

Creating a Culture of Transformational Leadership to Decrease Inpatient Falls

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Abstract

Introduction/ Purpose: Optimization of patient outcomes, with the absence of adverse events, is the epitome of quality healthcare and the focus of healthcare institutions. Falls have consistently been associated with the quality of nursing care in the acute care, inpatient setting. As one of the largest segments in healthcare, nursing, and in particular nurse managers, have a significant role in advancing organizational quality initiatives, therefore their leadership behaviors need to foster change and create a supportive work environment. The 370-bed community medical center, which consistently strives to achieve quality patient care with zero adverse events resulting in patient harm, has faced challenges particularly as it relates to inpatient falls. Despite the implementation of evidence-based prevention protocols the incidence of falls continued to exceed national and organizational benchmarks therefore an imperative existed to explore initiatives to drive quality patient care.

Methods: An evidence-based nurse manager leadership development program was implemented, which included a nurse manager's self-assessment of leadership behaviors along with a transformational leadership education course. Pre- and post-implementation aggregate data of fall rate per 1,000 patient days were utilized for measurement.

Results: This quality improvement project resulted in an overall decrease of 44% in inpatient fall rates, within three months, as measured by inpatient fall rates per 1,000 patient days, on participating inpatient telemetry units. Results indicate that the overall fall rate for the three units with $t = 2.623$ and $p = 0.015$ demonstrated a statistically significant improvement in fall rates pre and post-project implementation. The Pearson correlation co-efficient ($r = 0.45$) also indicated a significant and positive relationship between pre & post-project implementation aggregate data.

Discussion: Project outcomes indicated similar findings to the literature, that the adoption of transformational leadership behaviors and practices in acute care settings improves overall patient safety outcomes including inpatient falls. Each of the inpatient telemetry units, whose nurse managers participated in the project, exhibited a significant decrease in fall rates over the three months following program implementation, which suggests a correlation between the evidence-based leadership development program, transformational nurse managers, and an improvement in fall rates.

Conclusion: Implementation of an evidence-based comprehensive leadership development program in this 370-bed community medical center, which utilized the transformational leadership theory as a framework, significantly decreased inpatient fall rates. Instituting this program throughout the organization with stakeholder engagement, as a component of both onboarding and continuing education, has the potential to improve quality patient care with a decrease in inpatient fall rates.

Keywords: inpatient falls, nursing leadership, patient outcome, quality of care, transformational leadership

Creating a Culture of Transformational Leadership to Decrease Inpatient Falls

Introduction

Leadership is the relationship between an individual and those who choose to follow with the intent of working towards a common goal (Akbiyik et al., 2020). Quality healthcare is defined by the Institute of Medicine (IOM, 2001) as care that is safe, effective, patient-centered, timely, efficient, and equitable, and is an overarching goal for healthcare institutions. Nursing, as the largest workforce in healthcare, plays a significant role in advancing an organization's quality initiatives; therefore, nursing leaders, in particular nurse managers, must engage in behaviors that foster change and create supportive work environments (Merrill, 2015). A relationship exists between quality outcomes and a nurse manager's ability to impact their team's work environment (Liukka et al., 2018). Leadership style, particularly transformational leadership, has emerged in the literature, as an important factor in attaining quality care and patient safety (Alloubani et al., 2019). The American Organization of Nurse Leaders (AONL, 2011) identifies, in their Future Care Delivery Model, that transformational leaders are a pillar on which patient safety culture is built. Further AONL asserts that nurse leaders are instrumental in leveraging resources to meet the tenants of quality healthcare as defined by the IOM.

Optimization of patient outcomes, with the absence of adverse events, is the epitome of quality healthcare, the focus of private and government regulatory agencies, and the primary focus of healthcare institutions. Falls and related injuries have consistently been associated with the quality of nursing care in the acute care, inpatient setting and are monitored as a nursing-quality indicator by the National Database of Nursing Quality Indicators (NDNQI) and the National Quality Forum (NQF) (Watson et al., 2015). A fall is defined by NDNQI (2020) as a sudden, unintentional descent, with or without injury to the patient, that results in the patient

coming to rest on the floor, against some other surface, on another person, or on an object whether assisted or unassisted or attributable to physiological factors. NDNQI provides quarterly and annual reporting of structure, process, and outcome indicators to evaluate nursing care at a unit level. Of the forty NDNQI quality indicators, across more than 250 nursing-sensitive measures available for reporting and monitoring, NDNQI data as well as the hospital's quality dashboard, related to falls, have consistently identified fall rates as an opportunity for improvement. Despite ongoing initiatives, fall rates at a 370-bed community medical center exceeded benchmarks; therefore, an opportunity existed to improve the quality of care. This Doctor of Nursing Practice (DNP) project implemented a comprehensive, evidence-based leadership development program for nurse managers that utilized the transformational leadership model to improve patient outcomes and decrease adverse events with a particular focus on inpatient fall reduction on telemetry units.

Background

Quality Outcomes in Hospitals

There is a need for a greater understanding of factors that improve quality and patient safety outcomes in hospitals. Although there have been significant healthcare quality improvements in the 20 years since the IOM's national movement, there continues to be significant work remaining to ensure that every person can expect to consistently receive high-quality healthcare (NQF, 2020). According to the literature, approximately 15% of hospitalized patients are harmed during their inpatient admission (Landrigan et al., 2010). The Agency for Healthcare Research and Quality (AHRQ, 2020) notes that despite national attention, patient safety remains a grave concern. AHRQ (2020) further explains that adverse events, defined as preventable or non-preventable medical events, that result in unintended harm to the patient by

an act of commission or omission, rather than by the underlying disease or condition, account for thousands of deaths and hundreds of thousands of injuries annually. Associated with these adverse events are consequences such as disability, unnecessary medical costs, and psychological, emotional, family, and societal impacts.

Patient safety culture has been described as the beliefs, values, and norms shared by the healthcare team that influences their behaviors. A positive patient safety culture, which will drive quality outcomes, is one of transparency, open communication regarding adverse events, and learning from mistakes as well as staff working together as a team (Costar, 2020). A transformational nursing leader is one who promotes a collaborative work environment and focuses on a blameless, patient safety culture that looks at errors as opportunities (Boamah et al., 2018). Such an environment promotes positivity and a high-quality work setting. These nursing leaders, particularly nurse managers, guide, motivate, and support their team; they convince followers to strive for higher performance and provide influence toward a shared vision. The Institute for Healthcare Improvement (IHI, 2001) indicates that the primary function of healthcare leaders is to influence their team in developing behaviors that result in excellent outcomes and are always improving performance. As the healthcare industry strives toward delivering quality care, transformational leaders are essential to success. The relationship between an established patient safety culture and the characteristics of a transformational leader is directly aligned (Asif et al., 2019).

Clinical Outcome - Falls

Patient falls during hospitalization are frequent, yet preventable adverse events, with an estimated 700,000 to one million patient falls annually (Butcher, 2013). Falls in acute care settings are one of the major factors that threaten patient safety, as 30% to 50% of all inpatient

falls result in injuries (Moe et al., 2015). Inpatient falls are responsible for increased morbidity and hospital costs as well as an average of six additional days added to the patient's hospital stay with more than 10% of mortalities experienced by adults aged 65 years and older (Yang et al., 2016). Fall-related injuries are the second leading cause of death in the United States and one of the most reported safety events in acute care environments (Cangany et al., 2015). As of October 2008, Medicare no longer reimburses health care facilities for inpatient falls and fall-related injuries. Falls with injury cost hospitals over 43 billion dollars, therefore lessening falls improves overall hospital operations and viability (Joint Commission, 2015). The demand for quality healthcare is building, and hospital leaders have an imperative to transform their organizations to meet these expectations. Leadership is considered a core component in the delivery of care from both a patient's and a healthcare worker's perspective (Asif et al., 2019).

Transformational Leadership

Transformational leadership theory, originally identified by James MacGregor Burns and extended by Bernard M. Bass, is based on the premise that a symbiotic relationship between the leader and the follower exists in which they motivate each other to higher levels, resulting in value system congruence (Stewart, 2006). According to Stewart (2006), Burns and Bass viewed transformational leaders as change agents, who use their qualities and personalities to motivate their followers to achieve goals, share visions, and empower them. Bass (2006) notes that these leaders inspire others, earn the respect of their team, and take the time to build up each person under their leadership.

There are four elements to the transformational leadership theory that measure effectiveness and illustrate key qualities of the leader known as the 4 I's (Fisher, 2017). These elements include idealized influence, inspirational motivation, intellectual stimulation, and

individualized consideration. Idealized influence is defined as a good moral compass and determination which positively influences those being led. Inspirational motivation is the leader's ability to articulate a clear vision and to communicate with passion and commitment. Intellectual stimulation is the ability to and support for thinking outside the box, making improvements without fear of being dismissed, and encouraging creativity and continuous improvement. Individualized consideration represents the leader's intentionality in taking the time to get to know each person on the team, including their strengths and weaknesses, and providing mentorship. Individualized consideration opens two-way communication between two people, allowing their roles to take a backseat.

Organizational Assessment

Falls remain one of the most vexing patient safety problems facing hospitals. A reduction in the incidence of falls would have a significant impact on a patient's overall hospital experience, decrease secondary complications, improve health outcomes, and minimize their utilization of healthcare resources (Moe et al., 2015). Organizational benefits to fall reduction include a favorable reputation within the community, notable publicly reported data, decreased legal liability, elevated caregiver morale, and improved financial stability (Cangany et al., 2015). A strengths, weaknesses, opportunities, and threats (SWOT) analysis was performed to determine the current state of the medical center, identify areas of vulnerability and barriers to success, assess readiness for change, and prepare a plan of action with effective strategies for project implementation. See Appendix A: SWOT Analysis. The medical center and clinical setting have several strengths such as being an academic medical center with an adjacent medical research facility, a multi-designation Magnet[®] facility, a high reliability, culture of safety, focused organization which sets an expectation of positive patient outcomes, and consistent

support for leadership education and growth. Weaknesses included a loss of quality focus by leadership due to the COVID pandemic, gaps in nurse manager knowledge and experience, and quality initiatives that are caregiver-focused only. Opportunities noted were the need to improve patient safety outcomes, including decreasing falls, rebuilding nurse manager and staff engagement and morale, and developing an initiative to build transformational leadership skills. The organizational threats included financial instability due to decreased reimbursement as well as Medicare penalties, community reputation regarding quality care, increased surveillance by authorities, additional salary expenses due to the nursing shortage as well as staff and nurse manager turnover.

Problem Statement

Inpatient falls, despite continued efforts and fall prevention program initiatives, remained a significant problem at the medical center. Reducing the incidence of these adverse events emerged as one of the organization's significant patient safety concerns; therefore, there was a need to develop a strategy aimed at improving patient outcomes by reducing fall rates. An environment, influenced by a nurse manager's leadership style, which supports patient safety outcomes and decreased adverse events, is essential to achieving an organization's mission, providing an effective work setting for the clinical staff, and delivering quality care to the community served (Merrill, 2015). A nurse manager's leadership development is vital to ensuring organizations have qualified leaders with problem-solving techniques to drive quality patient care and create optimized and cost-efficient organizations (den Breejen-de Hooge et al., 2021). To address the quality metric of inpatient falls at the medical center, a DNP project was conducted with select adult telemetry inpatient unit nurse managers whose units significantly exceeded the fall rate benchmark data and who consented to program participation. This project,

aimed at establishing a culture of transformational leadership, evaluated the impact of an evidence-based comprehensive nurse manager leadership development program on fall rates on their respective inpatient nursing units.

Organizational “Gap” Analysis of Project Site

The medical center, which consistently strives to achieve quality patient care with zero adverse events resulting in patient harm, faced challenges particularly as it related to inpatient falls. In the calendar year 2020, the organization recorded 171 inpatient falls, and in the calendar year 2021, 155 inpatient falls, which were almost evenly distributed month to month for both years. The rate of inpatient falls per 1,000 patient days, measured by NDNQI, noted that the medical center was between the 25th and 50th percentile as compared to other Magnet® facilities. These fall rates, also measured on the health system’s quality dashboard, consistently exceeded the targeted organizational benchmarks for most of 2020 and 2021. See Appendix B: Organizational Data. While various caregiver-focused initiatives to address falls existed, the overall impact in reducing the incidence of these adverse events was limited. An analysis of fall events revealed no trends around the time of day or shift when falls occur. However, it was noted that the majority of falls occurred around the activity of toileting including ambulating to or from the bathroom, standing up to use a urinal, or ambulating to a bedside commode. Despite the implementation of evidence-based fall risk assessments and prevention protocols such as a fall prevention bundle, a patient and family education program and brochure, please call signage, hourly rounding, no pass zone, bed exit and mobility alarms, transfer belts, and seat belt alarms the incidence of falls continued to exceed national and organizational benchmarks.

As the healthcare industry becomes more complex and competitive, there is a need for a greater understanding of factors that improve patient care outcomes in hospitals. Leadership and

specifically leadership style has been recognized as the nexus in achieving an established patient safety culture through its influence on the work environment (Alloubani et al., 2019). The ability of the nurse manager to create this safety culture environment and influence performance will lead to quality healthcare, improved patient outcomes, and decreased adverse events (Asif et al., 2019). The medical center's nurse manager is defined as those nurse leaders with 24-hour/7 day-a-week accountability and supervision of direct care registered nurses in an inpatient setting at the unit or department level. They are a diverse group with varying years of nursing as well as leadership experience. The majority have less than seven years of experience in a leadership role, and all have attained a master's degree in nursing. Although they exhibited leadership potential in their previous clinical roles of charge nurse or assistant nurse manager, the onboarding and development process for each of them as they transitioned to the nurse manager role varied based on their knowledge base, date of hire, and preceptor. The COVID pandemic placed significant barriers on the organization's ability to provide leadership development, education, and mentorship to these managers to help them understand the impact of their behavior in creating a safety culture environment that leads to quality patient care and a decrease in adverse events.

Enabling nurse managers to develop their transformational leadership skills will lead to enhanced relationships with colleagues and direct reports and improved quality patient outcomes (Renjith et al., 2015). To support the development of nurse managers, a comprehensive, evidence-based transformational leadership development program that included leadership style evaluation, a transformational leadership education course along with mentoring and coaching sessions were implemented. To reinforce the learned leadership development course concepts, a leadership toolkit was provided to managers. The toolkit contained supporting educational materials and tangible activities to guide their daily practice. Individualized SMART goals,

related to both unit-based inpatient fall rates as well as their leadership opportunities, were established in collaboration with each nurse manager at the end of the educational component. Mentoring as well as discussion surrounding progress toward goals was reviewed in the bi-monthly meetings. The focus of these mentoring sessions was to reinforce learned concepts, review incremental progress, and strategize for success.

The focus of this evidence-based, DNP performance improvement project was to minimize adverse events, by decreasing fall rates in the acute care telemetry inpatient units, through the professional development of nurse managers based on principles of transformational leadership theory. Formulated to guide and influence manager behavior, the program's primary focus was to redesign perceptions and values to create change in the culture of their respective nursing units. These managers were tasked with taking greater ownership of their work and optimizing performance. Transformational leadership is essential to enhancing organizational culture, achieving effective results, and fostering a high-quality work setting that assures an environment of patient safety resulting in positive patient outcomes (Boamah et al., 2018).

Review of the Literature

A literature review was conducted utilizing PubMed using the MeSH terms (patient outcome) AND assessment) AND nursing leadership as well as the Cumulative Index to Nursing and Allied Health Literature (CINAHL) using the search terms patient outcome AND nursing leadership as well as patient falls AND quality of care. These searches yielded 153 titles and abstracts. The search was refined to include articles written in English and published between 2015 and 2021 which yielded 47 relevant articles. After obtaining the results of the refined search, article titles and abstracts were then further scrutinized to yield 25 articles based on inclusion and exclusion criteria. The inclusion criteria are comprised of literature that focused on

transformational nursing leadership styles or behaviors in acute care settings and the style's impact on the work environment, patient outcomes, quality nursing care, and adverse events. Additionally, articles that addressed inpatient falls and their relation to patient safety and quality care were included. Moreover, the types of participants included nurses who provided direct patient care and nurse leaders, defined as those with 24-hour/7 day-a-week accountability and supervision of direct care registered nurses in an inpatient setting at the unit or department level. Exclusions consisted of articles that focused on health care settings outside of acute care, other leadership styles, did not feature quality as a component, or were not nursing-focused. Twelve articles formed the final group selected for review. Five were research studies that are correlational in design and utilized a cross-sectional survey to obtain data with a sample size that varied from 378 to 778 participants with one each conducted in the United States, Canada, Jordan, Netherlands, and Pakistan. Three articles were retrospective, secondary data analyses with sample sizes ranging from 11 to 281,865. Three peer-reviewed, expert content articles were also utilized along with one systematic review. Several national authoritative data sources were consulted to support this project. See Appendix C, for PRISMA diagram.

Research Studies

In all of the studies, an investigation was conducted to examine the effect of leadership style or behaviors on quality of care, lack of adverse events such as inpatient falls, and patient safety, which were impacted by unit climate and collaboration, structural empowerment, job satisfaction, and safety culture. Four studies suggested that there was an intervening influence on quality patient outcomes with the creation of a healthy work environment that supports autonomy and involvement in decision making which leads to job satisfaction (Adams et al., 2018; Alloubani et al., 2019; Asif et al., 2019; Boamah et al., 2018). These studies also

concluded that creating a unit climate of warmth and belonging, directly associated with the transformational leadership style, contributed to a safety culture and that engaged nurses are essential to ensuring quality care. The fifth study also examined the association between quality of care and leadership styles but with a focus on an identified need for education to strengthen leadership development which endorses the concept that leader education opportunities will result in empowerment and improved decision-making skills leading to perceived quality patient care and outcomes (den Breejen-de Hooge et al., 2021).

Three of the five studies evaluated utilized the Multifactor Leadership Questionnaire (MLQ), a validated and reliable tool, as the primary survey instrument to evaluate the presence of transformational leadership behaviors (Alloubani et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021). The MLQ measures key leadership styles, effectiveness behaviors, and leadership outcomes. The other two studies utilized alternative measurement tools to evaluate transformational leadership tendencies. (Adams et al., 2018; Asif et al., 2019). There was a similarity in three of the studies regarding how the assessment of patient outcomes was collected as it relates to the quality of care and adverse events using clinical nurse surveys and reporting to obtain data, noting that quality of care reported by nurses is an indicator of hospital quality (Asif et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021). Only one study, done by Adams et al (2018) used metrics and data from NDNQI combined with the Centers for Disease Control's National Healthcare Safety Network and the Hospital Consumer Assessment of Healthcare Providers and Systems to assess and support the evaluation of quality outcomes. Alloubani et al (2019) included only patient perceptions as the measurement metric for quality.

Asif et al (2019) noted that transformational leaders demand a higher level of

expectation which motivates clinical nurses to participate in evidence-based work, offer solutions to unit problems, and exert extra effort which significantly predicts quality patient outcomes. Asif et al (2019) goes on to recommend that the development of transformational leadership behaviors by nursing leaders will improve quality and achieve outcomes. Den Breejen-de Hooge et al (2021) takes this concept one step further adding that staff involvement develops a culture of trust and employs looking at error as an opportunity, that is creating a blameless culture; this creates a safety climate that leads to a decrease in adverse events including inpatient falls. Adams et al (2018) note that leader expectations of staff are the most closely linked to patient outcomes and infer that experience in a leadership role, as well as an expectation to improve the clinical practice environment, drives quality. Boamah et al (2018) concludes that transformational leadership is paramount to producing quality patient outcomes and clinical nurse support for an organization's vision.

All of the studies evaluated, support the assertion that a unit and safety culture driven by relational leadership practices are positively associated with decreased adverse events such as inpatient falls and improved patient outcomes (Adams et al., 2018; Alloubani et al., 2019; Asif et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021). The connection may be that effective nursing leadership is essential to the creation of practice environments that support a patient and outcome-focused mission as perceived by clinical nurses. An important concept and worthwhile strategy noted was the need to provide education regarding transformational leadership techniques and practices in the clinical setting as it appears that leadership training opportunities impact unit culture and patient care quality. Although each of the studies varied in design and method all the studies' results aligned with a correlation between transformational leadership behaviors, work environment, patient outcomes, and quality nursing care. The

differences surrounded whether the connection was made directly or indirectly based on subjective survey data versus statistical data that led to identifying the above relationships. Quality data, obtained from hospital or national metrics, would provide validation to the outcome measures in the studies decreasing the bias created by perception data. The studies reviewed were based on multi-site samples to glean a broader perspective and avoid the potential influence of culture bias in a single institution. Leadership style, as promoted by the studies reviewed, is essential to enhancing organizational culture, achieving effective results, and fostering a high-quality work environment that assures positive patient outcomes (Adams et al., 2018; Alloubani et al., 2019; Asif et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021).

Systematic Review

The systematic review utilized 13 research studies conducted between January 2010 and May 2016 with the inclusion criteria of investigations between leadership styles and/or behaviors, patient outcomes, and quality nursing care. The findings note that the practice of effective relationship-focused leadership in nursing management, such as those associated with transformational leadership, can influence directly or indirectly, an increase in quality nursing care and optimal patient outcomes as compared to task-focused leadership behaviors (Akbiyik et al., 2020). This review is in direct alignment with the five research studies noted above, that a correlation exists, between the concept of transformational leadership styles and behaviors in acute care settings and its influence on the work environment resulting in healthcare quality (Adams et al., 2018; Alloubani et al., 2019; Asif et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021).

Secondary Data Analyses

Three articles reviewed were retrospective, secondary data analyses. All highlight the

concept of hospital adverse events, including inpatient falls, as serious safety events with a significant impact on patients and health care organizations (Moe et al., 2015; Liukka et al., 2018; Watson et al., 2015). One of the articles, by Moe et al (2015), had a primary focus on characterizing key factors predictive of falls in hospitals with a review of 281,865 high-risk fall assessments in four US hospitals. They note that patient falls remain a major concern for hospitals since they can result in patient morbidity and mortality as well as increase length of stay and diminish quality of life. Hospital impacts identified include increased costs, legal implications, and the provision of less-than-optimal care. Moe et al (2015) allude to the fact that one-third of falls could be prevented. Similar to Moe et al, Watson et al (2015), examined the variables associated with falls. Their analysis focused on 7,721 falls that occurred in one hospital in Canada over five years. Watson et al (2015) conclude that even with fall prevention strategies and actions, no substantial reduction in falls was seen during the review period. They state that inpatient falls are a systemic, patient safety issue that require institutional strategies to be developed. Liukka et al (2018), takes a varied focus from the other analyses, relating adverse event response by nurse managers to transformational leadership elements. Their review and data collection took place in two hospitals in Finland with 11 nurse manager semi-structured interviews. Liukka et al (2018) state that transformational leadership, a visionary and interactive leadership style, exerts a positive influence on organizational culture, promotes organizational learning, and improves patient safety outcomes. They conclude that to prevent adverse events nurse managers must understand their responsibilities and have the skills to motivate and empower staff.

Peer-Reviewed, Expert Content

To obtain additional support and context for this project, three peer-reviewed, expert-

content articles were examined. Two of the articles focus on organizational patient safety culture as a major influence on patient safety practices, heavily impacted by leadership behaviors (Black et al., 2018; Murray et al., 2018). Murray et al (2018) noted that a safe culture is one nurtured by effective leadership and nurse leaders are the key to influencing organizational culture toward safer practices. They go on to state that clinical nurse leaders are essential for quality care and organizational investment in leadership development will cultivate confidence, professional growth, and competence. Inadequate leadership education is recognized as a barrier to nurses' acceptance of leader roles according to Murray et al (2018) and drives frustration which impacts staff engagement and the ability to influence change. Black et al (2018) have a similar emphasis regarding safety culture, and in particular fall prevention, which they identify as a complex problem that requires leadership engagement to operationalize and encourage staff and drive sustainable change. These authors describe the difficult task in hospitals of providing care without causing harm to patients which necessitates the need for an organizational culture assessment that includes leadership development. The third article by Fischer (2017) centers on transformational leadership skill development and competency as a means to contribute to quality improvements and the safety of patient care while enhancing career satisfaction. Like Murray et al, Fisher (2017) emphasizes the fact that nursing, as the largest group of healthcare professionals, is well-positioned to contribute to healthcare outcomes and patient safety. Fisher (2017) goes on to state that transformational leadership skills can be taught and enables nurse managers to develop a committed workforce and improve teamwork and communication which in turn will drive organizational safety culture.

National Data Sources

The IHI, AHRQ, and NQF all possess a mission to address systemic healthcare quality

issues. IHI's (2001) national action plan to advance patient safety points out that it is imperative for leaders to promote and sustain a safety culture and provides a framework for organizations to measure and evaluate their safety practices. AHRQ (2020) cites quality improvement efforts with leadership support as critical to achieving results. It notes that patient-oriented outcomes can be attributed to leadership presence. AHRQ (2020) provides a comprehensive unit-based eight-step safety program to drive improvement. A key point emphasized by AHRQ (2020) is that leaders are crucial to instilling a commitment to safety in all organizational members to create a positive safety culture. NQF (2020), similar to IHI and AHRQ, affirms that leaders must build a culture and a proficient workforce driven to deliver the safest, person-centered experience as a standard of care. NQF (2020) states that leadership commitment in all aspects of healthcare quality is crucial to organizational change. Their vision is that every person in every community is to receive high-quality care by 2030 and provides an actionable roadmap focused on quality outcomes, leadership, and patient safety (NQF, 2020).

This literature review suggests that evidence exists to support the concept that transformational leadership styles and behaviors in acute care settings influence the work environment which results in healthcare quality, improved patient outcomes, and decreased adverse events, particularly inpatient falls. The implications indicate a need for leaders to have educational opportunities that provide an understanding of the impact of behavior and leadership style on creating a work environment that leads to quality patient care. Organizational strategy, aligned with a strong safety climate, should support and position nurse managers to influence the outcomes of care. Additionally, self-assessment of leadership style by nurse managers, along with the study of the effects of the work environment on quality of care provide valuable insight and a comprehensive understanding of a causal relationship. Adoption of a transformational

leadership style by nurse managers has broad implications for the improvement of a hospital's safety culture ultimately resulting in quality patient outcomes and superior care with an even broader implication for improving patient safety in the United States. See Appendix D: Table of Included Studies.

Evidence-based Practice: Verification of Chosen Option

Evidence-based practice (EBP) is a decision-making approach that incorporates clinical expertise with scientific evidence to guide healthcare interventions (Melynk & Fineout-Overholt, 2015). EBP requires a critical appraisal of the literature along with knowledge of the organization's culture and resource needs in the practice environment to implement a planned change (Moran et al., 2020). With this in mind, the EBP approach aligned best with this DNP project of decreasing fall rates in the acute care telemetry inpatient units through the professional development of nurse managers based on the principles of transformational leadership theory.

Inpatient falls are one of the medical center's significant patient safety concerns. The clinical environment, influenced by the nurse manager's leadership style, supports positive patient outcomes, and promotes a culture that is nurtured in safety. The inpatient telemetry unit fall rates presented an opportunity to provide nurse manager leadership development, particularly regarding transformational leadership, in order to contribute to the overall improvement in the quality and safety of patient care and specifically decrease inpatient fall rates on the participating units.

It is essential for any EBP project that a relevant literature search, as well as a critical appraisal and synthesis of the evidence, is completed. The literature review, as noted above, included five research studies that were all level VI evidence. These studies suggest that substantiation exists to support the premise that transformational leadership styles and behaviors

in acute care settings impact the work setting and decrease adverse events, particularly inpatient falls (Adams et al., 2018; Alloubani et al., 2019; Asif et al., 2019; Boamah et al., 2018; den Breejen-de Hooge et al., 2021). Research implications identify a need for leaders to have educational opportunities which will provide an understanding of the impact of leadership style on the work environment and quality patient care (Black et al., 2018; den Breejen-de Hooge et al., 2021, Fischer, 2017). This performance improvement project, integrated evidence into practice and evaluated the success of the implementation process. It consisted of a comprehensive evidence-based program that included leadership style evaluation, followed by an intervention of a transformational leadership development course along with data review, comparison, and analysis of aggregate inpatient fall rates per 1,000 patient days pre- and post-intervention. The PICOT question for this project was, in a 370-bed medical center, does a comprehensive nurse manager transformational leadership development program with select inpatient telemetry nurse managers, compared to existing development opportunities, contribute to a decrease in their overall unit fall rates per 1,000 patient days within a 3-month time frame following program completion?

Theoretical Framework or Evidence-based Practice Model

The concept of transformational leadership as a theory, as previously discussed, was introduced by Burns and suggests that leaders who demonstrate certain characteristics and behaviors can promote change (Fischer, 2017). He believed that to understand leadership, we must examine human needs and social change. Burns contends that leadership is a moral undertaking and a response to human wants, expressed in human values (Burns, 1978). Bass expanded on Burn's work by creating a definition of transformational leadership. It is described as an integrative style of leadership identified by an enthusiastic, emotionally mature, visionary,

and courageous life-long learner who inspires and motivates by empowering and developing followers (Riggio & Bass, 2006). Competencies essential to the transformational leader include emotional intelligence, communication, collaboration, coaching, and mentoring (Fischer, 2017). Transformational leadership aims to improve organizational performance based on the idea that followers are essential to the leader's ability to the achievement of goals (Stewart, 2006).

The transformational leadership theory elements, represented by the 4 I's, which have been previously mentioned, suggest that even though the four components are interdependent, they must harmonize to yield performance beyond expectations, also known as the additive effect (Stewart, 2006). Relating the 4 I's to nursing, in particular, idealized influence provides opportunities for the nurse manager as a role model as well as their staff to be an advocate for patients (Fisher, 2017). Inspirational motivation involves the nurse manager's ability to articulate a vision to their staff along with supporting staff suggestions for innovation to drive organizational improvements and change. Accountability is also a crucial component of inspirational motivation, as those with an investment in patient care can motivate others to achieve positive outcomes (Fisher, 2017). Intellectual stimulation encourages the nurse manager, as someone who has a significant influence on patient safety, to challenge the status quo, which is key to achieving improvements in patient care (Fisher, 2017). Individualized consideration focuses on the nurse manager's capability to demonstrate genuine concern for the needs of their staff on an individual basis which will encourage empowerment and contribution to the organization's safety culture.

The project's evidence-based comprehensive leadership development program aligned with the four theory elements. See Appendix E: Concept Map - Transformational Leadership Theory. Idealized influence includes emotional intelligence in leadership (Renjith et al., 2015).

Inspirational motivation follows the five practices of exemplary leadership. Modeling the way involves nurse manager's clarifying their personal values and determining congruence with the healthcare organization, which leads to becoming a role model and an alignment between values and actions (Renjith et al., 2015). Inspiring a shared vision requires the nurse manager to cultivate a team spirit and enlist the nursing team in developing a common vision and shared aspirations (Renjith et al., 2015). Challenging the process entails the nurse manager questioning existing processes, generating ideas for innovative change and improvements along with their team, and the willingness to test change and learn from mistakes to achieve a successful implementation (Renjith et al., 2015). Enabling others to act works to develop trust and the ability to strengthen the nursing staff by sharing power and discretion with the nurse manager (Renjith et al., 2015). Encouraging the heart compels the nurse manager to express gratitude and recognize contributions for individual excellence which positively reinforces effective behavior (Renjith et al., 2015). The third I, intellectual stimulation, includes optimizing performance addressed by coaching, unlocking potential, and supporting performance through partnership. Individualized consideration is putting relationships first, focusing on character, and capitalizing on strengths (Renjith et al., 2015). A nursing leader's utilization of the 4I's as part of their daily work drives relational leadership practices which have distinct implications in achieving quality patient outcomes and decreasing adverse events, including inpatient falls. The connection is, that effective nursing leadership, is essential to the creation of a practice environment that supports the patient and has an outcome-focused mission.

Goals, Objectives, and Expected Outcomes

The primary goal of this project was to decrease inpatient fall rates by 10%, as measured by fall rates per 1,000 patient days, on each of the three selected inpatient telemetry units in the

three months, July through September 2022, following the completion of a comprehensive leadership development program.

The objectives for this evidence-based project included:

1. Establish baseline fall rate data. Review the hospital quality dashboard and NDNQI reports for fall rates per 1,000 patient days for July through September 2021, focusing on the same time period as the project. Identify the inpatient telemetry units with the highest fall rates which also exceed national benchmarks. Record baseline aggregate data in July 2022.
2. Provide participating inpatient nurse managers with their individual confidential access to the electronic Multifactor Leadership Questionnaire (MLQ) self-assessment to assess individual leadership styles and effectiveness behaviors one week prior to the leadership development program course and again three months following the completion of the program.
3. Provide a six-hour electronic leadership development course on transformational leadership theory elements to the participating nurse managers in July 2022.
4. Distribute the transformational leadership toolkit, based on theory elements, to participating managers at the conclusion of the leadership development course in July 2022 to provide reinforcement of concepts.
5. Facilitate the development of two SMART goals in collaboration with the participating nurse managers, one goal focused on the individual's MLQ-identified leadership opportunities, and the other goal on the unit-based inpatient fall rates at the conclusion of the leadership development course in July 2022.
6. Provide 30 minutes of individual mentoring for participants every other week to review

SMART goal incremental progress, identify barriers and successes, reinforce transformational leadership techniques from the development course, and review toolkit utilization and application from July through September 2022.

7. Evaluate fall rate data for July through September 2022 via the hospital quality dashboard and NDNQI reports for fall rates per 1,000 patient days, in October 2022 to compare post-intervention aggregate data 2022 with 2021 baseline aggregate data.
8. Review SMART goal progress, with participating nurse managers, along with the second MLQ results in October 2022, three months following the completion of the leadership development program.

The goal of this project was to attain a 10% decrease in the fall rates per 1,000 patient days on each of the participating inpatient telemetry units over the three-month period of July through September 2022.

Methods

This evidence-based project began with a completed needs assessment and gap analysis of the clinical site supporting the need for the performance improvement project. Further planning for this project was guided by a thorough literature review that provided evidence to support the proposed problem statement and PICOT question. Following the project proposal submission, approval was obtained by the UA clinical advisor, the organization's Institutional Review Board (IRB), and the University of Alabama's IRB. Organizational and University of Alabama IRB approval letters can be found in Appendix F: IRB Approval Letters.

Based on July through September 2021, NDNQI and hospital quality dashboard fall rate data, three inpatient telemetry units with the highest fall rates per 1,000 patient days were identified for participation. An individual meeting was held, with each of the three corresponding

unit nurse managers, to describe the project and gauge their interest in participation. Once the DNP student had three nurse managers who agreed to participate in the project, the informed consent was obtained which provided participants with project details and outlined their rights as voluntary participants. Given the professional role of the DNP student and the relationship to participants, the process of informed consent specifically reviewed the protection of human rights and addressed the implied perceptions of power, influence, or coercion by choosing to voluntarily participate in the project. See Appendix G: Participant Informed Consent Form. Once the DNP student had three nurse managers who agreed to participate in the project, the DNP student purchased the MLQ online assessment links, with prior approval for project use from Mind Garden, the authorized provider of the survey, and sent an individual confidential access link to each of the participants. See Appendix H: MLQ Approval for Use. The MLQ is a 45-item survey that takes approximately 15 minutes to complete. Primary survey scales for transformational leadership include builds trust, acts with integrity, encourages others and innovative thinking, and coaches and develops people (Mind Garden, 2022). These scales are in direct alignment with the 4 I's noted above. See Appendix I: MLQ Sample Survey. The MLQ provides an excellent relationship between survey data and organizational outcomes (Mind Garden, 2022). Participants completed the self-assessment within one week of receiving the MLQ email link.

Each of the nurse manager participants received a baseline assessment of their transformational leadership characteristics and leadership effectiveness behaviors. Results of the self-assessment were voluntarily shared by the participants, with the DNP student for the development of individual goals and mentoring. When all three participant nurse managers had completed the assessment and received their results, the six-hour leadership development course

was assigned and completed within two weeks. This course was conducted via a web-based platform, hosted by Alison a free online service. The evidence-based course focused on education and skills training for transformational leadership development, with six modules that included foundational concepts for leaders, cutting-edge leadership tips in three modules, thoughts for wise leaders, and a course assessment. Content is developed and validated by subject matter experts to ensure that content is up to date and contains the evidence-based, valued knowledge and skills of experienced professionals. Alison separately ensures that all courses maintain a consistent standard of pedagogic expertise, such that they are well-structured, easy to follow, and communicate valuable information to the learner. Whenever possible, they match their standard of learning with national standards including Continuing Professional Development (CPD) which notes that the learning activity has reached the required CPD standards and benchmarks, and the learning value has been scrutinized to ensure integrity and quality (Alison, 2022)

At the completion of the transformational leadership development course, each of the nurse manager participants met with the DNP student and was provided with a transformational leader toolkit. This toolkit provided supporting educational resources and activities to reinforce leadership course concepts and guide the nurse managers' daily practice. The DNP student facilitated the development of two SMART goals, in collaboration with each nurse manager participant, surrounding their unique MLQ-identified leadership opportunities and their respective unit-based inpatient fall rates. Every other week, the DNP student provided individual mentoring and coaching opportunities for each participant nurse manager to review progress towards SMART goal attainment, celebrate successes, identify barriers, reinforce transformational leadership techniques from the course, and review toolkit utilization and

application to facilitate achievement of goals. Learned concepts were reviewed and reinforced. Each mentoring session lasted approximately 30 minutes.

At the end of three months, the DNP student purchased additional MLQ online self-assessment links and provided them to the participants to assess their individual personal growth in the foundational concepts of transformational leadership. One of the strengths of the MLQ, as noted by Mind Garden (2022), is that success can be measured through retesting to track changes in leadership style. The results of the pre and post- intervention MLQ self-assessments were not utilized within this DNP project. Although useful for the personal and professional development of participants, they were beyond the scope of the project. The DNP student reviewed the hospital quality dashboard inpatient fall rates per 1,000 patient days for July through September 2022, comparing 2022 post-intervention aggregate data with 2021 baseline aggregate data to evaluate post-program implementation goal achievement. The DNP student shared post-intervention falls data for each unit included in this project, in a meeting with each respective participant nurse manager. This meeting provided managers an opportunity to review post-intervention MLQ survey results and review progress towards SMART goal attainment for leadership development and for unit fall rates. This evidence-based, performance improvement project and its results were presented to all UA-appropriate parties, organizational nursing leadership, and the medical center senior leadership team as the final work for the DNP student.

Project Design

This DNP performance improvement project is a single cohort, non-randomized, prospective design with aggregate data review and analysis of fall rates per 1,000 patient days from the hospital quality dashboard and NDNQI reports pre-and post-intervention. Aggregate fall rate data was analyzed to determine if the evidence-based intervention employed had a

positive effect on patient outcomes and resulted in a decrease in inpatient fall rates on the respective nursing units. Incidental findings provided by the MLQ survey report pre- and post-leadership development program may be utilized by participating nurse managers for personal and professional leadership development but were not included in the data analysis by the DNP student for this project.

Project Site and Population

This project took place in a non-profit, 370-bed medical center that is part of a five-hospital health system located on the outskirts of Philadelphia, PA. The medical center serves two distinct patient populations, those that are affluent and insured and those that are poor and under or uninsured. Further, the targeted project site was the inpatient telemetry units with bed counts ranging from 19 to 32. The population, served by these units, included adult and geriatric patients with a medical, surgical, or orthopedic diagnosis. Many have multiple comorbidities and frequent hospital admissions.

The nurse managers, who agreed to be voluntary participants in this project, have 24-hour/7 day-a-week accountability and supervision of direct care registered nurses on the medical center's inpatient telemetry units and have less than seven years of leadership experience. Their respective units had the highest fall rates per 1,000 patient days in 2021 based on organizational and national benchmarks. Their role, in this project, was to complete all components of the evidence-based transformational leadership development program and then apply the learned concepts in daily practice. The program was comprised of the pre and post validated MLQ survey, review of the self-assessment of their leadership style and effectiveness behaviors, and completion of the leadership development course. Also, each participating nurse manager met with the DNP student, the principal investigator (PI) conducting the project, as facilitator and

mentor to develop individualized SMART goals related to leadership development as well as improvement in their respective unit-based inpatient fall rates. The nurse managers, as the vehicle with which this project was driven, implemented and integrated transformational leadership principles and behaviors into their daily practice based on their learnings in the transformational leadership development course. The application of learned concepts into daily practice was supported by the toolkit and mentoring relationship. They developed a mentor/mentee relationship with the DNP student and met every two weeks to review SMART goal incremental progress, celebrate successes, identify barriers, reinforce transformational leadership techniques from the course, and review toolkit utilization and application to facilitate the achievement of goals.

The DNP student was the PI for the scholarly project as well as the Vice President, Patient Care Services for the organization. The supervisory relationship of the DNP student to the participants in the project had the potential to complicate the study design. This required careful consideration and attention for the protection of human rights for all participants in all matters given their relationship to the PI. Another barrier was the delayed availability of the third quarter NDNQI data post-implementation for comparison purposes. Historically, NDNQI fall rate data, and the hospital quality dashboard is closely correlated. Despite the lack of NDNQI data availability to corroborate the hospital quality dashboard fall rate data for July through September 2022, the post-implementation results were statistically significant and didn't require additional validation.

A multi-designation Magnet® facility with an organizational culture supportive of nursing leadership education and growth, along with the academic mindset that is present in an academic medical center, have created a supportive infrastructure for the implementation of

quality-focused improvement projects and the successful execution of this evidence-based, performance improvement project. The senior leadership team, guided by their commitment to patient safety and quality improvement, expressed interest in this project enabling its effective facilitation.

Measurement Instruments

Inpatient fall data was acquired from the hospital quality dashboard and NDNQI report for fall rates per 1,000 patient days. These reports are produced monthly by the medical center's quality department and quarterly by the NDNQI national database. The MLQ survey, as a valid and reliable instrument, measures key leadership styles, effectiveness behaviors, and leadership outcomes. It can assist in determining whether a leader exhibits the relationship style characteristics and practices associated with transformational leadership principles (Alloubani et al., 2019). It provided personal and professional development information, as well as a baseline understanding of transformational leadership characteristics, for the nurse managers who were participating in the leadership development program and implementing transformational leadership principles and behaviors. Aggregate fall rate data per 1,000 patient days, for the three selected inpatient telemetry units, were measured and analyzed pre- and post-intervention. The falls report was sent via an encrypted and secured email to the DNP student from the medical center's quality department and is stored on the secured hospital server. Although not included in this DNP project, the MLQ self-assessment and comparison to universal norms, as a component of the program, were measured and analyzed pre- and post-intervention for the personal use of participant nurse managers. The MLQ reports were generated by the online service and securely emailed to the participating nurse managers. The goal for this project was to decrease fall rates per 1,000 days for the three selected inpatient telemetry nursing units. Given the education

provided in the transformational leadership course, as well as participation in the evidenced-based transformational leadership development program, an increase was noted in the MLQ actual scores for participating nurse managers. These incidental findings may be utilized by the participating nurse managers for personal and professional leadership development but as previously mentioned, were not the focus for this project.

The standard reliable quality measure for falls is a national benchmark established by NDNQI and endorsed by the NQF and AHRQ (National Database of Nursing Quality Indicators, 2020). This quality measure, the fall rate, is calculated as the number of falls per 1,000 patient days, utilizing the midnight census to calculate the number of patient days. Fall rate is a measurement of risk, it tells you how many falls you can expect for every 1,000 bed days of care. It can be influenced by patient characteristics, nursing unit, hospital culture, environment, equipment, and procedures. It is recommended that fall data be calculated as a fall rate per 1,000 patient days rather than the total number of falls in a given time frame because rates per 1,000 patient days versus raw numbers provide a meaningful way to directly compare falls over time, across hospitals and among inpatient units to determine if care is improving.

Data Collection Procedures

Pre-Implementation –

Following organizational and UA IRB approval, the 2021 fall rate data for the organization was accessed from the hospital quality dashboard and NDNQI reports through the medical center's information system SharePoint[®] site, an encrypted, password-protected system that meets all standards of the Health Insurance Portability and Accountability Act (HIPPA). No patient identifiers are included in these summary reports, see Appendix B: Organizational Data. Inpatient telemetry units that exceeded national and organizational benchmarks for fall rates in

2021 and their respective nurse managers were identified as potential participants in the project. These managers were presented with detailed information regarding the project and its purpose as well as the expectations for participants. The Nurse managers who agreed to participate received an informed consent, approved by the IRB, further explaining their rights as voluntary participants and expectations for participation.

Implementation –

Following receipt of the signed informed consent from the participants, a unique, confidential MLQ survey link was sent to the participants, by the DNP student, which provided them access to the platform Transform©, on behalf of the third-party survey provider, Mind Garden, which has exclusive rights to all survey tools and educational resources. The DNP student obtained written permission to use all materials. See Appendix H: MLQ Approval for Use. The login method that the provider utilized was password protected and encrypted based on the identified user's email. The survey provider's security practices included measures to secure web access to data, limit database access to essential staff members, and undertake efforts to address security vulnerabilities for various tools and databases (Mind Garden, 2022). They also have policies in place to prohibit employees from viewing personal information without business justification. The survey provider does not sell or otherwise share any individually identifiable information given by a participant to any entity or organization. The medical center's secure employee email server, which is encrypted, and password protected, was used for all survey communication. The survey data and information received from the third-party provider were stored on the medical center's secured servers. Individual participants were assigned a unique identification number to ensure that survey responses were anonymous, and that no data was linked back to them directly. Results of the self-assessment were voluntarily shared with the

DNP student for the development of individual goals and mentoring as part of the intervention but were not included in data collection.

Assignment of the leadership development course was administered electronically utilizing Alison, an online education platform, to each of the three participants following completion of the MLQ survey. The leadership course is a series of six one-hour modules that may be taken all together or incrementally. Participants had two weeks to complete all six sessions. Alison employs security measures to protect against unauthorized access to, or unauthorized alteration, disclosure, or destruction of data that is collected. Access to the Alison server is password protected and an important component of their security system.

Monthly fall rate data from the hospital quality dashboard and quarterly NDNQI reports were accessed from the medical center's information system SharePoint® site for review. Organizational fall rates were calculated per 1,000 patient days with aggregate reporting of data uploaded by the medical center's quality department each month. NDNQI data, received quarterly from the NDNQI national database by the medical's center quality department is uploaded to the information system SharePoint® site.

Post-Implementation –

Three months following the intervention of the leadership development program, fall rate aggregated data for July through September 2022 were obtained once again via the hospital quality dashboard through the medical center's information system SharePoint® site. No patient identifiers were included in these summary reports. Although the use of the NDNQI fall rate data for the third quarter, July through September 2022, was anticipated, the data will not be available until late December 2022 and therefore cannot be included in the post-implementation data analysis. A second MLQ self-assessment survey link to the platform Transform© was sent by the

DNP student to each of the nurse manager participants. The login method and security practices remained the same as noted above. Although not included in the DNP project, the MLQ self-assessment results and comparison to universal norms were measured and analyzed pre- and post-intervention for the personal use of participant nurse managers only. MLQ reports were generated by the online service and securely emailed to the nurse managers participating in the implementation of the project.

Data Analysis

Data analysis to examine pre- and post-intervention fall rates per 1,000 patient days commenced three months post leadership development program. A paired sample T-test including Pearson correlation using Microsoft Excel[©] analytics was utilized for the analysis of data to determine whether there was a mean difference between the two sets of aggregate fall rate data as well as identify any statistically significant results the DNP project intervention had on the measured outcome of fall rates. As a secondary analysis of data, a run chart, was developed utilizing Microsoft Excel[©] analytics to examine the fall rates for the selected timeframes of July through September 2021 as compared to 2022, to visually depict if there were any changes over time. The run chart provided an objective understanding of the data and helped to determine if the intervention led to improvements. See Appendix J and K, for project analytics. A descriptive statistical analysis of the patient population, for each of the telemetry units included in the project, was completed including measures of central tendency and variation as it relates to age, diagnosis, and primary unit focus. See Appendix L, for a detailed analysis.

The MLQ pre-and post-intervention survey reports provided data on how frequently each of the nurse managers believed they exhibited various kinds of leadership behaviors. Their feedback was profiled against researched benchmarks of the optimal frequency for each

leadership style. Comparisons were provided with universal norms. No comparison was done between the nurse manager participants. A listing of the nurse managers' ten highest and lowest frequency leadership behaviors was also provided as part of their individual reports to assess both their perceived strengths and weaknesses. Given the education that was provided in the leadership development course, an anticipated increase in the MLQ transformational leadership behavior self-assessment and comparison to universal norm scores post-intervention was expected. These incidental findings were of interest to the DNP student and may be utilized by the participating nurse managers for personal and professional leadership development but were beyond the scope of this project.

Cost-Benefit Analysis/Budget

Financial costs for project implementation and evaluation for the DNP student were nominal as the leadership development course was free of charge and the MLQ pre- and post-implementation surveys and materials cost approximately \$300. This DNP quality improvement project did not result in any direct costs to the medical center, however, there were indirect costs associated with the project. Each nurse manager devoted roughly 12 hours to project-related activities including pre- and post-MLQ surveys, the leadership development course, and the scheduled meetings with the DNP student. The average nurse manager's hourly salary at the medical center is \$63.00, therefore the indirect cost per nurse manager was \$756 with a total cost of \$2,268. Nine hours of the DNP student's time, during work hours, was spent throughout the project, meeting with the nurse managers which cost the facility an additional \$1,080.

The organizational return on investment for this project has the potential to be substantial as there were statistically significant findings in the reduction of fall rates for participating inpatient telemetry units. The average cost for one inpatient fall, according to NDNQI (2020), is

about \$14,000. The average medical center fall rate per 1,000 patient days from July to September 2021 was 2.21 based on an average of 7,356 patient days. The fall rate lessened to 1.59 for July through September 2022, with an average of 7,673 patient days. This equated to ten fewer falls during that time period in 2022 versus 2021 and has the potential to result in an annualized reduction of 40 falls or a fall rate of 1.30 based on 2021's patient days of 88,578 for the calendar year. Costs to implement the project, as designed, throughout the entire medical center, with all 15 nurse managers would be \$15,840. The potential reduction in costs associated with falls for the medical center could be approximately \$560,000 for one year. The overall savings for that one year would be \$544,160 when considering the implementation costs. See Appendix M, for Cost/Benefit Analysis.

Timeline

The DNP project proposal was submitted and approved by the assigned University of Alabama (UA) faculty advisor in April 2022. Organizational Institutional Review Board (IRB) approval was received in May 2022, followed by UA IRB approval, on July 7th, 2022. Fall rate data review, telemetry unit selection, manager informed consent, and email to nurse managers with MLQ self-assessment survey link to establish baseline data were completed within the first week following IRB approval. Completion of the MLQ survey by the nurse managers and MLQ reports were received and reviewed by July 15th. The leadership development online course was accessed by the nurse manager participants and completed by July 21st. Within five business days, following the nurse managers' completion of the online development course, the DNP student met with each participant, provided them with the toolkit, and facilitated the development of their two SMART goals. Beginning in July 2022 and ending in October 2022, bi-weekly progress review meetings with the DNP student and nurse manager participants

occurred. At the beginning of October 2022, an email to the nurse managers with the MLQ self-assessment survey link, to obtain post-intervention data, was sent with a request for a one-week completion. On October 15th, data analysis of the fall rates per 1,000 patient days from the previous three months was compared to the 2021 baseline aggregate data from those same three months in 2022 to evaluate post-program implementation goal achievement. The DNP student shared post-intervention falls data for each unit included in this project, in a meeting with each respective participant nurse manager in the last week of October 2022. This meeting provided managers an opportunity to review post-intervention MLQ survey results and review progress towards SMART goal attainment for leadership development and for unit fall rates. This evidence-based, performance improvement project and its results were presented to all UA-appropriate parties, organizational nursing leadership, and the medical center senior leadership team as the final work for the DNP student in early November 2022.

Ethical Considerations/Protection of Human Subjects

Organizational and UA IRB approval was obtained before initiating this performance improvement DNP project. Participation in this project was voluntary. No coercion or retribution took place, and no punitive actions were implemented. All aggregate falls data and SMART goals were stored within the medical center's password-protected computer system. There are no known conflicts of interest. All patient information that was shared amongst the participants and the DNP student was protected by the Health Insurance Portability and Accountability Act (HIPAA) of 1996 which protects the privacy of patients' health information (Modifications to the HIPAA Privacy, Security, Enforcement, and Breach Notification Rules, 2013). Additionally, standards of care for nursing practice were carefully followed. All falls information collected as a part of evaluating the impact of this project was aggregated data from the hospital quality

dashboard and NDNQI reports which did not include any patient identifiers. The consented project participants remained anonymous assured by each of them being assigned a unique identification number so that no data can be linked back to them. The list of participants and their identifying numbers was kept in an Excel© spreadsheet on the DNP student's password-protected computer. When the study was completed, and the data had been analyzed, this list was destroyed.

One potential barrier that was identified is in relation to the nurse managers, who are in a direct reporting relationship with the DNP student conducting this project. To ensure the protection of human rights, a voluntary informed consent was provided to each nurse manager by the DNP student, explaining their rights as well as expectations regarding the project. Participation was voluntary and without consequences, penalty, retribution, punitive action, or impact to their current position, employment, or professional standing. They had the opportunity to decline to participate or withdraw from the project at any time.

Results

Prior to project implementation, baseline 2021 fall rates for the three-month time frame of the project, July through September, were reviewed for all inpatient telemetry units at the medical center to determine those with the highest fall rates. Three units were identified, along with their respective nurse managers, who met the inclusion criteria and consented to participate. Unit 1's fall rate was 2.51, with an NDNQI rate of 1.88, Unit 2's fall rate was 3.01 with an NDNQI rate of 1.50, and Unit 3's fall rate was 4.04 with an NDNQI fall rate of 2.89. A 10% fall rate reduction goal was established for each of the participating inpatient telemetry units. Unit 1's fall rate goal was 2.26, Unit 2's was 2.71, and Unit 3's was 3.64. Following the completion of the evidence-based nurse manager leadership development program, the aggregate fall rate

data was compiled, for July through September 2022, included in the project timeframe. Unit 1's fall rate was 1.30 a 52% reduction, Unit 2's fall rate was 1.22 a 40% reduction, and Unit 3's fall rate was 1.74 a 43% reduction. See Appendix N: Unit Falls Data.

Statistical analysis was performed to determine the impact of the evidence-based DNP project on fall rates per 1,000 patient days. A paired t-test (See Appendix J: Project Statistics) was used to compare pre and post-implementation aggregate fall rates. The results indicated that the overall fall rate for the three units ($t = 2.623$, $p = 0.015$) demonstrates a statistically significant improvement between pre and post-project implementation. The Pearson correlation coefficient ($r = 0.45$) indicates a significant and positive relationship between the pre & post-project implementation data. The run chart (See Appendix K: Run Charts) illustrates an overall decrease in fall rates across all three units as compared to the project goal of a 10% decrease in fall rates per unit. Unit 2 demonstrated an overall consistent decrease in fall rates over the three months while units 1 and 3 displayed some variation from month to month. A bar chart is included to depict the nominal fall rate data changes for the two time periods being compared in this project. See Appendix O: Bar Charts.

The descriptive statistical analysis of the patient population, for each of the telemetry units included in the project, revealed that 54% of the patients were 65-89, with 54% female and 46% male and a racial breakdown of 54% white and 41% black with several other races of lower percentages. See Appendix L: Unit Population Data The primary diagnoses for Unit 1 are diabetes at 20% followed closely by congestive heart failure at 19%. Unit 2's predominant diagnosis is major bowel disease, which comprises 42% of their patient population, and Unit 3's is major joint replacement of the lower extremities at 20% followed by sepsis at 13%.

Interpretation/Discussion

Patient safety, quality patient care, and the avoidance of adverse events, particularly inpatient falls, all of which have a substantial impact on an individual's quality of life, are a crucial focus in hospitals and healthcare organizations. The medical center was facing a significant challenge related to inpatient falls, with above national average fall rates per 1,000 patient days and the nurse manager composition at the medical center is one with varying years of nursing as well as leadership experience. Nursing leaders, in particular, nurse managers and their leadership behaviors, are critical to operationalizing and fostering a safety culture towards safer practices that drive quality patient outcomes. The aim of this DNP quality improvement project was to examine whether the implementation of a comprehensive, evidence-based leadership development program for nurse managers, focused on transformational leadership, would improve patient outcomes, and decrease adverse events, particularly inpatient falls and fall rates on telemetry units with the highest fall rates at the medical center.

The outcomes of this PI project, indicate similar findings to the literature, that the adoption of transformational leadership behaviors and practices in acute care settings improves patient safety, in particular, inpatient falls. Each of the inpatient telemetry units whose nurse managers participated in this project exhibited a significant decrease in unit fall rates over the three months following program implementation, which suggests a correlation between the evidence-based leadership development program, transformational nurse managers, and an improvement in patient care quality, particularly inpatient fall rates. An overall decrease in fall rates of 44% across the three inpatient telemetry units was realized over the three-month project period against an overall 10% goal, with each unit contributing to the overall fall rate reduction. The analysis of the run charts completed for this project demonstrates that Unit 2 although

experiencing falls each month, maintained the most consistent performance, while Unit 1 had no falls for two months followed by two falls in September, both of which, when investigated by the nurse manager, were contributed to human factors. Unit 3 also had two months with no falls during the project period but had a large spike of three falls during August, mid-project. Following this result, the nurse manager of Unit 3 utilized the toolkit provided at the beginning of the project to adopt additional transformational leadership practices which led to a refocus for the nurse manager and the clinical team resulting in zero falls the following month.

Leadership style, particularly transformational leadership, is an important factor in attaining quality care and patient safety (Alloubani et al., 2019). The American Organization of Nurse Leaders (AONL, 2011) identifies, in their Future Care Delivery Model, that transformational leaders are a pillar on which patient safety culture is built. Further AONL asserts that nurse leaders are instrumental in leveraging resources to meet the tenants of quality healthcare as defined by the IOM. The participating nurse managers were engaged and enthusiastic throughout the program and contributed to the overall success of the project. They were eager to understand their opportunities for improvement, learn for the online course, and work consistently throughout the three months on SMART goal achievement. In addition to the goal of a 10% decrease in their fall rates in July through September 2022 as compared to 2021, which they all achieved; each of the nurse managers identified SMART goals, based on the MLQ survey results of their lowest scores in transformational leadership effectiveness behaviors. These SMART goals were unable to be fully achieved during the three months of the project, due to its shortened timeframe, but each nurse manager will continue to work toward achievement in the months to follow, for both their personal and professional development.

Several limitations to this project were identified. The original project design for data

collection and analysis included both hospital quality dashboard aggregate fall rate data as well as NDNQI fall rate data. Unfortunately, NDNQI data for the third quarter, July through September 2022, will not be available until late December 2022 and therefore is not included in the post-implementation data analysis. Additionally, the timeframe of three months is shorter than desired to evaluate the full effectiveness of change in leadership behaviors. Furthering this project with current participants as well as expanding the program throughout the medical center or health system should be considered to determine the full impact of this comprehensive, evidence-based leadership development program, using the transformational leadership theoretical framework. Continued facility and leadership support are imperative for conducting further study which has the potential to improve quality patient outcomes and decrease adverse events, particularly inpatient falls, with the adoption of transformational leadership behaviors and practices in acute care settings by nurse managers.

Conclusion

The inpatient fall rates, which exceeded both national and organizational benchmarks, at the medical center were a prevalent concern that required intervention. With this in mind, it was imperative to translate evidence into practice in order to improve quality patient outcomes and decrease adverse events, particularly inpatient falls. Current evidence suggests that the adoption of transformational leadership behaviors and practices in acute care settings improves patient safety.

A culture of leadership support for evidence-based practice was an important factor in engaging stakeholders at all levels to champion this project. After implementing a comprehensive leadership development program in this community medical center, based on the transformational leadership theory, inpatient telemetry fall rates decrease significantly during the

three months of the project. This project exposed a gap in education for nurse managers and served as a reminder that education is needed to provide them with the necessary knowledge and skills to foster leadership growth and behaviors essential to creating a safety culture environment that leads to quality patient care. Instituting this comprehensive leadership development program throughout the organization with stakeholder engagement, as a component of both onboarding as well as continuing education, has the potential to improve quality patient care with a decrease in inpatient fall rates. This quality improvement initiative demonstrated how simple and inexpensive but extremely beneficial leadership education and development can be for the optimization of patient outcomes for a healthcare organization.

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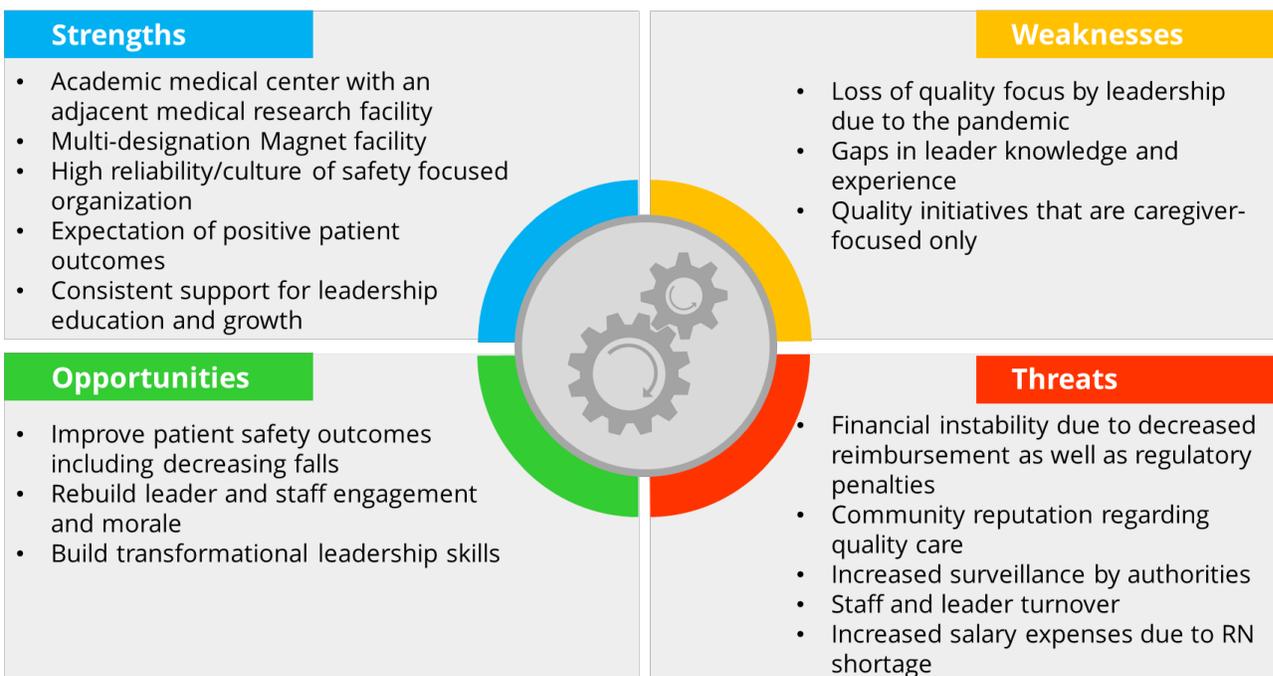
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Appendix

Appendix A: SWOT Analysis

SWOT analysis



Appendix B: Organizational Data

Inpatient Falls 2020

Inpatient Falls - All Harm Scores*

01/01/2020 to 12/31/2020

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Total
All IP Falls	24	13	10	16	20	11	12	14	7	13	15	16	171
Assisted to Floor	2	2	1	3	5	3	4	2	0	2	1	6	31
Found on Floor/Unassisted to Floor	18	11	8	13	14	8	8	10	7	9	13	10	129
Unknown	4	0	1	0	1	0	0	2	0	2	1	0	11
Patient Days	7,187	6,624	5,539	5,517	5,981	5,570	5,924	6,271	6,223	6,968	7,261	7,318	76,383
Falls / 1000 Days	3.34	1.96	1.81	2.90	3.34	1.97	2.03	2.23	1.12	1.87	2.07	2.19	2.24

Inpatient Falls 2021

Inpatient Falls - All Harm Scores*

01/01/2021 to 12/31/2021

	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Total
All IP Falls	5	11	16	14	8	10	12	19	16	14	19	11	155
Assisted to Floor	1	1	4	3	2	3	3	2	0	5	8	4	36
Found on Floor/Unassisted to Floor	3	10	12	9	5	7	9	16	16	8	11	7	113
Unknown	1	0	0	2	1	0	0	1	0	1	0	0	6
Patient Days	7,239	6,580	7,501	7,500	7,378	7,278	7,025	7,789	7,256	7,828	7,342	7,862	88,578
Falls / 1000 Days	0.69	1.67	2.13	1.87	1.08	1.37	1.71	2.44	2.21	1.79	2.59	1.40	1.75

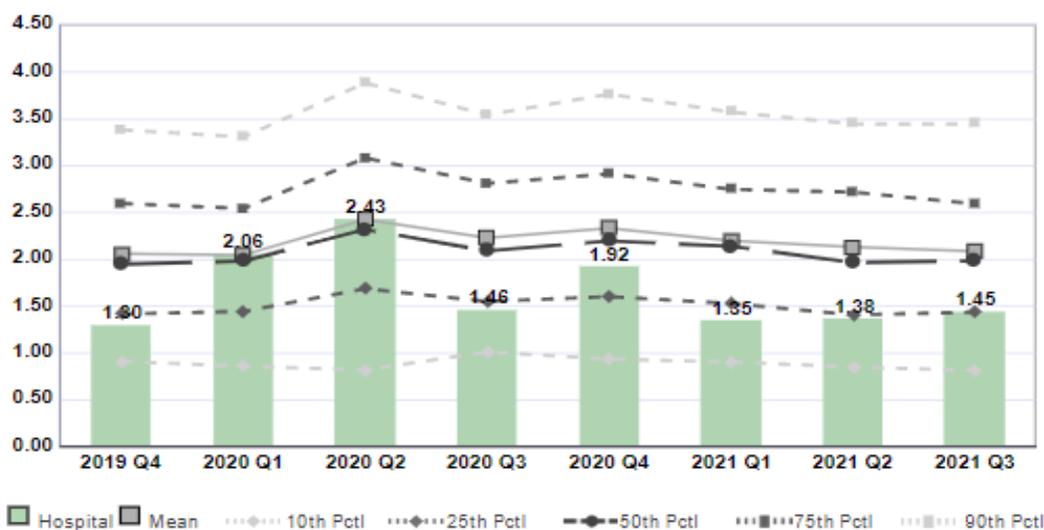
NDNQI Data 2019-2021

NDNQI Data

Compared by: Magnet

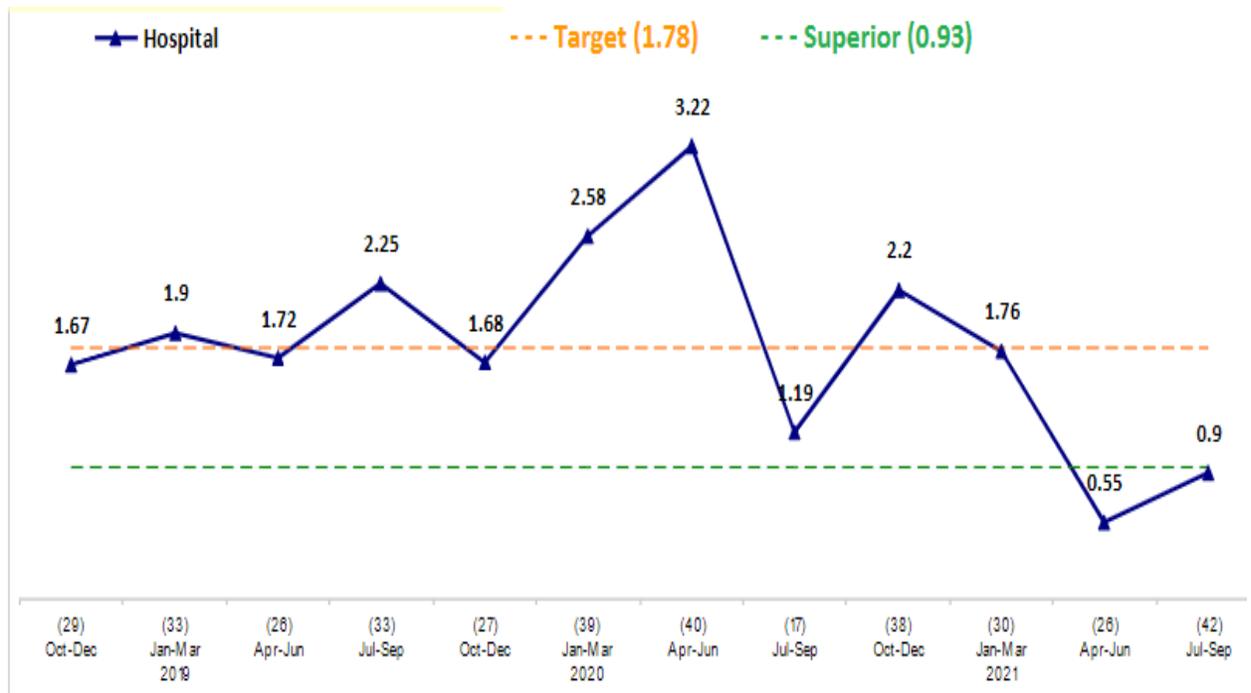
Peer Group: Magnet Facilities

Measure: Total Patient Falls Per 1,000 Patient Days

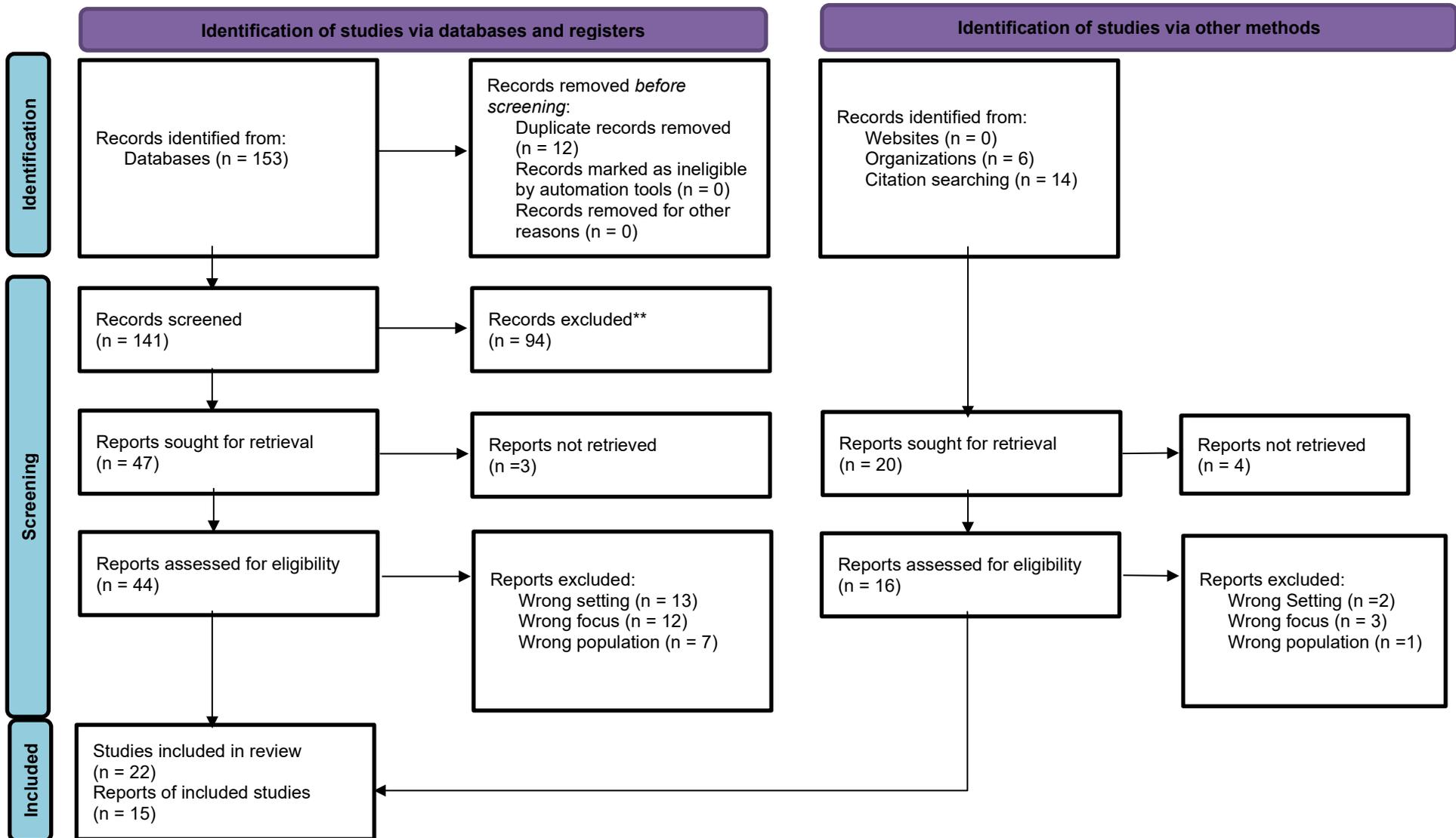


Metrics	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2	2021 Q3	Average
Hospital-Unadjusted Measure	1.30	2.06	2.43	1.46	1.92	1.35	1.38	1.45	1.67
Mean	2.06	2.05	2.43	2.23	2.33	2.20	2.13	2.09	2.19

Quality Dashboard 2019-2021 Hospital Quality Dashboard



Appendix C: PRISMA Diagram



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>

Appendix D: Table of Included Studies

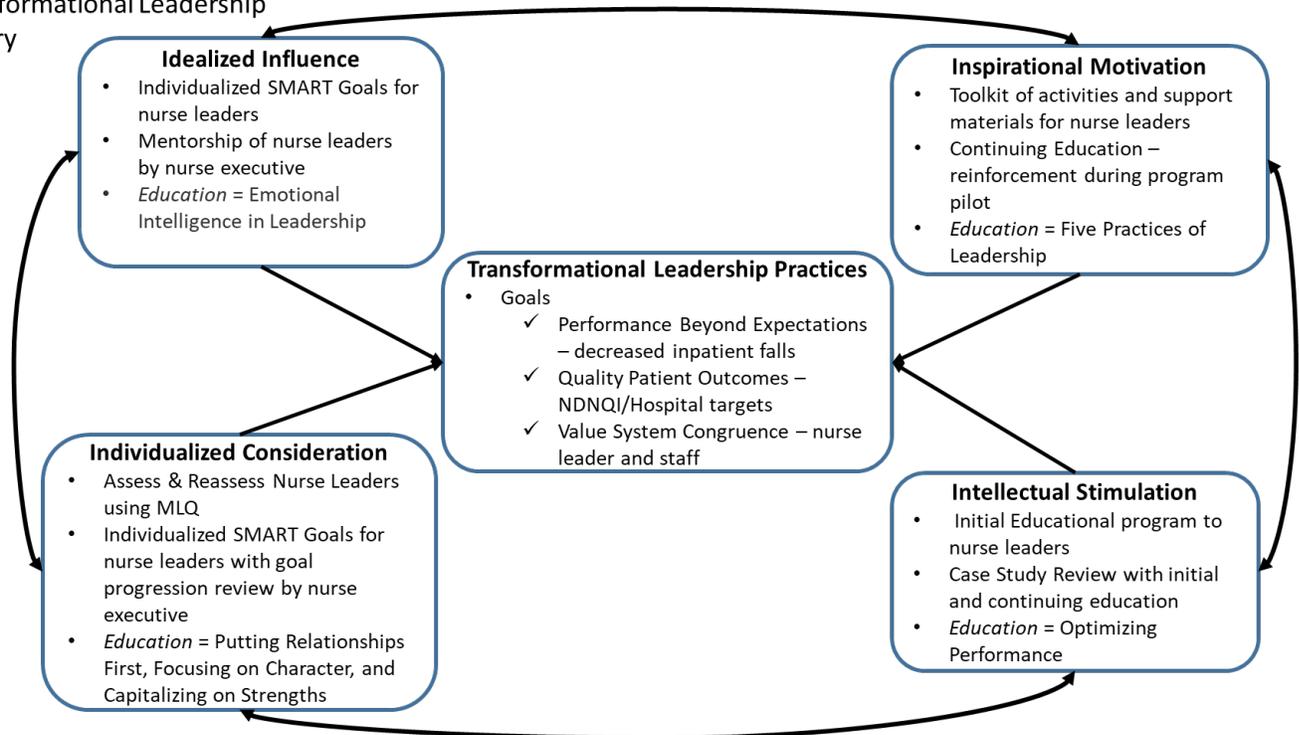
Authors, Year, Country	Design/ Sample	Purpose	Measurement Method	Results
Boamah, Spence-Laschinger, Wong, & Clarke, 2018, Canada	<p>Descriptive Correlational Qualitative</p> <p>Cross-sectional predictive survey of 378 RNs in direct, acute patient care in hospitals across Ontario, Canada (38% response rate)</p>	<p>To investigate the effects of nurse managers' transformational leadership behaviors on job satisfaction and patient safety outcomes</p>	<p>Transformational Leadership - Multifactor Leadership Questionnaire -5X Short Rater (MLQ-5X)</p> <p>Structural Empowerment – Conditions of Workforce Effectiveness-II (CWEQ-II)</p> <p>Staff Nurse Clinical Leadership – Clinical Leadership Survey (CLS)</p> <p>Nurse-Assessed Adverse Outcomes – American Nurses Association Nursing Quality Indicators</p>	<p>Transformational leadership had a strong and significant positive, direct effect on structural empowerment which increased nurses' job satisfaction and decreased the frequency of adverse patient outcomes by nurses' perception</p>
Alloubani, Akhu-Zaheya, Abdelhafiz, & Almatari, 2019, Jordan	<p>Descriptive Correlational Quantitative</p> <p>Cross-sectional, convenience sample of 400 respondents- 50 nurse managers, 150 staff nurses, 200 patients at 3 private hospitals and 3 public hospitals</p>	<p>To investigate managers' leadership styles, from the perspective of registered nurses, and its effects on the quality of nursing care in both the private and public healthcare sectors.</p> <p>To assess the relationship between leadership styles and particular organizational outcomes</p>	<p>Nursing Leadership - Multi-Factor Leadership Questionnaire (MLQ-5X)</p> <p>Patient Satisfaction - Nursing Care Quality Questionnaire</p>	<p>A positive correlation was found between transformational leadership style with organizational outcomes and the quality of nursing care</p>

Authors, Year, Country	Design/ Sample	Purpose	Measurement Method	Results
<p>Adams, Gregas, & Fryer, 2018, United States</p>	<p>Descriptive Correlational Quantitative</p> <p>Cross-sectional survey of 778 nurse leaders from a convenience sample of 35 hospitals varying in bed size, setting, and type located across eight U.S. states</p> <p>Data collection by hospitals for the National Database of Nursing Quality Indicators combined with the Centers for Disease Control’s National Healthcare Safety Network and the Hospital Consumer Assessment of Healthcare Providers and Systems</p>	<p>To address the evidence gap between the direct influence of nurse leaders’ practice characteristics on patient outcomes by examining the relationship between nurse leaders’ self-reported, personal, and practice characteristics and selected patient outcomes</p>	<p><i>Nurse Leader Survey</i> – Leadership Influence over Professional Practice Environments Scale (LIPPES) 59-item self-administered survey</p> <p><i>Nurse Sensitive Patient Outcomes</i> – Unit level data (# events/1000 patient days) on rate of falls with injury, hospital-acquired pressure ulcers, central line-associated bloodstream infections, catheter-associated urinary tract infections, and unit-level patient satisfaction scores</p>	<p>Leader expectations of staff, one of the LIPPES characteristics, was most closely linked to patient outcomes</p> <p>Two additional nurse leader characteristics, internal strategy and resolve/status significantly correlated with patient outcomes</p>
<p>Asif, Jameel, Hussain, Hwang, & Sahito, 2019, Pakistan</p>	<p>Descriptive Correlational Qualitative</p> <p>Cross-sectional random sampling survey of 386 RNs in 17 government hospitals in Punjab, Pakistan (64.33% response rate)</p>	<p>To examine the relationships between transformational leadership, structural empowerment, job satisfaction, nurse-assessed adverse patient outcomes, and the quality of care</p>	<p><i>Transformational Leadership</i> – 7 items measured using 5-point Likert scale</p> <p><i>Structural Empowerment</i> - 12 items measured using 5-point Likert scale</p> <p><i>Job Satisfaction</i> -3 items measured using 5-point Likert scale</p> <p><i>Nurse-Assessed Adverse Patient Outcomes</i> – 5 items measured using 5-point Likert scale</p> <p><i>Quality of Care</i> – 4 items measured using 5-point Likert scale</p>	<p>Nursing leaders’ transformational behavior significantly predicted the desired patient outcomes by reducing adverse patient outcomes and increasing quality of care through the intervening influence of structural empowerment and job satisfaction</p>

Authors, Year, Country	Design/ Sample	Purpose	Measurement Method	Results
<p>den Breejen-de Hooge, van Os-Medendorp, & Hafsteinsdóttir, 2021, Netherlands</p>	<p>Descriptive Correlational Quantitative</p> <p>Multi-center cross-sectional survey of 655 RNs, in Dutch university medical centers (18.9% response rate)</p>	<p>To determine the association between quality of care and leadership styles and practices and whether the characteristics of nurse leaders influence this interaction</p>	<p><i>Nursing Leadership - Multi-Factor Leadership Questionnaire (MLQ-6S)</i></p> <p><i>Transformational Leadership – Leadership Practice Inventory (LPI) – 30 items measured using 10-point Likert scale</i></p> <p><i>Quality of Care – Nurse Reported Quality of Care (NRQC) - 2 items measured using 4-point Likert scale & 2 items measured using 3-point Likert scale</i></p>	<p>Transformational leadership was significantly associated with quality of care.</p> <p>There is a pressing need for further leadership training opportunities, founded in transformational leadership, for nurse leaders working in clinical practice</p> <p>Pressing need for education and training for nurses in how to develop leadership skills</p>

Appendix E:

Concept Map
Transformational Leadership
Theory



Appendix F: IRB Approval Letters

OFFICE OF RESEARCH
PROTECTIONS
250 N. Radnor Chester Road
Suite 200
Radnor, PA 19087
610.225.6222
mainlinehealth.org

Date: May 17, 2022

To: Frances Cusick, MSN, RN NEA-BC
MLH - MLH

RE: E-22-5217 - Creating a Culture of Transformational Leadership to Decrease Inpatient
Falls

Action: Quality Improvement

Action Date: 05/17/2022

Dear Ms. Cusick:

I have reviewed the information you submitted to the Office of Research Protections (ORP) regarding the above referenced project. Based on the information you provided, the research project as submitted on 05/04/2022 05:47:43 PM EDT is a Quality Improvement project and therefore does not require review by the Main Line Hospitals Institutional Review Board (MLH IRB).

In the future, if changes are made to the above referenced project, please notify the ORP immediately so a determination can be made if MLH IRB review is necessary at that time.

If you have any questions, please call the Office of Research Protections at 610-225-6222.

Regards,

Albert A. Keshgegian, M.D., Ph.D.
Chairman, Main Line Hospitals Institutional Review Board

THE UNIVERSITY OF
ALABAMA® | Research &
 Economic Development
 Office for Research Compliance

July 5, 2022

To: Frances Cusick, MSN, RN NEA-BC
 DNP Program
 Capston College of Nursing
 The University of Alabama
 Box 870358

From: Carpentato T. Myles, MSM, CIM, CIP 
 Director & Research Compliance Officer

Re: **Notice of Approval**

IRB Application #: 22-05-5666
 Project Title: "Creating a Culture of Transformational Leadership to Decrease Inpatient Falls"
 Submission Type: New
 Approval Date: July 5, 2022
 Expiration Date: July 4, 2023
 Funding Source: None
 Review Category: EXPEDITED
 Approved Documents: Informed Consent

Dear Ms. Cusick:

The University of Alabama Institutional Review Board has approved your proposed research. Therefore, your application has been approved according to 45 CFR part 46 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

The approval for your application will lapse, as noted above. If your research will continue beyond this date, please submit the Continuing Review to the IRB as University policy requires before the lapse. Please note any modifications made in research design, methodology, or procedures must be submitted to and approved by the IRB before implementation. Please submit a final report form when the study is complete.

Please use reproductions of the stamped IRB-approved informed consent to obtain consent from your participants.

All the best with your research.

Appendix G: Participant Consent Form

Informed Consent

Please read this informed consent carefully before you decide to participate in the study.

Consent Form Key Information: The participant in this study will:

- Take an online survey, the Multifactor Leadership Questionnaire (MLQ), which is a self-assessment of leadership behaviors
- Take a 6-hour online transformational leadership competency development course
- Develop 2 SMART Goals related to unit-based inpatient fall rates
- Meet with the principal investigator for 30 minutes every other week for 3 months to discuss incremental goal progress
- Take the MLQ survey 3 months following the first survey for individual comparison

Purpose of the research study: The purpose of the study is to address the current quality metric of inpatient falls at the medical center in adult telemetry inpatient units with the highest fall rates per 1,000 patient days. This project, in collaboration with you, as the nurse manager of one of these units, is aimed at establishing a culture of transformational leadership and will evaluate the impact a comprehensive nurse manager leadership competency development program will have on the inpatient fall rates on your respective nursing unit within three months of completing the program.

What you will do in the study: You will receive the MLQ online survey link via your hospital email from the principal investigator. The MLQ is a 45-item survey that measures transformational leadership characteristics and leadership effectiveness behaviors and takes 1 hour or less to complete. You can skip any question that makes you uncomfortable and can stop the survey at any time. You will have 1 week to complete this survey. You will receive a report of your survey results as compared to national norms for your personal growth and development as a leader. You will then receive a link via your hospital email for the online transformational leadership competency development course. This course will take approximately 6 hours to complete. You will have 1 week to complete the course. A series of 30-minute meetings will occur every other week for 3 months to support goal progress. Three months following the transformational leadership competency development course you will once again receive the MLQ online survey link via your hospital email from the principal investigator which will take approximately 1 hour to complete. You can skip any question that makes you uncomfortable and can stop the survey at any time. You will receive a report of your survey results as compared to national norms for your continued personal growth and development as a leader.

Time required: The study will require about 12 hours of your time. This includes up to 1 hour for an online, pre-intervention MLQ survey, 6 hours for an online educational course, up to 1 hour for an online, post-intervention MLQ survey, and 30 minutes every other week for goal progress meetings for 3 months and a final meeting to review goal attainment for a total of about 3 hours.

Risks: There will be no penalty, consequences, retribution, punitive action, or impact to your current position, employment, or professional standing for participating or not participating in this study.

Benefits: There are no direct benefits to you for participating in this research study other than the opportunity to develop transformational leadership competencies by participating in the program. The study may help us understand leadership behaviors and their impact on patient safety and quality care in particular inpatient falls.

Confidentiality: Fall rate data will be acquired from aggregated hospital reports which will be accessed through the information system SharePoint© site which is encrypted, password protected, and meets all the standards of the Health Insurance Portability and Accountability Act (HIPPA). No patient identifiers are included in these reports.

The information that you will provide as a participant in this study will be handled confidentially. The MLQ survey login method, that the third-party provider Mind Garden utilizes, is password protected and encrypted based on the identified user's email. The survey provider's security practices include measures to secure web access to data, limit database access to essential staff members, and undertake efforts to address security vulnerabilities for various tools and databases. They also have policies in place to prohibit employees from viewing personal information without business justification. The survey provider does not sell or otherwise give to any entity or organization other than the customer, any individually identifiable information given by a participant. The survey data and information you receive from this third-party provider will be sent to you via the medical center's employee email which is password protected on the hospital's secured servers.

Also, for data security and to minimize the potential for a data breach, the principal investigator will utilize UA Box, which provides a secure cloud-based system for file and data storage, sharing, and collaboration for any documents utilized for this project. All data is encrypted both in transit and storage and is maintained on domestic servers.

Voluntary participation: Your participation in the study is completely voluntary. There will be no penalty, consequences, retribution, punitive action, or impact to your current position, employment, or professional standing.

Right to withdraw from the study: You have the right to withdraw from the study at any time without penalty, consequences, retribution, punitive action, or impact to your current position, employment, or professional standing.

How to withdraw from the study: If you want to withdraw at any time from the study, please inform the principal investigator.

Compensation/Reimbursement: You will receive no payment for participating in the study.

If you have questions about the study or need to report a study-related issue please contact, contact:

Name of Principal Investigator: Frances Cusick

Title: DNP student

Department Name:
Telephone: 856-472-8994
Email address: fran.cusick4@gmail.com

Faculty Advisor's Name: Dr. Teresa Welch
Department Name: Capstone College of Nursing
Telephone: 205-348-0422
Email address: tdwelch@ua.edu

If you have questions about your rights as a participant in a research study, would like to make suggestions or file complaints and concerns about the research study, please contact:

Ms. Tanta Myles, the University of Alabama Research Compliance Officer at (205)-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach Website at <http://ovpred.ua.edu/research-compliance/prco/>. You may email the Office for Research Compliance at rscompliance@research.ua.edu.

Agreement:

- I agree to participate in the research study described above.
- I do not agree to participate in the research study described above.

Signature of Research Participant

Date

Print Name of Research Participant

Signature of Investigator or other Person Obtaining Consent

Date

Print Name of Investigator or other Person Obtaining Consent

Appendix H: MLQ Approval for Use

For use by Frances Cusick only. Received from Mind Garden, Inc. on April 19, 2022

**Permission for Frances Cusick to reproduce 1 copy
within three years of April 19, 2022**

Multifactor Leadership Questionnaire™

Third Edition Manual and Sample Set

Bruce J. Avolio and Bernard M. Bass
University of Nebraska and SUNY Binghamton

Contributions by:

Dr. Fred Walumbwa
Weichun Zhu

University of Nebraska—Lincoln
Gallup Leadership Institute



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www.mindgarden.com

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Appendix I: MLQ Sample Survey

For use by Frances Cusick only. Received from Mind Garden, Inc. on April 19, 2022

Multifactor Leadership Questionnaire

Leader Form

My Name: _____ Date: _____

Organization ID #: _____ Leader ID #: _____

This questionnaire is to describe your leadership style as you perceive it. Please answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.**

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits you. The word "others" may mean your peers, clients, direct reports, supervisors, and/or all of these individuals.

Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4
1. I provide others with assistance in exchange for their efforts	0	1	2	3 4
2. I re-examine critical assumptions to question whether they are appropriate	0	1	2	3 4
3. I fail to interfere until problems become serious	0	1	2	3 4
4. I focus attention on irregularities, mistakes, exceptions, and deviations from standards	0	1	2	3 4
5. I avoid getting involved when important issues arise	0	1	2	3 4
6. I talk about my most important values and beliefs	0	1	2	3 4
7. I am absent when needed	0	1	2	3 4
8. I seek differing perspectives when solving problems	0	1	2	3 4
9. I talk optimistically about the future	0	1	2	3 4
10. I instill pride in others for being associated with me	0	1	2	3 4
11. I discuss in specific terms who is responsible for achieving performance targets	0	1	2	3 4
12. I wait for things to go wrong before taking action	0	1	2	3 4
13. I talk enthusiastically about what needs to be accomplished	0	1	2	3 4
14. I specify the importance of having a strong sense of purpose	0	1	2	3 4
15. I spend time teaching and coaching	0	1	2	3 4

Continued →

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Not at all	Once in a while	Sometimes	Fairly often	Frequently, If not always	
0	1	2	3	4	
16. I make clear what one can expect to receive when performance goals are achieved	0	1	2	3	4
17. I show that I am a firm believer in "If it ain't broke, don't fix it."	0	1	2	3	4
18. I go beyond self-interest for the good of the group.....	0	1	2	3	4
19. I treat others as individuals rather than just as a member of a group	0	1	2	3	4
20. I demonstrate that problems must become chronic before I take action	0	1	2	3	4
21. I act in ways that build others' respect for me	0	1	2	3	4
22. I concentrate my full attention on dealing with mistakes, complaints, and failures	0	1	2	3	4
23. I consider the moral and ethical consequences of decisions	0	1	2	3	4
24. I keep track of all mistakes	0	1	2	3	4
25. I display a sense of power and confidence	0	1	2	3	4
26. I articulate a compelling vision of the future	0	1	2	3	4
27. I direct my attention toward failures to meet standards.....	0	1	2	3	4
28. I avoid making decisions	0	1	2	3	4
29. I consider an individual as having different needs, abilities, and aspirations from others.....	0	1	2	3	4
30. I get others to look at problems from many different angles	0	1	2	3	4
31. I help others to develop their strengths	0	1	2	3	4
32. I suggest new ways of looking at how to complete assignments	0	1	2	3	4
33. I delay responding to urgent questions.....	0	1	2	3	4
34. I emphasize the importance of having a collective sense of mission	0	1	2	3	4
35. I express satisfaction when others meet expectations	0	1	2	3	4
36. I express confidence that goals will be achieved	0	1	2	3	4
37. I am effective in meeting others' job-related needs.....	0	1	2	3	4
38. I use methods of leadership that are satisfying.....	0	1	2	3	4
39. I get others to do more than they expected to do.....	0	1	2	3	4
40. I am effective in representing others to higher authority	0	1	2	3	4
41. I work with others in a satisfactory way	0	1	2	3	4
42. I heighten others' desire to succeed.....	0	1	2	3	4
43. I am effective in meeting organizational requirements	0	1	2	3	4
44. I increase others' willingness to try harder	0	1	2	3	4
45. I lead a group that is effective	0	1	2	3	4

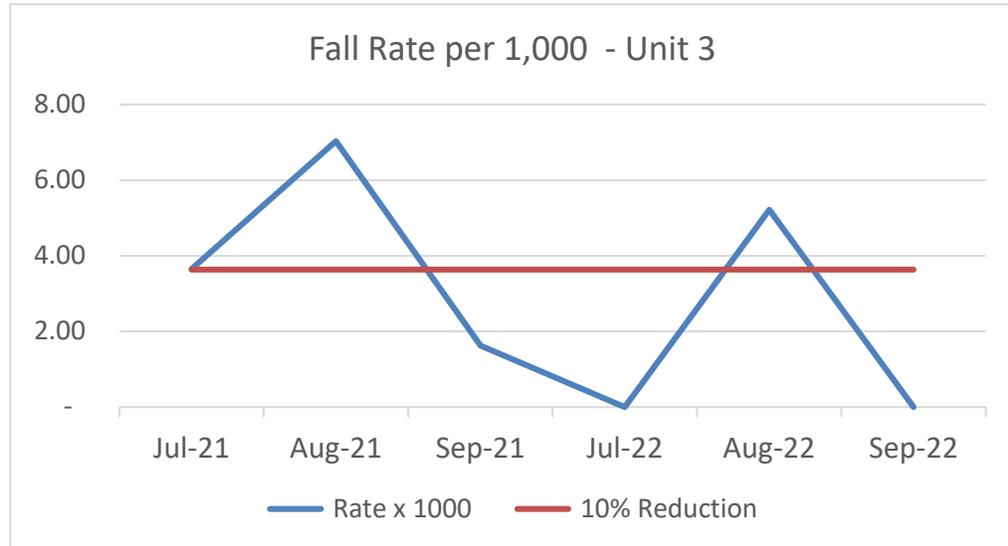
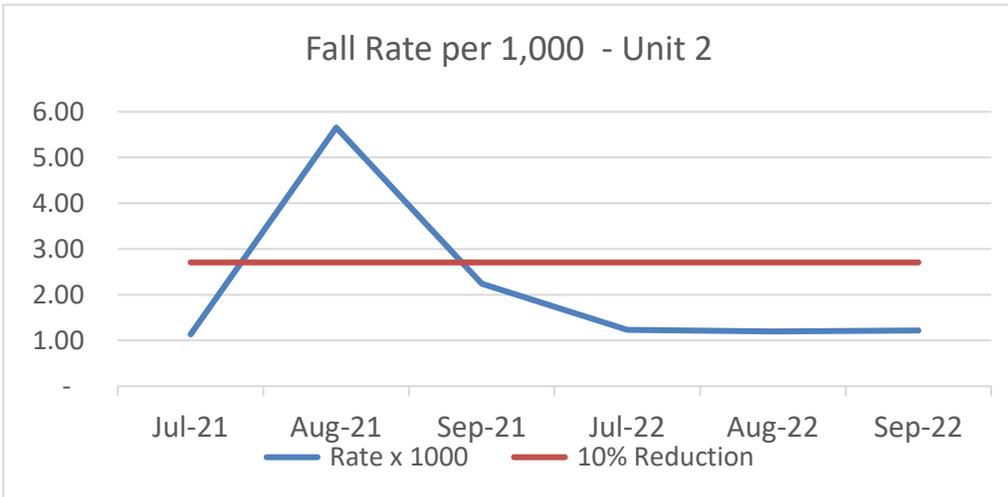
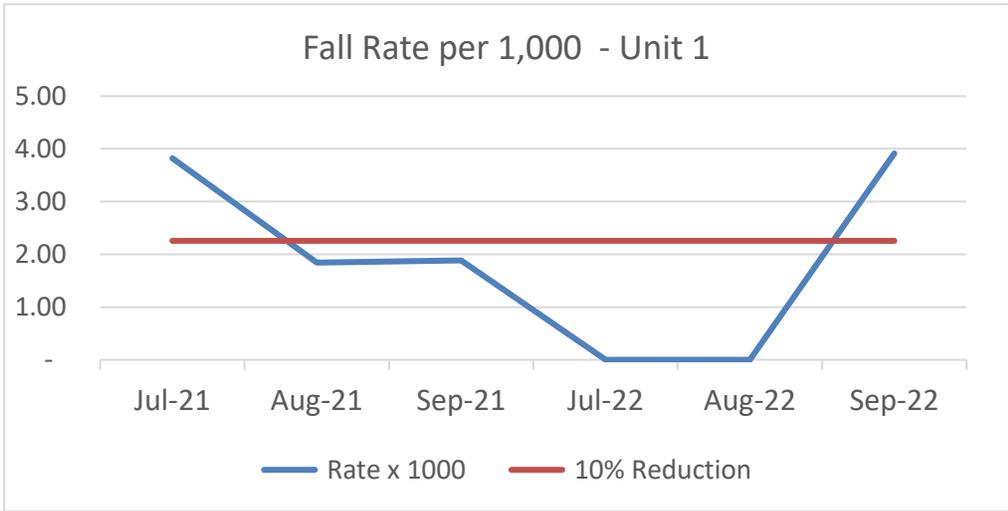
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Appendix J: Project Statistics**t-Test: Paired Two Sample for Means**

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	3.209276791	1.419674228
Variance	4.067965353	3.60396834
Observations	9	9
Pearson Correlation	0.454656765	
Hypothesized Mean Difference	0	
df	8	
t Stat	2.622764595	
P(T<=t) one-tail	0.015259575	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	0.030519149	
t Critical two-tail	2.306004135	

Appendix K: Run Charts



Appendix L: Unit Population Data

July 2021 - Jun 2022

Row Labels	Unit 1		Unit 2		Unit 3		Total # Cases	Total % Cases
	# Cases	% Cases	# Cases	% Cases	# Cases	% Cases		
Female	504	53.22%	916	53.79%	883	54.47%	2303	53.92%
Male	443	46.78%	787	46.21%	738	45.53%	1968	46.08%
Grand Total	947	100.00%	1703	100.00%	1621	100.00%	4271	100.00%

Row Labels	Unit 1		Unit 2		Unit 3		Total # Cases	Total % Cases
	# Cases	% Cases	# Cases	% Cases	# Cases	% Cases		
18-44	109	11.51%	199	11.69%	181	11.17%	489	11.45%
45-64	285	30.10%	540	31.71%	426	26.28%	1251	29.29%
65-89	491	51.85%	889	52.20%	926	57.13%	2306	53.99%
90+	62	6.55%	75	4.40%	88	5.43%	225	5.27%
Grand Total	947	100.00%	1703	100.00%	1621	100.00%	4271	100.00%

Row Labels	Unit 1		Unit 2		Unit 3		Total # Cases	Total % Cases
	# Cases	% Cases	# Cases	% Cases	# Cases	% Cases		
Asian	12	1.27%	29	1.70%	20	1.23%	61	1.43%
Black	563	59.45%	542	31.83%	655	40.41%	1760	41.21%
Hispanic	13	1.37%	32	1.88%	30	1.85%	75	1.76%
Other/ Decline/	12	1.27%	26	1.53%	33	2.04%	71	1.66%
White	347	36.64%	1074	63.07%	883	54.47%	2304	53.95%
Grand Total	947	100.00%	1703	100.00%	1621	100.00%	4271	100.00%

July 2021 - Jun 2022

Top 10 MS-DRG groups

Unit 1		
Row Labels	# Cases	% Cases
Diabetes	118	0.196667
Congestive heart failure	112	0.186667
Sepsis	98	0.163333
Hypertension	51	0.085
Cardiac arrhythmia	50	0.083333
COPD, bronchitis/asthma	39	0.065
Circulatory Disorders Except AML, with Cardiac Catheterization	37	0.061667
Pulm Edema/Resp Failure	36	0.06
Simple pneumonia and respiratory infections	32	0.053333
Percutaneous coronary intervention	27	0.045
Grand Total	600	1

Unit 2		
Row Labels	# Cases	% Cases
Major bowel	355	0.415205
Major Chest Procedures	72	0.084211
GI obstruction	67	0.078363
Simple pneumonia and respiratory infections	58	0.067836
Other vascular surgery	58	0.067836
Sepsis	56	0.065497
Stomach, Esophageal and Duodenal Procedures	55	0.064327
Infectious/Parasit Dis W/ Or Proc	51	0.059649
Esophagitis, gastroenteritis and other digestive disorders	46	0.053801
Aortic And Heart Assist Procedures Except Pulsation Balloon	37	0.043275
Grand Total	855	1

Unit 3		
Row Labels	# Cases	% Cases
Major joint replacement of the lower extremity	130	0.202492
Sepsis	85	0.132399
Spinal fusion (non-cervical)	72	0.11215
Combined anterior posterior spinal fusion	70	0.109034
Hip & femur procedures except major joint	62	0.096573
Other Musculoskeletal System and Connective Tissue O.R. Procedures	50	0.077882
Hip Replacement w/ Principal Diag of Hip Fracture	50	0.077882
Cervical spinal fusion	44	0.068536
Simple pneumonia and respiratory infections	43	0.066978
Nutritional and metabolic disorders	36	0.056075
Grand Total	642	1

Appendix M: Cost-Benefit Analysis Table**Cost-Benefit Analysis**

Implementation Costs			
Based on 15 nurse managers	Amount	Cost/Item	Total
MLQ survey and materials	15	\$ 300	\$ 4,500
Nurse Manager time (hours)	12*15	\$ 63	\$ 11,340
Total			\$ 15,840
Benefit			
Based on 44% fall rate reduction	Amount	Cost/Item	Total
Reduction in patient falls	40	\$14,000	\$560,000
Projected Increased Revenue (first year)			\$544,160
Benefit/Cost Ratio			35.4

Appendix N: Unit Falls Data

Calendar Year 2021

Patient Days

Unit	July	August	September	Jul-Sep 2021
<i>Unit 1</i>	523	542	531	1596
<i>Unit 2</i>	883	884	893	2660
<i>Unit 3</i>	548	569	616	1733
Total	1954	1995	2040	5989

Calendar Year 2021

Falls

Unit	July	August	September	Jul-Sep 2021
<i>Unit 1</i>	2	1	1	4
<i>Unit 2</i>	1	5	2	8
<i>Unit 3</i>	2	4	1	7
Total	5	10	4	19

Calendar Year 2021

Fall Rate (falls/1,000 pt days)

Unit	July	August	September	Jul-Sep 2021	10% Target	NDNQI
<i>Unit 1</i>	3.82	1.85	1.88	2.51	2.26	1.88
<i>Unit 2</i>	1.13	5.66	2.24	3.01	2.71	1.50
<i>Unit 3</i>	3.65	7.03	1.62	4.04	3.64	2.89
Total	2.56	5.01	1.96	3.17	2.86	

Calendar Year 2022

Patient Days

Unit	July	August	September	Jul-Sep 2022
<i>Unit 1</i>	530	537	511	1578
<i>Unit 2</i>	812	837	820	2469
<i>Unit 3</i>	521	575	565	1661
Total	1863	1949	1896	5708

Calendar Year 2022

Falls

Unit	July	August	September	Jul-Sep 2022
<i>Unit 1</i>	0	0	2	2
<i>Unit 2</i>	1	1	1	3
<i>Unit 3</i>	0	3	0	3
Total	1	4	3	8

Calendar Year 2022

Fall Rate (falls/1,000 pt days)

Unit	July	August	September	Jul-Sep 2022	% Reduction
<i>Unit 1</i>	0.00	0.00	3.91	1.30	52%
<i>Unit 2</i>	1.23	1.19	1.22	1.22	40%
<i>Unit 3</i>	0.00	5.22	0.00	1.74	43%
Total	0.54	2.05	1.58	1.40	44%

Appendix O: Bar Charts

