and clinical nurse leadership intersect, patient safety is established. The overlap of the culture, nurse demographic characteristics and clinical nurse leadership produces either a positive outcome or negative outcome for the patient. The environment or context for this study is within the operating room.



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Major Construct

Clinical Leadership. Research on clinical leadership has focused on the skills and attributes of leadership. Prominent researchers in leadership have completed meta-analyses of theory, concepts, definitions and current literature. Five consistent themes emerge to describe clinical leadership: clinical expert, effective communicator, collaboration / negotiation, problem resolution and coordination of resources (Bartzak, 2010; Cook, 1999; Curtis, de Vries, & Sheerin, 2011; Doody & Doody, 2012; Ross, Fitzpatrick, Click, Krouse, & Clavelle, 2014).

Conceptual definitions

Clinical Nurse Leadership competency. Clinical nurse leadership competency is conceptually defined as the summation of leadership skills in five key areas: clinical expert, effective communicator, collaboration / negotiation, problem resolution and coordination of resources.

Clinical expert. A clinical expert is conceptually defined as a clinical RN with specialist knowledge in perioperative nursing practice. The knowledge of an expert includes technical, procedural, practical and aesthetic domains (Fardellone, Musil, Smith, & Click, 2014; Gillespie, Chaboyer et al., 2011). Specifically, clinical expert RNs are guided by the immediacy of action

needs, recognize situations requiring intervention, deal with complex situations while remaining open to the potential opportunity to grow and learn, manage multiple tasks efficiently, and meet the needs of both the patient and family within the context of the specialist area (Fardellone, 2014).

Effective communicator. An effective communicator is conceptually defined as having emotional intelligence skills to articulate and clarify relevant information to an audience through both verbal and nonverbal behaviors (Delmatoff & Lazarus, 2014, Gillespie et al., 2011; Patrick, Laschinger, Wong, & Finegan, 2011).

***Collaboration and negotiation*.** Collaboration and negotiation are conceptually defined as the act of working together with other team members to reach agreement through discussion and compromise to achieve patient goals. Collaboration and negotiation skills are characteristics applied to contextual situations to influence others to reach mutual ground from varied perspectives and opinions (Patrick et al., 2011).

***Problem resolution*.** Problem resolution is conceptually defined as the process of solving and/or settling an issue. Specifically, problem resolution pertains to one's ability to comprehend a problem that relates to practice roles in anticipation of providing support and advice to team members (Burns, 2009).

***Coordination of resources*.** Coordination of resources is conceptually defined as one's ability to balance competing priorities for human, material, and social resources (Gillespie et al., 2011). Nurses organize OR team process, function as a connection point for team communication, and maintain relations between the patients and care providers (Patrick et al., 2011).

Integrative OR Team. Integrative teams are conceptually defined as an interdisciplinary, collaborative, healthcare group which utilizes communication to achieve an outcome. Effective

communication is the foundation of the teamwork where competence is demonstrated through interpretation of subtle cues (verbal and nonverbal) and the passing of relevant information amongst team members (Gillespie et al., 2011).

Culture. Culture is conceptually defined as integrated patterns of human behavior, to include values, beliefs (learned and shared), and assumptions, that influence thinking and course of action within groups that are transmitted to new members over time (Harkness & DeMarco, 2012; Leininger, 1985; HHS, 2000).

Patient Safety. Patient safety is an emerging discipline as well as the summation of healthcare practices focused on prevention of patient harm. Patient safety is conceptually defined as the application of safety science methodology to minimize and prevent adverse events in medical care while creating a safe, patient centric environment (Emanuel et al., n.d.; Mitchell, 2008).

Operational Definitions of Variables

Clinical leadership competency. Competence will be the score achieved on the Leadership Practices Inventory® tool (LPI®). Each competency uses a 10-point Likert-type scale to self-report frequency of leadership behavior. The LPI® measures leadership behaviors with five subscales: challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart (Kouzes & Posner, 2003). Higher scores on the LPI® represent areas of strength, whereas lower scores represent areas of weakness (2003).

Clinical expert. Competence will be scored with the LPI® instrument. Specific subscales which demonstrate competence includes: challenging the process (Chappell et al., 2011; Fardellone, et al., *2014; Chappell, Richards, & Barnett, 2014).*

Effective communicator. Competence will be scored with the LPI® instrument. Specific subscales which demonstrate competence include: inspiring a shared vision, enabling

others to act, and encouraging the heart (Chappell et al., 2011; Fardellone, et al., 2014; Chappell, Richards, & Barnett, 2014).

Collaboration and negotiation. Competence will be scored with the LPI® instrument. Specific subscales which demonstrate competence include: inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart (Chappell et al., 2011; Fardellone, et al., 2014; Chappell, Richards, & Barnett, 2014).

Problem resolution. Competence will be scored with the LPI® instrument. Specific subscales which demonstrate competence include: challenging the process, enabling others to act, modeling the way, and encouraging the heart (Chappell et al., 2011; Fardellone, et al., 2014; Chappell, Richards, & Barnett, 2014).

Coordination of resources. Competence will be scored with the LPI® instrument. Specific subscales which demonstrate competence include: enabling others to act, modeling the way, and encouraging the heart (Chappell et al., 2011; Fardellone, et al., 2014; Chappell, Richards, & Barnett, 2014).

Integrative Team. Integrative team structures will be measured by having or not having a standardized communication strategy in use.

Culture. Culture in the operating room will be categorized as having or not having ANCC Magnet® accreditation.

Patient Safety. Patient safety will be measured by the number of reported sentinel events in the operating room.

Chapter 2

Review of Literature

The review of literature will provide current knowledge related to bedside nurse clinical leadership skills and competencies. The following databases were utilized: CINAHL, Google Scholar, Medline, PubMed, Pub Med MeSH headings, and Ohiolink. Databases were searched using the following keywords: bedside nurse, characteristics of leadership, clinical leadership, leadership, leadership theory, nurse leadership, nursing, operating room, patient safety, peri-operative nursing, staff nurse, surgical environment, and teamwork. The search was not limited in time period. Articles were reviewed for relevance and categorized utilizing the Matrix Method (Garrard, 2014). Excluded from the search were abstracts of citations, advertisements, and book reviews. The topics discussed in the review of literature are bedside nurse clinical leadership, leadership theories and models, quality and patient safety related to bedside nursing care, and characteristics of clinical nursing leadership.

Leadership Theory and Models

Extensive research and theory related to leadership has been produced over the past 50 years. Some of the first work in leadership study described the works of behavioral and trait theories during the 1950's. Lewin and White & Lippitt identified common behavioral styles of leaders to include authoritarian, democratic and laissez-faire (Marquis & Huston, 2006). In the late 1960's and early 1970's new theories began to arise. Situational and contingency theories evolved in the works of Fiedler and Hersey & Blanchard (2006). The overall philosophy of situational theorists was that leadership is dynamic and is influenced by interrelationship with the situation.

Since the late 1970's, contemporary theories of leadership have dominated the landscape. Within the classification of contemporary theories are two major movements: interactional

theory and transformational theory. Interactional theories describe the leader behaviors in the context of relationships between personality and particular situations (Fiedler et al., 2006). There are subgroups of theories that fall within the interactional framework. Schein created a model based on systems theory where the multifaceted person responded to a working environment (2006). Hollander expanded this work to include leadership as a two-way process between the leader and the follower in a given situation (2006). At the same time, Robert Greenleaf developed "servant leadership" as a leadership attitude that embodied service and role inversion whereby the leader supports the follower by creating an encouraging, collaborative environment (Autry, 2004; Jenkins & Stewart, 2010; Marquis & Huston, 2006). In 1981, Ouchi applied Japanese style management to interactional leadership theory to create Theory Z. Theory Z supports shared decision making, job fit, and holistic involvement with the employee (Marquis & Huston, 2006).

The second contemporary theory, transformational leadership (TL), has been the dominant philosophy within healthcare since the late 1980's and early 1990's. The transformational leader was initially introduced by Burns in 1978 as a leader who combines transactional leadership practice with vision and staff empowerment (Cook, 1999; Doody & Doody, 2012; Marquis & Huston, 2006). Tyrell in 1994 added to TL theory the "inclusion of nursing at all levels and settings to demonstrate visionary leadership" which then influenced Kouzes and Posner to describe five TL leadership practices in 2008 (Bartzak, 2010; Cook, 1999; Curtis et al., 2011; Doody & Doody, 2012; Ross et al., 2014). These five TL leadership practices are the focus of TL leadership theory. The differentiation between management and leadership became a discussion point amongst leadership theorists. Goleman revolutionized leadership vocabulary with the phrase "emotional intelligence". Goleman's work was based on human behavior and brain science research regarding competencies required for leaders and star

performers (Goleman, 1998; Goleman, Boyatzis, & McKee, 2002).

Transformational leadership theories are beginning to move towards the inclusion of complexity science and chaos theory. The premise of complexity science and chaos theory is the creation of order out of chaos to produce productive conflict and culture change (Chadwick, 2010; Porter- O'Grady & Malloch, 2002; Otten & Chen, 2011). Examples of complexity science include: The Swiss Cheese Model, quantum theory, and the Kirton Adaptation-Innovation Theory. Trailblazers in quantum leadership theory are Porter-O'Grady and Malloch. Quantum leadership theory accounts for chaotic (transforming) systems where leadership and active engagement of all organization members creates order through holism, intrinsic motivation, emergent leadership, dissipative leadership, and integrated leadership (Chadwick, 2010; Porter-O'Grady & Malloch, 2002). Quantum leadership blends the concepts of transformational leadership theory with complexity science and chaos theory to describe leadership in the current environment of continuous change.

Quality and Patient Safety Leadership

Research surrounding nursing leadership and quality demonstrates a direct increase in the quality of patient care in the presence of increased professional practice, high levels of work ethic, teamwork, use of evidence based practice, increased efficiency and RN empowerment (Bartzak, 2010; Battie, 2013; Kliger, Lacey, Olney, Cox & O'Neil, 2010; Thrall & Cavaliero, 2012). The American Organization of Nurse Executive (AONE) implemented a Transforming Care at the Bedside initiative testing of over 900 innovations in 50 hospitals over two years (Thrall & Cavaliero, 2012). Key findings related to bedside RN participation in the program included creating a patient-centered care environment, increased efficiency in services, improved safety throughout the units and creation of high functioning teams with demonstrated decreases in patient falls and pressure ulcers (2012). Leadership is a cornerstone of effective, successful

units and teams. A cross sectional survey of 2065 RNs who participated in TeamStepps training and implementation found leadership attributes to have greater correlation with patient safety than communication, handoffs, feedback, staffing, or teamwork (Castner et al., 2012).

Multiple studies demonstrate improvement in teamwork, communication, and patient outcomes in relation to leadership skills of frontline nurses (Bohmer, 2013; Blumenthal, 1996; Chavez & Yoder, 2015; Endacott & Westley, 2014; Hobgood et al, 2010; Paull, Deleeux, Wolk, Paige, Neily & Mills, 2013; Robertson et al., 2010). Bohmer (2013) and Blumenthal (1996) argue that service improvements and quality care require leadership from direct nurse caregivers. Bohmer (2012) defines nurses as "linchpins" and articulates their work as "highly autonomous" requiring decisive action and critical thinking application of clinical protocols often lacking in structure and organization. Substantive studies demonstrate leadership skills are required for safe practice and deficiency in clinical nurse leadership skills are related to a large number of adverse events (Cooper et al., 2010; Endacott & Westley, 2014; Hobgood et al., 2010; Todd, Manz, Hawkins, & Parsons, 2008).

Characteristics of Clinical Leadership

Research on clinical leadership has focused on the skills and attributes of leadership. Prominent researchers in leadership have completed meta-analyses of theory, concepts, definitions and current literature. Five consistent themes emerge to describe clinical leadership: clinical expert, effective communicator, collaboration / negotiation, problem resolution and coordination of resources (Bartzak, 2010; Cook, 1999; Curtis et al., 2011; Doody & Doody, 2012; Ross et al., 2014). Accomplished nurse leaders identify two additional characteristics as crucial qualities of leadership: vision and emotional intelligence (Clark, 2008; Delmatoff & Lazarus, 2014; Fitzpatrick, 2004; Huston, 2008). Ross et al. (2014) conducted a descriptive study of transformational leadership practices of nurse leaders using the Leadership Practice

Inventory® (LPI®). LPI® uses five subscales where higher scores represent areas of strengths and lower scores are areas for improvement (Kouzes & Posner, 2003). Results showed higher transformational leadership practices for respondents with more nurse leader training (Ross et al., 2014). The LPI® tool was also used for a descriptive, correlational, cross-sectional study of clinical ladder staff nurse participants (Fardellone et al., 2014). This research is in direct contrast to the previous study as it found the nurses with more years of RN experience self- reported fewer leadership behaviors (2014).

Other tools to measure leadership characteristics and attributes have been utilized in nursing research. Patrick, Laschinger, Wong, and Finegan (2011) conducted a non-experimental survey study to test psychometric properties of the clinical leadership survey (CLS). Based on Kouzes and Posner's model of transformational leadership, this research focused on staff nurse leadership skills and reported content validity for the CLS scale at 85% with a global leadership clinical scale serving as the validity check (2011). Chappell, Richards, and Barnett (2014) looked at predictors of clinical leadership skill in RNs with less than 24 months experience using the CLS. Results indicated the overall strongest predictors of clinical leadership skills were the quality of the new graduate nurse transition programs, length of transition programs, and months of clinical experience as an RN (2014).

Nurse leadership research tends to be qualitative when attempting to define concepts. Consistent themes emerge from qualitative research studies from in-depth interviews, focus groups, anecdotal summaries, and surveys (Anderson, Manno, O'Connor & Gallagher, 2010; Burns, 2009; Jenkins & Stewart, 2010; Khoury, Blizzard, Moore & Weaver, 2011; Tregunno et al., 2009; Catsner, Foltz-Ramos, Schwartz, & Ceravolo, 2012). Burns (2009) applied a phenomenological approach to explore the concept of leadership from the bedside nurse perspective. Six leadership skills (knowing the role, doing the job, expert knowledge, problem

solver, effective communicator, motivator, developer of others) and nine attributes of clinical leadership (legitimate, recognized, respected, dynamic, driven, visioning, approachable, non-judgmental) were identified (2009). Treggunno et al. (2009) was able to conduct a large scale study with 31 focus groups within six teaching hospitals to explore nursing leadership for patient safety. This work characterized the leader as the following three themes: "the go-to", "on the ball", and "keeps the ball rolling" (2009). Anderson et al. (2011) shared high National Database of Nursing Quality Indicators (NDNQI) results for focus group discussion to identify theoretical constructs of leadership. The three concepts emerging from this study were visibility, communication, and respect (2011).

Nurse Leadership Research

Extensive research exists regarding leadership theory and models. Much of this research comes from the behavioral and social science disciplines. Nurse researchers have applied these theories to clinical leadership practice to identify strategies to improve patient care. Most of the clinical leadership research specific to nurse leaders has centered on patient safety, error prevention and quality initiatives due to healthcare reform and the IOM reports (Auer, Schwendimann, Kock, Geest & Ausserhofer, 2014; Bartzak, 2010; Burston, Chaboyer, Wallis & Stanfield, 2011; Castner et al., 2012; Collins, Newhouse, Porter & Talsma, 2014; Cvetic, 2011; Gillepsie et al., 2011; Johnson & Kimsey, 2012; Thrall & Cavaliero, 2012; Tregunno et al., 2009; Sprayberry, 2014; Zook, 2014).

Few research studies have been conducted to examine the complex and dynamic environment of the operating room to identify leadership challenges unique to the surgical patient experience. Gillepsie, et al. (2011) examined the relationship between quality care, patient outcomes, and nurse qualifications via a survey of 345 Australian perioperative nurses. Coordination, communication, teamwork and leadership were recognized as significant

components of perioperative competence; but the study did not emphasize the particulars of bedside OR RN aptitudes that distinguish leadership. Johnson and Kimsey (2012) examined perioperative patient safety outcomes after implementation of the TeamStepps program. This team focused training improved collaboration, communication, and transparency within the perioperative research setting; but the study did not specifically address leadership skills as they relate to patient safety. Leach et al. (2011) implemented a mixed methods research design to evaluate high performing teams in the OR setting. The study focused on surgical team interactions, role clarity, role behavior and interdisciplinary relationships (2011). No research was found exclusive to the nursing leadership skills of the OR RN at the bedside of the surgical patient.

Limitations in the body of research includes a lack of similar studies for comparison specific to bedside RN leadership skills in the OR environment. Comparative studies related to the OR environment have focused more on quality initiatives, team dynamics and communication rather than the leadership skills inherent to successful patient advocacy in surgical services. No research studies were found that specifically address leadership competencies of the OR RN at the bedside of the surgical patient. Other limitations relate to the leadership assessment instrument utilized in the research as being a self-reported tool. This limits the inventory of skills to the participant's perception of self in the context of the situation. Direct observation and recording of the leadership skills may prove to be more valid.

Nursing Implications

Quality improvement and patient safety literature demonstrates a direct link between nursing leadership practices and excellence in patient safety behaviors (Bartzak, 2010; Battie, 2013; Bohmer, 2013; Blumenthal, 1996; Castner et al., 2012; Chavez & Yoder, 2015; Endacott & Westly, 2014; Hobgood et al., 2010; Kliger, Lacey, Olney, Cox & O'Neil, 2010; Paull et al.,

2013; Robertson et al., 2010; Thrall & Cavaliero, 2012). The Joint Commission (2014) has also identified leadership competency as the number one root cause of error in intra-operative sentinel events consistently over the past ten years. Examination of outcome data and descriptions of leadership competencies will result in tangible information to identify leadership gaps at the bedside of the operative patient.

Literature to date describes a multitude of leadership theories over the past century. These theories are complex and closely intertwined with behavioral and social sciences. New theories that emerge tend to build off the previous scaffold of leadership models. Transformational leadership theory and quantum leadership are the prominent theories utilized in the healthcare environment at present. The Leadership Practice Inventory® tool and the Clinical Leadership Survey (CLS) are two instruments demonstrated in studies as valid, self-reporting mechanisms to measure leadership skills. Consistent themes have emerged to describe clinical leadership competency: clinical expert, effective communicator, collaboration / negotiation, problem resolution and coordination of resources (Bartzak, 2010; Cook, 1999; Curtis et al., 2011; Doody & Doody, 2012; Ross et al., 2014).

There are limited, if any, studies that focus on leadership attributes of the OR RN in the operative environment. It is unknown which clinical leadership competencies are used by the OR RN and if these reflect clinical leadership competency described in the literature. Identification of these attributes lays the groundwork related to identification of variance in practice. Discrepancies in practice, once known, will direct initiatives to standardize practice and create instructional plans aimed at development of bedside leadership competency. The operative environment is a unique, dynamic setting unlike the inpatient units related to the team structure and perioperative culture. Cultural change must come from within the surgical suites if facilities desire to sustain effective patient safety initiatives. Leadership from the bedside of the

surgical patient is quintessential to protect the patient from harm as demonstrated in existing research (Albanese, et al., 2010; Bartzak, 2010; Cooper et al., 2010; Endacott, et al., 2014; Herlehy, 2011; Hobgood, et al., 2010; Institute of Medicine, 2004; Johnson & Kimsy, 2012; Leach, Myrtle, & Weaver, 2011; Sprayberry, 2014; Todd et al., 2008; Tregunno et al., 2009).

Chapter 3

Methods

Design

A descriptive, correlational study design will provide information about leadership characteristics of operating room nurses within their practice environment. This national study surveyed operating room nurses through the AORN database. The survey was sent nationally to 10,296 email addresses. The inclusion criteria for participants was provided to include: (1) active nurse (RN) in perioperative services, (2) currently works directly in patient care more than 50% of the time, and (3) more than two years of experience in perioperative services.

Sample

Power analysis was performed to determine the sample size appropriate to control for error. The online G*Power Program determined sample sizes for prevention of Type I and Type II errors as indicated in Table 1 (Faul, Erdfelder, Lang, & Buchner, 2008). An a priori power analysis for correlation with an effect size of 0.30, an alpha significance of 0.01, and a statistical power between .80 and .90 required a sample size of 122-154. The power analysis is based on the relationships between sample size, significance criterion, population effect size and statistical power (Cohen, 1992). Power analysis for this study does not reflect the null hypothesis rejection at p = .01, but rejects the null hypothesis at p = .05. Increased stringency was used for determination of sample size.

Table 1

Power Analysis: Apriori

Effect Size	Significance (α)	Power (1-β)	Sample Size Required
.30 medium	.05	.80	82

.30 medium	.05	.90	109
.30 medium	.01	.80	122
.30 medium	.01	.90	154
.10 small	.05	.80	779

A convenience sample of operating room nurses from the AORN database were sent an invitation to complete a demographic survey and the Leadership Practices Inventory® instrument (see Appendix F). Of the 10,296 invitations to participate, 220 nurses responded for a 2.1% response rate. 195 survey respondents met inclusion criteria. The final number of participants to complete both the demographic survey and Leadership Practices Inventory® tool for the sample was 176 (19 respondents completed the demographics section only). The hypothesis for this study is non-directional requiring two tails to achieve more stringency at .01 α to prevent Type 1 errors. The power of .90 is adequate to control for type II error. The sample size meets criteria for a medium effect size (.30), an alpha significance at .01, and a statistical power of .90.

Ethical Considerations

Request for approval of this research study was obtained through the Case Western Reserve University Institutional Review Boards (IRB) as well as the Association of Operating Room Nurses (AORN) Nursing Research Committee. Informed consent was provided to potential participants from the AORN database prior to dispersal of the research study instruments. Participation was voluntary with selection of participants from a convenience sample of AORN members. Participants were informed that there are no risks, as participation will not affect membership in AORN. Participants were informed of the purpose of this research, what to expect as a participant, and how the data obtained will be utilized.

This research study followed strict adherence to the protection of human rights. All IRB procedures were obeyed and implemented to protect confidentiality, privacy, anonymity, and self-determination. The survey information was anonymous as no identifiable data was contained. The researcher will be the only person with access to study data. Personal health information (PHI) will not be collected.

Instrument

All instruments utilized for this study are self-report tools. Demographic information was collected using a researcher developed questionnaire (see Appendix G). Baseline demographic information obtained from each participant includes: active RN licensure, state of current practice, years of RN experience, years of operating room experience, highest nursing degree, amount of time in direct patient care roles, AORN membership, Certified Nurse Operating Room (CNOR) certification, type of leadership training, and Magnet® accredited employer status.

The Leadership Practices Inventory® tool is based on the Posner and Kouzes' (2003) transformational leadership practices which identify leadership behaviors on five subscales using a 10 point Likert scale with an overall Cronbach's α of 0.95 (Chappel et al., 2014; Fardellone et al., 2014; Patrick et al., 2011; Ross et al., 2014). This 30-item assessment tool measures the frequency of leadership behaviors as self-report items on five subscales: challenging the process, inspiring a shared vision, enabling others to act, modeling the way, encouraging the heart (2003). Higher scores on the LPI® represent areas of strength, whereas lower scores represent areas of weakness (2003). Reliability coefficients for each leadership practice subscales demonstrate strong internal consistency scores: challenging the process (0.80), inspiring a shared vision (0.87), enabling others to act (0.75), modeling the way (0.77), encouraging the heart (0.87) (The

Leadership Challenge, 2015). Each characteristic of clinical leadership competency is mapped and tested to the corresponding subscale in previous studies (Chappell et al., 2014, Patrick et al., 2011) (see Table 2).

Six behavioral competencies are identified within each of the five subscales and scored according to frequency of the behavior: (1) almost never do; (2) rarely; (3) seldom; (4) once in a while; (5) occasionally; (6) sometimes; (7) fairly often; (8) usually; (9) very frequently; and (10) almost always do (2015). Test-retest reliability scores for the LPI® tool are consistently strong at the 0.90 level or higher (2015). LPI® tool scores were calculated to show percentages, means and standard deviations.

Table 2

Alignment of Leadership Practice Behaviors from LPI® to Clinical Leadership Characteristics.

Leadership Practice Behaviors*	Clinical Leadership Characteristics**
Challenging the process	Clinical expert
	Problem resolution
Inspiring a shared vision	Effective communicator
	Collaboration and negotiation
Enabling others to act	Effective communicator
	Collaboration and negotiation
	Problem resolution
	Coordination of resources
Modeling the way	Collaboration and negotiation
	Problem resolution
	Coordination of resources

Encouraging the heart	Effective communicator
	Collaboration and negotiation
	Problem resolution
	Coordination of resources

*(Kouzes & Posner, 2003); **(Chapell et al., 2014, Patrick et al., 2011)

Procedure

Prior to data collection, institutional review board endorsement from Case Western Reserve University along with AORN Nursing Research Committee approval to access the AORN membership database was obtained. The AORN database contains contact information for AORN members. AORN members received an electronic mailing (e-mail) with background information on the study (see Appendix H). AORN chose to send the invitation to a random selection of members and not the entire database of members based on the following parameters: staff nurse status in perioperative services not to exclude managers, coordinators, and educators. This research study was conducted at the same time as the AORN annual salary survey. At the request of AORN, no reminder emails would be sent if the sample size was significant. On the launch date, potential participants were sent the invitation with a link and password to the Qualtrics website survey. The data collection period was 3 weeks in length with no reminder emails sent to potential participants. Data collected was downloaded from Qualtrics for analysis.

Data Analysis

Data analysis utilized SPSS Statistics 21 Premium software. Descriptive and inferential statistics were used to examine the data set based on the research questions. Data was cleaned and re-coded for analysis. Frequency tables were created to represent the demographic identity of the sample group. For each research question, analysis is dependent on the attribute of interest. The subsequent research questions are followed by the analysis methods.

1. What is the magnitude of clinical nurse leadership of operating room nurses?

This distribution of scores was depicted for the sample group of respondents based on the LPI® tool five subscale scores for challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart. Subscales scores have a range from 6-60. These subscale scores are represented with a composite mean score for each subscale. The composite mean score was derived from a mean values table to represent the range, mean, standard deviation, and variance for each item on the LPI® tool. Each item was scored utilizing a 10 point Likert scale.

For the remainder of the research questions:

2. Are there differences in clinical nurse leadership when compared by specialty certification status?
3. Are there differences in clinical nurse leadership when compared by organizational characteristics?
4. Are there differences in clinical nurse leadership when compared by years of operating room experience?

Independent samples T-Tests were used to measure mean differences in variables as identified above.

Data Management

All respondents were provided a link and password to access the survey through the Qualtrics survey platform. The survey was anonymous. The data is kept in a password protected account through the Case Western Reserve University Qualtrics account. The data is only accessible to the researcher. Data was downloaded from Qualtrics to the SPSS file. No assistants were used to collect or enter any data into the software program. The SPSS files

contain defined items and sample descriptors based on numeric values and categorical data. It is kept on the hard drive of the researcher's home computer. There was no missing data. All LPI® tool entries were complete.

Chapter 4

Results

A convenience sample of operating room nurses with membership in AORN was utilized for this national study. The response rate was low at 2.1%, however, the initial invitation was sent to 10, 296 nurses. This allowed for the final sample to be large enough for significance in data and generalizability of findings. The sample size for demographic data was 195 with 176 respondents completing the LPI® tool as well. The sample size meets criteria for a medium effect size (.30), an alpha significance at .01, and a statistical power of .90. An increased stringency in the alpha significance ($p = .01$) was used for sample size determination as compared to the statistical tests run at an alpha of $p = .05$.

Demographics

Descriptive statistics were used to report the sample size, mean, frequency, and percentage. The national sample included representation from 38 of the 50 states with one international participant and two multi-state respondents. The majority of the respondents were female (n = 182, 93.33%). Nursing degree achievement varied from associate (n = 66, 33.85%), bachelor (n = 108, 55.38%), master (n = 19, 9.74%), and doctorate (n = 2, 1.03%). The national average of bachelor or higher prepared nurses is 65% compared to this sample size of 66% further supporting the generalizability of these findings due to a representative sample of the population (NCSBN, 2015). The Institutes of Medicine look to increase bachelor prepared nurses to 80% by 2020 (IOM, 2010). Seventy-four percent of responding nurses had ten years or greater of operating room experience. Most participants spend greater than 30 hours per week in the circulating role (n = 107, 54.9%) and less than ten hours per week in the scrub role (n = 150, 76.9%). The National Nursing Workforce Study data reports 50% of RNs were age 50 or older

(n= 78,700) (NCSBN, 2015). Employment in Magnet® accredited organizations accounted for only 29% (n = 56) of participants. Most respondents were AORN members (n = 193, 98.97%), but only 68% (n = 133) were certified in the operating room specialty. Leadership training for respondents was varied with the majority of training having been received through continuing nursing education (n = 69, 35.38%). Nineteen percent of the respondents reported no leadership training (n = 38).

Communication strategies utilized in every patient interaction for the respondents were varied. Surgical checklists (n = 80, 41.03%) and SBAR Handoff (n = 78, 40%) were used by most respondents. No communication strategies were reported for 1.54% (n = 3) of respondents. Sentinel event rates of the employer were known by 27% (n = 53) of respondents leaving 73% (n = 138) unaware. The demographic summary is provided in Table 3.

Table 3

Demographic Summary

Characteristics	N	Frequency	Percent
Gender			
Male	195	13	6.7
Female		182	93.3
Highest Nursing Degree			
Associate (AD)	195	66	33.8
Bachelors (BSN)		108	55.4
Masters (MSN)		19	9.7
Doctorate (PhD or DNP)		2	1
Years of Operating Room Experience			
3-5 years	195	24	12.3
6-9 years		27	13.8
10 or greater years		144	73.8

Number of Hours/Week in Circulator Role			
0-10 hours	195	18	9.2
10-20 hours		30	15.4
20-30 hours		40	20.5
30-40 hours		107	54.9
Number of Hours/Week in Scrub Role			
0-10 hours	195	150	76.9
10-20 hours		32	16.4
20-30 hours		7	3.6
30-40 hours		6	3.1
AORN member			
Yes	195	193	99
No		2	1
CNOR certification			
Yes	195	133	68.2
No		62	31.8
Magnet facility employment			
Yes	195	56	28.7
No		139	71.3
Type of leadership training			
None	195	38	19.5
In-service		35	17.9
Continuing education		69	35.4
Academic credit college course		46	23.6
Leadership certification program		7	3.6
Communication Strategies in Use			
None	195	3	1.5
SBAR		78	40.0
Surgical Debrief		22	11.3
Safety Checklist		80	41.0
Other		12	6.2
Sentinel Event Knowledge			
Yes	195	53	27.2

No	138	70.8

LPI® Mean Subscale Scores

Mean LPI® subscale scores for the sample are summarized as follows. Actual subscale scores range from 6 to 60 (see Table 4). The higher scores represent behaviors used most often and demonstrate strength. Lower scores represent areas of weakness. The subscale behaviors in order of frequency of behaviors for the sample are: enable others to act (M = 52.65), model the way (M = 50.21), encourage the heart (M = 48.49), challenge the process (M = 45.60), inspire a shared vision (M = 41.06). Subscale composite μ scores were used for subsequent independent t-test sampling. Composite subscale scores were created for each subscale for use in independent sample t-tests.

Table 4

LPI® Tool Subscale Composite Score Distributions

Variable	Minimum	Maximum	M	SD	N	Cronbach's Alpha
Model the way	31	60	50.21	6.63	176	.76
Inspire a shared vision	6	60	41.06	12.45	176	.94
Challenge the process	17	60	45.60	9.53	176	.86
Enable others to act	16	60	52.65	6.04	176	.85
Encourage the heart	22	60	48.49	8.98	176	.86

Analysis of Research Questions

Are there differences in clinical nurse leadership when compared by CNOR status?

Each composite subscale mean score of the LPI® tool was compared to CNOR certification status of the respondents. An independent t-test was conducted to compare subscale composite

scores for OR nurses with CNOR certification and without CNOR certification. There was no significant difference in scores for each subscale in CNOR certification (see Table 5).

Table 5

Independent T-Test Scores for CLINICAL NURSE LEADERSHIP and CNOR

Variable	CNOR certification	N	M	SD	t value	df	p value
Model the way	Yes	123	50.05	6.88	-.47	174	0.64
	No	53	50.57	6.05			
Inspire a shared vision	Yes	123	40.63	12.80	-.70	174	0.48
	No	53	42.08	11.63			
Challenge the process	Yes	123	45.30	9.72	-.64	174	0.53
	No	53	46.30	9.12			
Enable others to act	Yes	123	52.85	5.46	.67	174	0.50
	No	53	52.19	7.25			
Encourage the heart	Yes	123	48.47	8.55	-0.1	174	0.99
	No	53	48.49	9.99			

($p = .05$)

Are there differences in clinical nurse leadership when compared by Magnet® accreditation status? Each composite subscale score of the LPI® tool was compared to Magnet® accreditation status of the respondents' employer. An independent t-test was conducted to compare subscale composite mean scores for OR nurses with Magnet® status and without Magnet® status. There was no significant difference in scores for four of the five subscales in Magnet® status. There was a significant difference in scores for subscale score "encourage the heart" in Magnet® status (see Table 6).

Table 6

Independent T-Test Scores for CLINICAL NURSE LEADERSHIP and Magnet®

Variable	Magnet®	N	M	SD	t value	df	p value

Model the way	Yes	48	51.48	6.75	1.57	174	0.12
	No	128	49.73	6.54			
Inspire a shared vision	Yes	48	44	11.2	1.93	174	0.55
	No	128	39.97	12.75			
Challenge the process	Yes	48	47.04	9.38	1.29	174	0.22
	No	128	45.06	9.56			
Enable others to act	Yes	48	53.58	5.40	1.25	174	0.21
	No	128	52.30	6.25			
Encourage the heart	Yes	48	51.08	7.91	2.39	174	0.02
	No	128	47.50	9.19			

(p = .05)

Are there differences in clinical nurse leadership when compared by years of OR experience? Each composite subscale score of the LPI® tool was compared to the number of years of OR experience of the respondents. An independent t-test was conducted to compare subscale composite scores for OR nurses with less than 10 years OR experience and with greater than 10 years OR experience. There was no significant difference in scores for the five subscales in years of OR experience (see Table 7).

Table 7

Independent T-Test Scores for CLINICAL NURSE LEADERSHIP and Years OR experience

Variable	Yrs. OR	N	M	SD	t value	df	p value
Model the way	< 10 yrs.	45	49.91	6.53	-.34	174	0.73
	> 10 yrs.	131	50.31	6.68			
Inspire a shared vision	< 10 yrs.	45	41.64	12.48	.36	174	0.72
	> 10 yrs.	131	40.87	12.48			
Challenge the process	< 10 yrs.	45	46.80	9.05	.98	174	0.33
	> 10 yrs.	131	45.19	9.68			
Enable others to act	< 10 yrs.	45	52.58	6.13	-.10	174	0.92
	> 10 yrs.	131	52.68	6.03			

Encourage the heart	< 10 yrs.	45	48.11	10.74	-.32	174	0.75
	> 10 yrs.	131	48.60	8.34			

(p = .05)

Other Analyses

Leadership training was categorized into formal training (academic credits, leadership certification program) and informal training (none, in-service education, continuing education credit) and run as independent t-tests. Statistical significance was demonstrated for three of the five subscales: model the way, challenge the process, encourage the heart. There was no significant difference in scores for "inspire a shared vision" and "enable others to act" (see Table 8).

Table 8

Independent T-Test Scores for CLINICAL NURSE LEADERSHIP and Leadership Training

Variable	Leader Training	N	M	SD	t value	df	p value
Model the way	Formal	49	52.27	5.48	2.61	174	0.010
	Informal	127	49.41	6.87			
Inspire a shared vision	Formal	49	45.02	10.52	1.0	47	0.32
	Informal	127	39.54	12.83			
Challenge the process	Formal	49	48.96	8.79	2.97	174	0.003
	Informal	127	44.31	9.51			
Enable others to act	Formal	49	53.53	4.95	1.20	174	0.232
	Informal	127	52.32	6.40			
Encourage the heart	Formal	49	50.94	7.75	2.29	174	0.023
	Informal	127	47.53	9.27			

(p = .05)

Highest nursing degree was categorized into Group 1 (associate degree) and Group 2 (bachelor degree, master degree, doctoral degree) and run as independent t-tests. Statistical

significance was demonstrated in one of the five subscales: challenge the process. There was no significant difference in scores for the other four subscales (see Table 9).

Table 9

Independent T-Test Scores for CLINICAL NURSE LEADERSHIP and Highest Nursing Degree

Variable	Degree	N	M	SD	t value	df	p value
Model the way	Group 1	58	49.90	6.89	-.43	174	0.67
	Group 2	118	50.36	6.52			
Inspire a shared vision	Group 1	58	39.16	13.49	-1.13	174	0.15
	Group 2	118	42.01	11.85			
Challenge the process	Group 1	58	43.40	10.20	-2.18	174	0.03
	Group 2	118	46.69	9.02			
Enable others to act	Group 1	58	52.85	5.66	.29	174	0.77
	Group 2	118	52.56	6.24			
Encourage the heart	Group 1	58	47.47	8.75	-1.05	174	0.30
	Group 2	118	48.97	9.09			

($p = .05$)

Chapter 5

Discussion

This chapter provides a summary of the study examining clinical nurse leadership. This study provides new knowledge related to leadership behaviors at the bedside of the operating room patient. Findings, limitations, implication to nursing practice and suggestions for future research are included. The results provide a starting point to describe and quantify clinical nurse leader behaviors.

Discussion of Research Question Results

The Competency and Credentialing Institute (CCI) research shows a team of CNOR certified nurses furthers professional culture and is correlated to improved surgical outcomes (CCI, 2016). Findings from this study do not show a relationship between specialty certification and clinical nurse leadership, but instead suggest CNOR may measure empirical knowledge in the operating room only. There was no significant difference in clinical nurse leadership noted with years of operating room experience. These findings are contradictory to some of the current literature. Perhaps this is due to the OR having a significantly higher average age of RNs in comparison to the general nursing population; on average by ten years (Penprase, Monahan, Poly-Droulard, and Prechowski, 2016). The mean age of the perioperative nurse is 56 years old, with only 8.4% of AORN members under the age of 30 years old (Bacon and Stewart, 2015).

Overall LPI® subscale mean scores demonstrate favorable ratings for OR nurses. All five subscale scores fall in the upper quartile (Q3) of the range representing strengths in all five areas. The operating room environment is a highly autonomous practice area requiring strong leadership and teamwork competencies. Although overall scores for the sample demonstrate above average skills, the scores can be further analyzed to ascertain which aptitudes rank lower.

Interventions for this environment should focus on emotional intelligence competency and overall teamwork proficiencies. Emotional intelligence skills assist to articulate and clarify relevant information to an audience through both verbal and nonverbal behaviors (Delmatoff & Lazarus, 2014, Gillespie et al., 2011; Patrick et al., 2011). Collaboration and negotiation facilitate action towards consensus around achievement of patient goals from varied perspectives and opinions (Patrick et al., 2011). Point of care decisions affect adverse events, infection rates, patient safety and patient outcomes (Bartzak, 2010; Burton et al., 2011; Chappell et al., 2014; Sprayberry, 2014). Statistical significance was demonstrated for three of the five subscales when comparing clinical nurse leadership to formal versus informal leadership training. These findings support the rationale for providing formalized leadership training (academic college courses or leadership certification programs) to bedside nursing staff. Highest nursing degree variables describe statistical significance for one of the five subscales, challenge the process. These findings support the movement by professional nursing societies and healthcare organizations to implement the IOM recommendations for 80% bachelorette nurses in the workforce by 2020 (IOM, 2010). Transition of associate degree nurses to higher levels of education will require an increase in both bridge programs (RN-BSN, RN-MSN, RN-PhD/DNP), educational funding and nursing faculty. This study also did not include diploma graduate nurse or licensed practical nurse (LPN) as a measurement of highest educational level. Diploma graduate nurses account for only 5.6% of the AORN RN population as often diploma RNs have returned to complete BSN or higher degrees (AORN, 2015). LPN use in the OR environment has largely decreased over the last decade with the introduction of the surgical technician to function in the surgical scrub role.

Global Perspective

Operating room RNs demonstrate high levels and competence in clinical nurse leadership skills. This may suggest that patient safety issues are not due to a lack of ability to intervene on the patient's behalf. Unexpected results from the survey were the lack of awareness of sentinel event rates at 28% of the sample (n = 191). Bedside awareness of patient safety errors and sentinel events appears to be the missing piece of the puzzle. The operating room has talented, competent, clinical nurse leaders ready to provide excellent care. To do so, nurses must be equipped with the information necessary to achieve patient-centric goals. If bedside providers are not aware of the problem, how can the issue get corrected? Transparency in sentinel event reporting and root-cause analysis is central to moving the rates to zero. Case review in a just culture with the entire team, provides opportunity to learn from mistakes. The players are ready at the bedside to intervene and provide optimal care, however, they do not have the data required to change practice to increase patient safety. Perioperative services have one of the highest sentinel event rates with four of the top five sentinel event types specific to this area. Education and training must focus on bringing the knowledge to the daily huddles and surgical safety checklists. Report back mechanisms need to be engrained in the process to include who, what, where, when, and how. This could start with a simple daily conversation that states: "it has been x number of days since the last sentinel event." Active engagement in the solution process not only develops clinical leadership skills, but enhances teamwork and patient safe environments.

Limitations

Limitations noted with the sample group include multiple factors. This sample group has a specialized skill set and work role competencies that are specific to the operating room. Other practice areas and environments may not produce the same results. AORN is a specialty

organization for operating room nurses. Non-members were not included or provided an opportunity to participate in this study. Inclusion of non-members may have provided different results than described.

The LPI® tool is a self-report measurement tool of the respondents perceived leadership behaviors. Direct observation of nurse behaviors would increase rigor and validity of the data. Respondents may have over-reported or under-reported scores within the subscales. Self-report tools are subjective in nature based in the respondent's interpretation of both the tool items and the environment or milieu. Measurement of the data within the survey required re-coding for dichotomous groupings to run statistical analyses.

The sampling method for this research was a convenience sample. One limitation associated with this research is a lack of comparison group for analysis. Results of this study may have been affected by grouping point cut offs. Future studies may consider more detail or options in the data collection to control for this issue.

Although this research did not show significance between clinical nurse leadership and CNOR certification, specialty certification may still be an indicator of clinical nurse leadership competency. Only 31% of the 195 respondents were CNOR certified representing a small portion of the population. This suggests external validity may be compromised. Significance is shown for clinical nurse leadership and Magnet® status in one of the five subscales. A larger sample size may account for the lack of significance in the other four categories. No significance is present between clinical nurse leadership and years of OR experience in this study. OR experience was categorized as "less than" or "greater than" 10 years within the data sets. Expansion or re-grouping of this data set may produce different results.

Implications for Nursing Practice

Multiple studies demonstrate improvement in teamwork, communication, and patient outcomes in relation to leadership skills of frontline, bedside nurses (Bohmer, 2013; Blumenthal, 1996; Chavez & Yoder, 2015; Endacott & Westley, 2014; Hobgood et al, 2010; Paull, Deleeux, Wolk, Paige, Neily & Mills, 2013; Robertson et al., 2010). The purpose of this scholarly project was to examine which clinical nurse leadership competencies are present in operating room nurses. The overall sample scores on the LPI® tool demonstrate strength ratings on all five subscales for operating room nurses. Leadership competency is essential for effective teamwork and prevention of errors. Application of the LPI® instrument for a baseline evaluation of competence may be incorporated into the nurse career development plan. Direct observation with the LPI® tool will provide 360° feedback on leadership skills and may be incorporated into an action plan. Identification of weaknesses may be used to individualize learning content and effectively allocate resources.

The study model proposed for clinical nurse leadership demonstrates relationships amongst the concepts of culture, nurse demographics, and clinical nurse leadership within an environment affect patient outcomes. The preliminary findings within this study demonstrate a relationship exists but does not quantify the patient outcome components. Further analysis of patient outcome data as it relates to the model may provide insight into error reduction and best practice within the OR environment.

Effective communication requires a two-way flow of information. Quality data, sentinel event rates, and patient safety concerns must be included in every huddle, checklist, and patient centered conversation. Transparency in practice and awareness of system pitfalls give the

bedside provider data to navigate in complex practice environments. Communicate effectively, ask questions, and seek clarification in every situation.

Suggestions for Future Research

Differences noted in clinical nurse leadership and specialty certification, Magnet® accreditation and nursing experience require further testing to validate or disprove the findings of this study. Future research identifying the relationship and causality of clinical nurse leadership with leadership training modalities will assist the profession in targeting best practice for optimal outcomes. Correlating the type of nursing degree to clinical nurse leadership competencies would also provide insight into effective strategies to prepare clinical nurses in leadership skills.

A myriad of communication tools are used for patient safety as described in this study. Future research defining best practice as evidenced by patient outcomes and error reduction is warranted. Examination of the root causes specific to intra-operative sentinel events identified leadership as the number one reason for errors with communication as the second leading cause (The Joint Commission, 2014). In addition, less than one-third of the respondents were aware of sentinel event rates of their employer. Research comparing quality and communication interventions around adverse events, pre and post hoc, would provide valuable information. Sentinel event education, training, and prevention strategies are critical to safe patient care.

Other characteristics of interest to future research include exploration of clinical nurse leadership competencies in comparison to: work title and function, non-Magnet® facilities, full-time educator specific to OR on staff, and/or generational age groups.

Clinical nurse leadership is demonstrated as a competence in bedside care for the operating room. Future research needs to focus on the most effective strategies to provide error

data to the bedside. Lean methodologies to analyze process variance present an alternative view for issue resolution. Linking the process to the issue to the outcome may go a long way in error prevention.

Conclusion

This study has provided insight specific to clinical nurse leadership practices of operating room nurses. Findings from this study provide initial support for investment in leadership training at point of care. Generalizability and strength of these study findings are based on both the alpha stringency of the sample size at $p = .01$ and this is a national survey with 38 of the 50 states participating. The results warrant further study to strengthen validity; however, the evidence suggests clinical nurse leadership is strong in operating room nurses.

Statistics revealed that 35% of the total reported sentinel events occurred in the perioperative setting (The Joint Commission, 2014). This research found only 28% of study participants knew the sentinel event rates of their current employer. Even fewer study participants were able to correctly define a sentinel event. Awareness is the first step to transparency and prevention. The IOM has attributed 44,000 – 98, 000 patient deaths annually to preventable medical errors (1999). These errors are commonplace, under reported and preventable. In addition to advancing clinical nurse leadership skills at the bedside, healthcare providers must not lose site of the goal: no adverse patient safety events. Zero is achievable when we invest resources wisely.

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** IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp. software generated all data tables and data analysis for this project.

Appendix A

Comparison of "never events", as defined by the NQF ("serious reportable events") versus CMS ("non-reimbursable serious hospital-acquired conditions")

doi:10.1186/1754-9493-3-26

1. "Never" and "No pay"

Events which overlap between the NQF and CMS definitions of "never events"

- Surgery on the wrong body part
- Surgery on the wrong patient
- Wrong surgery on a patient
- Foreign object left in patient after surgery
- Death/disability associated with intravascular air embolism
- Death/disability associated with incompatible blood
- Death/disability associated with hypoglycemia (HAC's include diabetic ketoacidosis, nonketotic hyperosmolar coma, hypoglycemic coma, secondary diabetes with ketoacidosis, secondary diabetes with hyperosmolarity)
- Stage 3 or 4 pressure ulcers after admission
- Death/disability associated with electric shock
- Death/disability associated with a burn incurred within facility
- Death/disability associated with a fall within facility

2. "Never"

Events which should never happen according to the NQF, but are not listed on the CMS "never events").

- Postoperative death in a healthy patient
- Implantation of wrong egg
- Death/disability associated with use of contaminated drugs, devices, or biologics
- Death/disability associated with use of device other than as intended
- Infant discharged to wrong person
- Death/disability due to patient elopement
- Patient suicide or attempted suicide resulting in disability
- Death/disability associated with medication error
- Maternal death/disability with low risk delivery
- Death/disability associated with hyperbilirubinemia in neonates
- Death/disability due to spinal manipulative therapy
- Incident due to wrong oxygen or other gas
- Death/disability associated with use of restraints within facility
- Impersonating a health care provider (i.e., physician, nurse)
- Abduction of a patient
- Sexual assault of a patient within or on facility grounds
- Death/disability resulting from physical assault within/on facility grounds

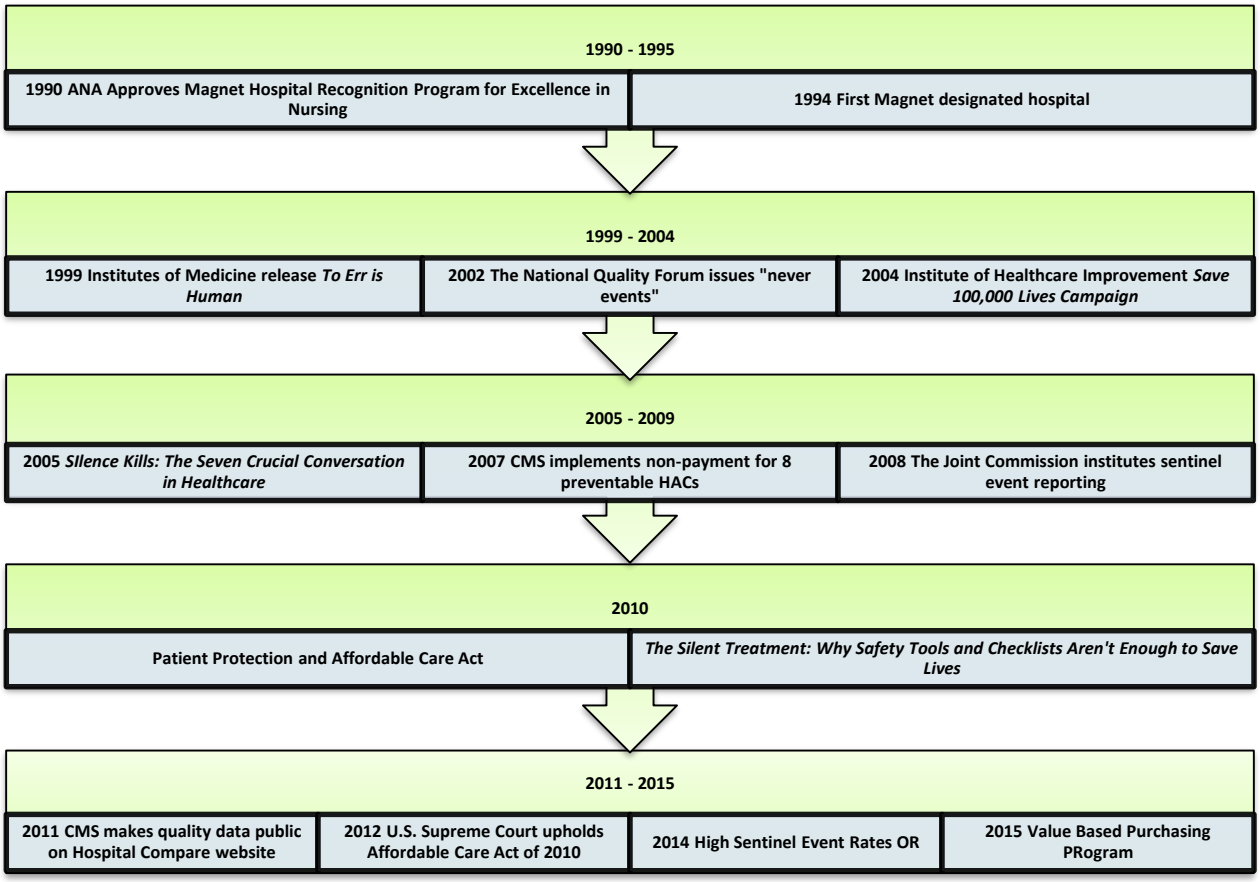
3. "No pay"

The list of controversy: Adverse events which are classified by the CMS as nonreimbursable "never events", but lack the according definition by the NQF.

- Catheter-associated urinary tract infection
- Vascular catheter-associated infection
- Surgical site infection following coronary artery bypass graft (CABG) - mediastinitis
- Surgical site infection following bariatric surgery (laparoscopic gastric bypass, gastroenterostomy, laproscopic gastric restrictive surgery)
- Surgical site infection following orthopedic procedures (spine, neck, shoulder, elbow)
- Deep vein thrombosis (DVT)/pulmonary embolism (PE) in total knee replacement and hip replacement

Appendix B

Timeline of Significant Events



Appendix C

The Joint Commission

SE Statistics as of: 9/5/2014

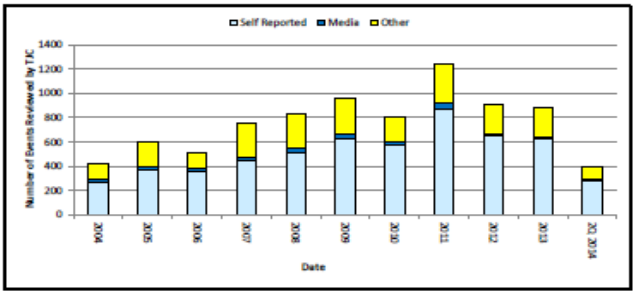
Summary Data of Sentinel Events Reviewed by The Joint Commission

Data Limitations: The reporting of most sentinel events to The Joint Commission is voluntary and represents only a small proportion of actual events. Therefore, these data are not an epidemiologic data set and no conclusions should be drawn about the actual relative frequency of events or trends in events over time.

Total number of Sentinel Events reviewed by The Joint Commission 1995 through June 2014	10816

Total Incidents Reviewed 1995 through 2003	
1995	1
1996	29
1997	119
1998	272
1999	421
2000	441
2001	398
2002	444
2003	416
1995 to 2003 Total	2541

Historical



Sources of Reviewable Sentinel Events 2004 through June 2014	Non-self reported	Self Reported	Total	%Self Reported
2004	151	267	418	63.9%
2005	225	367	592	62.0%
2006	154	357	511	69.9%
2007	292	448	740	60.5%
2008	310	509	819	62.1%
2009	344	624	968	64.5%
2010	230	572	802	71.3%
2011	378	865	1243	69.6%
2012	253	648	901	71.9%
2013	265	622	887	70.1%
2Q 2014	110	284	394	72.1%
2004 through 2013 Total	2712	5563	8275	67.2%

Sentinel Event Settings 2004 through June 2014	#	%
Hospital	5466	65.9%
Psychiatric hospital	855	10.3%
Ambulatory care	321	3.9%
Psych unit in general hospital	443	5.4%
Emergency department	478	5.8%
Behavioral health facility	301	3.6%
Home care	154	1.9%
Long term care facility	93	1.1%
Other***	105	1.3%
Office-based surgery	70	0.8%

Type of Sentinel Event	2004 - June 2014 Total	2012	2013	January to June 2014
Anesthesia-Related Event	104	7	8	2
Criminal Event	361	43	52	19
Delay in Treatment	937	107	113	34
Dialysis-Related Event	12	2	1	2
Elopement	93	10	9	5
Fall	664	76	82	44
Fire	114	15	9	7
Infant Abduction	28	3	2	0
Infant Discharge to Wrong Family	3	1	0	0
Infection-Related Event	172	12	13	6
Inpatient Drug Overdose	94	22	8	3
Maternal Death	120	8	7	6
Med Equipment-Related	218	17	20	5
Medication Error	428	42	38	12
Op/Post-op Complication	823	83	77	27
Other Unanticipated Event****	559	59	81	53
Perinatal Death/Injury	291	36	35	17
Radiation Overdose*	36	3	4	2
Restraint Related Event	123	7	4	2
Self-Inflicted Injury	65	14	9	1
Severe Neonatal Hyperbilirubinemia*	6	2	0	0
Suicide	814	85	90	39
Transfer-Related Event	27	3	2	1
Transfusion Error	124	16	7	3
Unintended Retention of a Foreign Body*	932	115	102	57
Utility System Failure	7	1	0	0
Ventilator Death	48	3	5	2
Wrong-patient, wrong-site, wrong-procedure	1072	109	109	35
Total Incidents Reviewed	8275	901	887	394

Sentinel Event Outcome 2004 through June 2014	#	%
Patient death	4984	58.7%
Loss of Function	801	9.4%
Other***	2710	31.9%
Total patients impacted*****	8495	100.0%

*Unintended retention of a foreign object , Severe Neonatal Hyperbilirubinemia & Radiation Overdose were added to the definition of reviewable events in 2005. This data represents events reviewed since that date, not 1995-2010.

**Other includes: Disease Specific Care, Diagnostic Imaging, Hospice Care

***Other includes: Unexpected Additional Care/Extended Care, and Psychological Impact

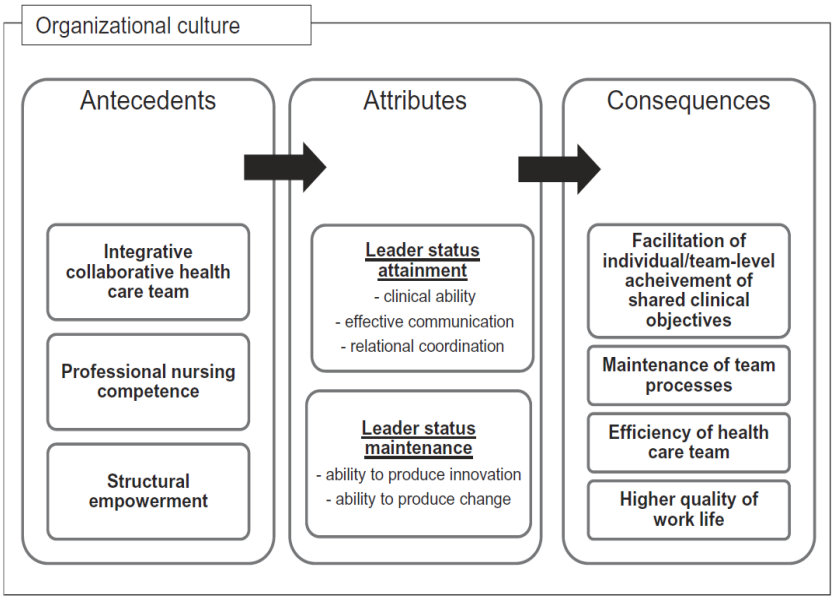
****Other include: Asphyxiation, Burn, Choked on food, Drowned, Found unresponsive

*****Multiple patients may be impacted by a single event.

The Joint Commission. (2014). *Summary data of sentinel events reviewed by The Joint Commission*. Retrieved from: http://www.jointcommission.org/sentinel_event.aspx

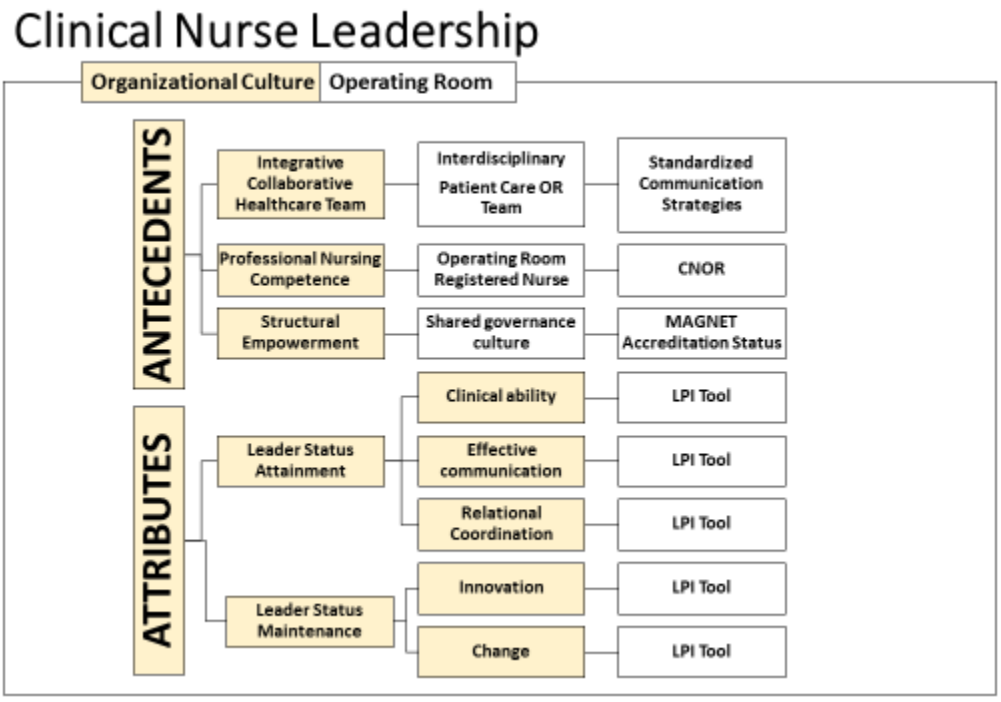
Appendix D

Figure 1. Antecedents, Attributes, and Consequences of Staff Nurse Clinical Leadership in a Hospital Clinical Unit Environment



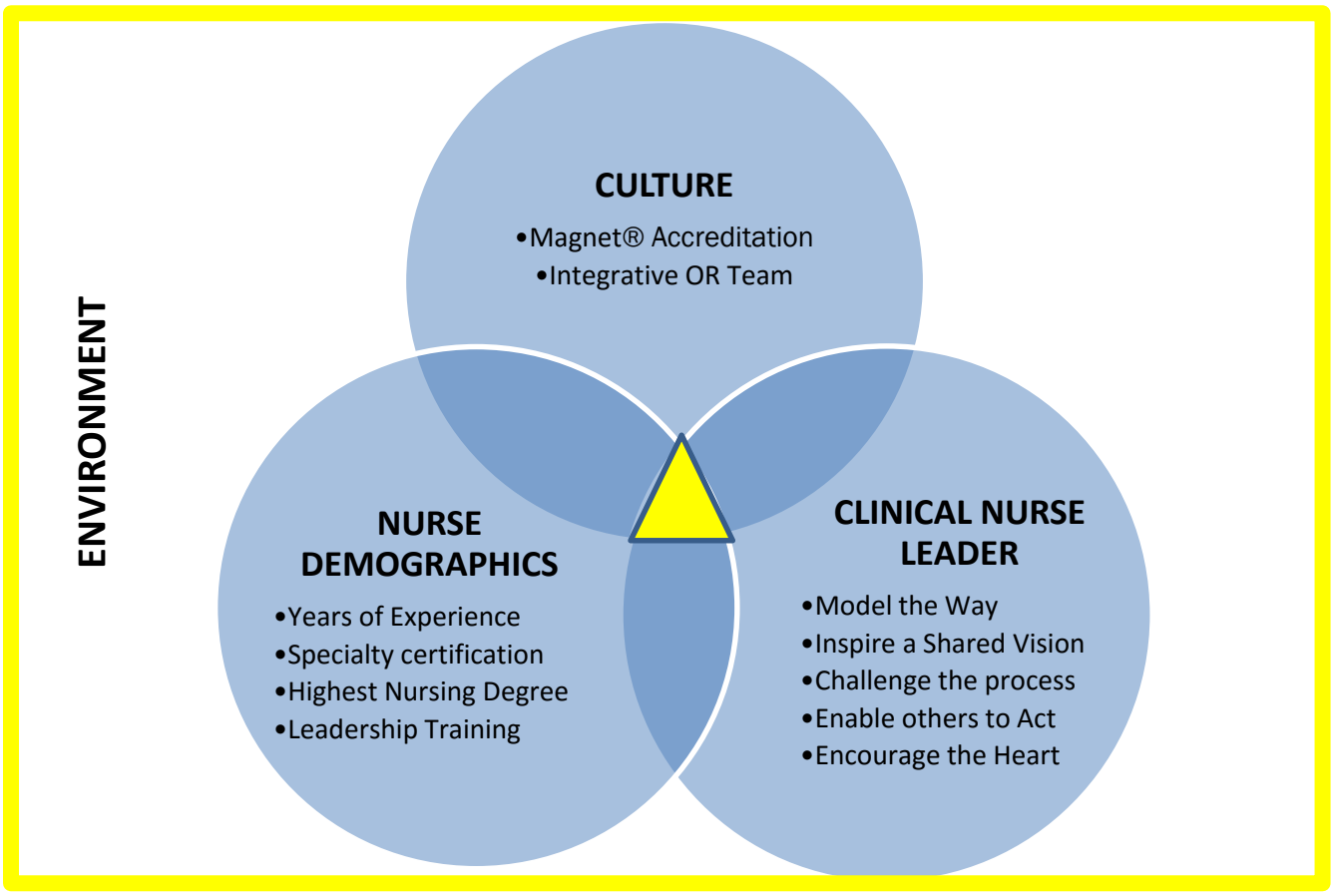
Chavez, E., & Yoder, L. (2014). Staff nurse clinical leadership: A concept analysis. *Nursing Forum*, *50*(2), 90-100.

Appendix E


Clinical Nurse Leadership
Organizational Culture
Operating Room
ANTECEDENTS
Integrative Collaborative Healthcare Team
Interdisciplinary Patient Care OR Team
Standardized Communication Strategies
Professional Nursing Competence
Operating Room Registered Nurse
CNOR
Structural Empowerment
Shared governance culture
MAGNET Accreditation Status
ATTRIBUTES
Leader Status Attainment
Clinical ability
LPI Tool
Effective communication
LPI Tool
Relational Coordination
LPI Tool
Leader Status Maintenance
Innovation
LPI Tool
Change
LPI Tool

Appendix F

Patient Safety Model



Appendix G

CLINICAL NURSE LEADERSHIP Demographics

Q1 Informed Consent Form

Introduction

The purpose of this research study is to examine clinical nurse leadership (CLINICAL NURSE LEADERSHIP) skills of staff nurses in the operating room setting. This study will examine the relationship between clinical nurse leadership skills, culture, and patient safety.

Procedures

You will be asked to complete a short questionnaire about the demographic characteristics. The questionnaire consists of 17 questions and will take approximately 5 minutes or less. This questionnaire will be conducted with an online Qualtrics-created survey. The second portion of the survey is the Leadership Practices Inventory (LPI) tool created by Posner and Kouzes' (2003). The LPI tool is a 30 item assessment tool of self-reported leadership behaviors. No future questions or contact with study participants will occur.

Risks/Discomforts

Risks are minimal for involvement in this study. Although we do not expect any harm to come upon any participants due to electronic malfunction of the computer, it is possible though extremely rare and uncommon.

Benefits

There are no direct benefits for participants. However, it is hoped that through your participation, researchers will learn more about leadership practices of staff nurses.

Confidentiality

All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than then primary investigator and assistant researches listed below will have

access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Compensation

There is no direct compensation.

Participation

Participation in this research study is completely voluntary. You have the right to withdraw at any time or refuse to participate. If you desire to withdraw, please close your internet browser.

Questions about the Research

Please feel free to contact the principal investigator or doctoral student co-investigator with any study questions or concerns.

Principal Investigator: Dr. Gayle Petty DNP, RN (216) 368-2016, gmp13@case.edu

Co-Investigator: Michelle Slater MSN, RN, CNOR (440) 213-8388, mls280@case.edu

Questions about your Rights as Research Participants If you have questions you do not feel comfortable asking the researcher, you may contact the Case Western Reserve University Institutional Review Board (IRB) at (216) 368-6925 or case-irb@case.edu

Q2 I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.

- ❍ Yes
- ❍ No

Q1 Gender

- ❍ Male
- ❍ Female

Q2 RN License

- ❍ Active
- ❍ Inactive

Q3 State of current practice

Q4 Years of RN experience

- ❍ 0-2 years
- ❍ 3-5 years
- ❍ 5-10 years
- ❍ 10 years or greater

Q5 Years of Operating Room experience

- ❍ 0-2 years
- ❍ 3-5 years
- ❍ 5-10 years
- ❍ 10 years or greater

Q6 Highest Nursing Degree

- ❍ Associate Degree (AD)
- ❍ Bachelors Degree (BSN)
- ❍ Masters Degree (MSN)
- ❍ Doctorate (PhD or DNP)

Q7 Currently working in the Operating Room in direct patient care greater than 50% of the time

- ❍ Yes
- ❍ No

Q8 Number of hours per week in the Circulator Role

- ❍ 0-10 hours
- ❍ 10-20 hours
- ❍ 20-30 hours
- ❍ 30-40 hours

Q9 Number of hours per week in the Scrub Role

- ❍ 0-10 hours
- ❍ 10-20 hours
- ❍ 20-30 hours
- ❍ 30-40 hours

Q10 Association of Operating Room Nurses (AORN) member

- ❍ Yes
- ❍ No

Q11 Certified Nurse Operating Room (CNOR) certification

- ❍ Yes
- ❍ No

Q12 Type of Leadership Training

- ❍ None
- ❍ In-Service Training
- ❍ Nursing Continuing Education
- ❍ Academic Credits (college level course)
- ❍ Leadership Certification Program

Q13 Facility of employment has Magnet Accreditation

- ❍ Yes
- ❍ No

Q14 Which communication strategies are utilized in every patient interaction? (Select ALL that apply)

- ❍ None
- ❍ SBAR
- ❍ I-Pass
- ❍ Surgical Debrief
- ❍ Safety Checklist
- ❍ Other

Q15 Please describe other communication strategies:

Q16 Do you have knowledge of the sentinel event rates of your employer?

- ❍ Yes
- ❍ No

Q17 Number of sentinel events per year in current practice area

Q18 Please define sentinel event:

Appendix H

Problems viewing this email? Open in browser

Greetings AORN Members!

We are conducting a research study to examine clinical nurse leadership skills of staff nurses in the operating room. This study will examine the relationship between clinical nurse leadership skills, culture, and patient safety.

We are looking for eligible participants who meet the following criteria:

- Active nurse (RN) in perioperative services
- Currently work directly in patient care more than 50% of the time
- Has more than two years of experience in perioperative services

If you meet the above qualifications and are interested in participating in this study:

- Please click the **survey link**
- Enter the password: *nurse*

This study is completely voluntary and poses no harm to participants. It consists of two questionnaires: demographic information and the Leadership Practices Inventory® tool. No future questions or contact with study participants will occur.

Please feel free to contact the principal investigator or doctoral student co-investigator with any study questions or concerns. If unable to reach either investigator, feel free to contact the Case Western Reserve University Institutional Review Board (IRB).

Start Questionnaire

Thank you,

Dr. Gayle Petty DNP, RN (Principal Investigator)
Email: gmp13@case.edu
Phone: 216-368-2016

Michelle Slater MSN, RN, CNOR (Co-Investigator)
Email: mls280@case.edu
Phone: 440-213-8388