Does Leadership Engagement Matter?

The Relationship Between Perceptions of Leader Engagement and

Patient Safety Outcomes in Acute Hospitals

Pamela S. Gordon, MBA, CPHQ, CPPS, FACHE

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(signature) PhD	April 17, 2023
Dr. F. Jeannine Everhart, PhD, MPH, MBA, MCHES® Committee Chair	Date
Diana Willeman-Buckelew	April 24, 2023
Dr. Diana Willeman-Buckelew, PhD Committee Member	Date
(signature)	April 19, 2023
Dr. Steven Pino, PhD, RN Committee Member	Date

Abstract

Introduction: Healthcare organizations continue to be challenged by avoidable harm events, poor patient safety outcomes, and financial losses. Little is known about relationships (if any) between leadership engagement and patient care, patient safety outcomes, or culture of safety. The purpose of the study was to determine if such relationships exist in order to reduce avoidable harm, improve patient safety outcomes, and stabilize financial performance.

Methods: This study was a retrospective, ecological study using 2021 NSHN and AHRQ Survey data for an acute healthcare system. Cronbach's alpha testing ensured variable reliability. Pearson correlation tests evaluated relationships between perceptions of leader engagement, leader presence, culture of safety, perceptions of safety culture, CAUTI, CLABSI, and transformation leadership theory characteristics.

Results: Pearson's correlation testing revealed there is a statistically significant, strong correlation between leader presence and perceptions of safety culture, $r(22) = .713$, $p < .001$. Pearson's testing also showed a statistically significant, negative correlation between leader presence and culture of safety (unit behaviors and morale), $r(22) = -.586$, $p = .003$. Perceptions of leadership engagement and leader presence both had positive correlations with CLABSI infection rates, $r(22) = .366$, $p = .079$ and $r(22) = .444$, $p = .03$, respectively. Conversely, perceptions of leadership engagement and leader presence had slightly negative correlations with CAUTI infection rates, $r(22) = -.145$, $p < .5$, $r(22) = -.102$, $p < .635$.

Conclusions: Results indicated perceptions of leadership engagement and leader presence had a slight positive relationship with CAUTI rate reduction, while CLABSI

rates became slightly worse as perceptions of leadership engagement and leader presence increased. Increased perceptions of leadership presence negatively correlated with culture of safety. One possible explanation may be that leaders only engaged during times when there are issues or negative conversations, thus unit morale was negatively impacted by lack of trust.

Keywords*: perceptions of leadership engagement, leader presence, culture of safety, patient outcomes, perceptions of care influence, perceptions of safety culture, transformational leadership theory characteristics

Dedication

I dedicate this paper and my journey through this program to my loved ones. My heartfelt thanks to my husband, Glenn, who spent countless days doing double home duty to allow me to do this work, to learn, to stretch my mind and horizons. He was a trooper and I am endlessly grateful for his encouragement and belief in my dream, OUR dream. Thank you, Glenn, for your love, encouragement, and patience. Thank you for believing in me. I dedicate this work to my sons, Josh and Kearsley. Kearsley, you especially supported me along the way, giving me encouragement and sharing your own doctoral woes and stresses. You checked up on me, motivated me, and said you were proud of me, which meant the world to me. I also dedicate this work to the most amazing grandkids, Theo and Blythe. Hopefully this will be an example for you to not accept any boundary forced upon you, but push toward your goals and dreams with passion and purpose. I dedicate this to my mom, who passed away in 2007 at a young age. I know she would be proud of me for sticking with it. She would be proud that instead of allowing childhood circumstances to define my life, I found the determination and resilience to pay it forward for myself, my children, and grandchildren.

I am grateful for the Radford University Carilion DHSc Program allowing me the opportunity to continue my education as a working professional. And finally, I dedicate this journey to God, for without His love, purpose, and faith, I would not have made it.

Acknowledgements

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List of Abbreviations

AHRQ ....Association for Healthcare Research and Quality

CAUTI ....Catheter associated urinary tract infection

CLABSI ....Central line associated blood stream infection

CMS ....Centers for Medicaid and Medicare

COS...........................Culture of Safety (Unit morale and culture)

HAI ....Hospital acquired infection

NSHN........................National Safety Healthcare Network

PSO ....Patient safety outcomes

UHS, Inc. ....Universal Health Services, Incorporated

PLE ....Perceptions of Leadership Engagement

PCI ....Patient Care Influence

COS...........................Culture of Safety

POSC.........................Perceptions of Safety Culture (patient handover, communication

and logistics)

LPRES.......................Perceptions of Leader presence

REL...........................Relationship between Leader and Staff

TLC...........................Transformational Leadership Characteristic Perceptions

Chapter 1

Introduction

Since the publication of "To Err is Human: Building a Safer Health System" by the Institute of Medicine in 1999 (Leape & Berwick, 2005), medical errors and preventable adverse patient events have continued to challenge healthcare organizations across the United States. Leape and Berwick's study showed that healthcare is a high-risk industry that is lagging far behind other industries in its focus on basic patient safety and prevention of these safety related harm events (Leape & Berwick, 2005). Per Leape and Berwick, such avoidable infections, patient harm and deaths accounted for 98,000 patients each year at the time of this early research. These adverse outcomes also attributed to financial burden of $29 billion per year resulting from loss of income, reduced productivity and payments for liabilities in 2008 (Wachter & Pronovost, 2009).

The Centers for Medicare and Medicaid Services (CMS) define adverse patient safety outcomes as avoidable death or serious complications among patients with treatable conditions (CMS, 2021). These outcomes are hospital acquired infections and hospital acquired conditions such as a fall with injury or a urinary tract infection after admission, all of which are preventable, avoidable injuries to patients while in hospital care (Cabero et al., 2018). According to the World Health Organization (WHO), one out of every 10 patients seen in a hospital setting is harmed during their episode of care (WHO, 2019), with 50% of these events being preventable. Such unsafe care makes adverse patient outcomes one of the ten leading causes of death and disability in the United States and other high-income countries (CMS, 2021). It is estimated that 15% of hospital expenditures, including litigation awards, within the United States is the result of

poor patient safety outcomes and preventable, adverse events, totaling 41.6 billion dollars

(CMS, 2020).

While there has been much focus on improvement programs and other initiatives

to both understand and impact adverse patient outcomes, there is little research available

that describes the impact of leadership engagement or the perceptions of leadership

engagement on these same outcomes. Unlike other industries, healthcare leaders are

promoted from within (Patrnchak, 2015). Healthcare operations is ever changing, fast

paced, and diverse in function, requiring different skills, attributes, and competencies of

leaders. Decision making, staff knowledge, and buy-in to the organization's mission and

vision are influenced by their level of employee engagement (Chin et al., 2019). During

staff shortages, for example, willingness to work over a few hours may depend on how

much the employee is emotionally engaged with and personally invested in the unit and

unit leader.

The purpose of this study is to understand the relationship, if any, between

perceptions of leadership engagement and patient safety outcomes. These relationships,

should they exist, may present an opportunity to reduce avoidable patient harm, reduce

financial burden to the patient, and allow continued healthcare business operation and

longevity.

Background

Healthcare organizations within the United States continue to be faced with

economic challenges and pressures to produce positive patient safety outcomes that show

reduction of avoidable harm to patients (Center for Disease Control, 2020). Hospital

acquired conditions (HACs) and hospital acquired infections (HAIs) have several

subcategories but can be defined as patient conditions or infections that require an

elevated level of care as a result of harm incurred during the acute hospital patient's

episode of care (Leape & Berwick, 2005). Despite decades of process improvements and

high reliability practices in other industries, healthcare still lags far behind in the ability

to directly influence reduction of avoidable harm in a way that is systemic and

sustainable (Pronovost et al., 2006). During the recent and ongoing Covid-19 pandemic,

patient safety outcomes have continued to be prevalent (Ghio et al., 2021). These

elevated harm events come with great costs to life, loss of efficiency and productivity,

reduced patient access, increased readmissions, longer lengths of stay, and escalated

resource needs (Vaughn et al., 2019). Such negative factors produce a significant strain

on already stretched healthcare organizations within the United States causing longevity

uncertainty in many healthcare systems (CDC, 2017).

According to a meta-analysis conducted by the National Healthcare Safety

Network (NHSN) data report from 2019, over 3,756 hospitals voluntarily reported patient

safety outcomes for catheter associated urinary tract infections (CAUTI) at an alarming

26,376 total infections for the year, for all facility beds cumulative (NHSN, 2019). The

same study showed that 29,669 central line associated bloodstream infections

(CLABSI's) were reported (NHSN, 2019). One instance of CAUTI has an average cost

of $14,000 and one case of CLABSI has an average cost of $31,000 as compiled by the

Agency for Healthcare Research and Quality (AHRQ) in 2017 (AHRQ, 2017). Total

costs for only these two HAIs equate to more than $1.2 billion by using the financial

estimates from 2017 as applied to the infection volumes reported in 2019. One may

surmise that these costs are understated due to inflation and other business health

indicators (Schreiber et al., 2018).

Healthcare organizations cannot continue to pass such unintentional costs on to

the patient (Saver et al., 2015). Care delivery in the United States is currently one of the

costliest in the world with high rates of out-of-pocket costs in spite of federal, state, and

local improvement programs. For example, the average out-of-pocket spend in 2021 for

each person who needed healthcare in the Unites States was $12,530 (CMS, 2020).

Hospitals are closing in areas with disparate populations, making access even more

difficult due to the inability to absorb such indirect costs of poor outcomes. Patient

populations within these areas are being left with voids for appropriate healthcare (CMS,

2020; Thornton et al., 2016).

Another risk in the rate of HAIs contributing to avoidable poor patient outcomes

is their role in readmissions and unexpected mortality (McCauley et al., 2021).

Unexpected mortality can be defined as deaths that occur from events other than the

primary diagnosis upon admission (CMS, 2020). Gaps in execution of clinical evidence

based best practices at largescale have allowed conditions that promote infections, which

have contributed to 30-day readmission rates of 18.9% in 2019 (CMS, 2019).

Unexpected deaths from HAIs acquired during hospital stays in the United States in 2017

was estimated at 99,000 (CDC, 2018). These readmissions and deaths are avoidable,

according to healthcare agency experts (McCauley et al., 2021). Healthcare needs strong

leadership to influence these statistics in a positive direction, assuring that all staff are

engaged and emotionally invested in achieving the best possible outcomes through harm

reduction.

Healthcare organizations rely on their leadership influence on teams to perform well operationally. These roles in healthcare are often promoted from within the organization (Vaughn et al., 2019). Such leaders are responsible for patient safety outcomes, daily operations and staffing, and the financial performance of their area, unit, or facility. Successful leaders in healthcare may have traits and characteristics similar to other industry leaders, but they also must be agile and strategic to keep ahead of the economic landscape changes within healthcare (Parr et al., 2021b). Giving directions for discreet tasks may be the primary role of a clinical manager. As promotions occur within the healthcare organization, the need for management transitions to the need for leadership (J & Mary, 2008). Those who were comfortable delegating discreet tasks may now find strategic planning and establishing a vision and mission for zero avoidable harm a struggle (MacNeill et al., 2021). Because of the organizational structure complexity and silos within healthcare organizations, intimate understanding of front line activity at the bedside is seldom known by high level leaders (Mustafa et al., 2019). Thus, engagement by leaders in an effective, meaningful way that is also perceived by the employee to impact patient outcomes is a challenge to overcome (Kumar, 2013). The extension of emotional connection and servant leadership from leader to staff member can provide the impetus for good decision making to positively influence patient care through an increased level of engagement (Adelman, 2012).

Knowledge of the complexity of healthcare systems, evolving markets, pay structures, and patient outcomes are paramount for successful healthcare operations (Weberg, 2012). Such complexity calls for an organizational structure unlike the traditional healthcare top-down power pyramid (Roussel et al., 2016). The necessity for

agility to evolve and innovate is a challenge for most current healthcare leaders, as is the

balance between care, compassion, and driving for results (Institute of Medicine, 2011).

Such innovations and streamlining of processes produce efficiencies that allow more time

to be spent on basic care principles at the bedside, promoting positive patient outcomes

(Saver et al., 2015).

Purpose of the Research

The purpose of this research study is to understand the statistical relationship, if

any, between perceived leadership engagement and patient safety outcomes, within 26

UHS, Inc. acute care hospitals across the United States.

Significance

As healthcare economic challenges continue, it will be necessary to understand

both the impacts of patient harm and the cost of it. Understanding any significance

between perceptions of leadership engagement and patient outcomes may provide a

means necessary to achieve improved outcomes, stable financial performance, and

organizational stability. In the United States alone, adverse outcomes from errors and

harm events account for $41 billion total costs (CMS, 2020). If this financial loss could

be reduced, and more importantly, lives saved from understanding how to better

influence behaviors that promote positive patient outcomes, all healthcare organizations

and patient populations may benefit.

While much literature exists on improving outcomes in other industries and

services, little exists on the leader's engagement effect on healthcare outcomes. This

study may trigger additional research to more deeply understand the influence of

leadership, even perceptions of leadership, on patient outcomes, which may require

strategic actions to build/hire transformational leadership competencies into the leadership model.

Research Question(s) and Hypotheses

Research Question #1: Is perception of leader engagement related to perceived patient care?

H1.1a: Perception of leader engagement is significantly related to perceived patient care.

Research Question #2: Is perceived leader engagement related to CAUTI and CLABSI rates?

H2.1a: Perceived leader engagement is significantly related to CAUTI and CLABSI rates.

Research Question #3: Is perception of leader presence, communication, and visibility related to CAUTI and CLABSI rates?

H3.1a: Perception of leader presence, communication, and visibility is significantly related to CAUTI and CLABSI rates.

Research Question #4: Is perception of leader engagement related to a perceived culture of safety?

H4.1a: Perception of leader engagement significantly relates to a perceived culture of safety.

Research Question #5: Is a perceived relationship between Leadership and Staff related to CAUTI and CLABSI rates?

H5.1a: A perceived relationship between Leadership and Staff is significantly related to CAUTI and CLABSI rates.

Research Question #6: Is perception of characteristics modeled by the transformational leadership theory related to CAUTI and CLABSI rates?

H6.1a: The perception of characteristics modeled by transformational leadership theory is significantly related to CAUTI and CLABSI rates.

Chapter 2

Review of the Literature

This chapter contains a review of the literature focused on leader engagement, including perceptions of leader engagement, and patient safety outcomes in acute care hospitals in the United States. The implications of this review will be applied to the research study of relationships of leader engagement influences on patient safety outcomes within Universal Health Services, Inc., (UHS) for 24 acute care hospitals across the United States. The target population for this study consists of all inpatient populations from all UHS acute care hospitals from January 1, 2021 to December 31, 2021. The literature review has been divided into themes that include challenges facing acute healthcare leaders, economic pressures and healthcare staffing, the cost of poor patient safety outcomes, improvement strategies for patient safety outcomes, and lastly, leadership theories that may provide insight and support to better understand implications of leader engagement and perceptions of engagement to influence patient outcomes in a positive manner (Heller & Harrison, 2021). Specifically, the transformational leadership theory will be the construct framework for the statistical results interpretation and discussion of this study. Results from this literature review and statistical study may have implications for sustainability of healthcare organizations within a volatile economic landscape, as well as thought provoking insights to improving outcomes for patients. Such improvements are invaluable to sustaining life for the patient and loved ones at a micro level, as well as longevity support for the organization in achieving its mission to care for patients of each community (Cowie et al., 2020; Heller & Harrison, 2021).

Articles and data for this literature review were retrieved between January 2021

and August 2022. A total of 2,251 peer reviewed articles, book publications, website

reviews, and discreet databases were reviewed in totality. Because leadership theory is

discussed within this review, as well as evidence-based improvement methodologies,

some of the reference materials are a bit dated in order to cite the original author and

publication. The majority of the references used for this review were published within the

past 7 years from online databases such as PubMed, Radford University Library, My

Athens, and Jama electronic information portals. Google Scholar was utilized to seek

peer reviewed journal articles. Data was retrieved from the Center for Disease Control,

Agency for Healthcare Research and Quality, American Hospital Association, National

Healthcare Safety Network, and the World Healthcare Organization websites.

Research terms were distilled to include leadership theory in healthcare,

healthcare leadership engagement, leader engagement perceptions, impacts and

outcomes, patient safety outcomes, hospital acquired infections, hospital acquired

conditions, healthcare leadership influence, Covid-19 Pandemic effects on patient

outcomes, and healthcare operations/acute hospital economic changes. Articles chosen

exhibited information relevant to the themes of healthcare challenges in improvement of

patient safety outcomes, influences of leadership engagement, improving perceptions of

engagement, transformational leadership theory and significance, culture of safety and

high reliability systems to reduce avoidable harm, and more recent Covid-19 Pandemic

impacts to healthcare leadership and patient outcomes. Additional consideration was

given to articles related to healthcare leadership influence on outcomes over time in

healthcare or leadership influences on outcomes in other industry sectors to better

understand the product of leadership theories in action (CMS, 2021; Zafar & Naveed, 2014).

While Covid-19 Pandemic impacts are lingering and may have statistically changed leader engagement based on many various process and staffing changes since onset of the pandemic, the quantification of such results are not yet fully realized through peer reviewed published studies (Choi et al., 2022). Intermediate impacts to staffing, leaders flexing during staffing shortages, and burnout will be described based on limited publications of peer reviewed literature.

Challenges Facing Healthcare Organizations

Healthcare organizations within the United States continue to be faced with economic challenges and pressures to produce positive patient safety outcomes that show reduction of avoidable harm to patients (CMS, 2020). Two categories of such avoidable harm are defined as hospital acquired infections (HAIs) or hospital acquired conditions (HACs). HACs and HAIs have several classifications but can be defined as infections or conditions that began while the patient was in the hospital's care, resulting in an elevated level of care or treatment plan (Leape & Berwick, 2005). Despite decades of process improvements and high reliability practices in other industries, healthcare still lags far behind other industry sectors in the ability to directly influence reduction of avoidable harm in a way that is systemic and sustainable (Pronovost et al., 2006). During the recent and ongoing Covid-19 Pandemic, poor patient safety outcomes have continued to be prevalent (Ghio et al., 2021). In addition to the need for an elevated level of care and sometimes causing patient death, these incurred harm events produce unplanned financial burden, loss of efficiency and productivity, create issues for patient access, increase

readmissions, create longer than necessary lengths of stay, and exponentially increase

resource needs, including costs of litigation (Vaughn et al., 2019). These resulting

negative factors produce a significant strain on already stretched healthcare systems

within the United States causing longevity uncertainty in many care systems (CMS,

2018).

Struggles with Avoidable Harm in Patient Outcomes

According to a meta-analysis conducted by the National Healthcare Safety

Network (NHSN) from 2019, over 3,756 hospitals voluntarily reported patient safety

outcomes for catheter associated urinary tract infections (CAUTI's) stood at an alarming

26,376 total infections for the year, for all acute care inpatient facility beds cumulative

(CDC, 2020). The same study showed that 29,669 central line associated bloodstream

infections (CLABSI's) were reported (CDC, 2020). One instance of CAUTI has an

average cost $13,793 and one case of CLABSI has an average cost of $31,000 as

compiled and calculated by the Agency for Healthcare Research and Quality in 2017

(AHRQ, 2017). Because these infections are defined as avoidable harm by healthcare

systems, the baseline for accepted performance is zero infections (CDC, 2017). Total

national costs for these two hospital acquired infections equate to a conservative

estimation of $1,284,473,168, by using the financial estimates from 2017 as applied to

the infection volumes reported in 2019 (AHRQ, 2020). One may surmise that these costs

are understated due to inflation and other business health indicators (Schreiber et al.,

2018).

Healthcare organizations cannot continue to pass such unintentional costs on to

the patient (Saver et al., 2015). Care delivery in the United States is currently one of the

costliest in the world with quadrupled out of pocket costs in spite of federal, state, and

local improvement programs. For example, the average out-of-pocket spent for each

person for healthcare last year in the Unites States was $12,530 (CMS, 2020). Lack of

affordable care is forcing hospitals to close in areas with limited access, income, and

other health care options, making access even more difficult due to the inability to absorb

unplanned indirect costs of HACs and HAIs. Patient populations living in these areas are

left with huge voids for appropriate care services based on the lack of care access, one of

the fastest growing health equity concerns across America (CMS, 2020).

The most alarming factor for the rate of poor patient outcomes, including HAIs, is

the increased readmissions and unexpected mortality rates (McCauley et al., 2021).

Unexpected mortality rates are defined as avoidable deaths that may not be associated

with the patients' primary condition or level of acuity and these mortality rates are

considered a patient safety indicator (CMS, 2019). Gaps in consistent execution of

clinical bundles and evidence-based best practices have allowed lapses in patient care

processes that promote infections causing 30-day readmission rates to increase, climbing

to 18.9% in 2019 (CMS, 2019). Unexpected deaths resulting from HAI's during inpatient

acute hospital stays in the United States in 2017 was estimated at 99,000 (CDC, 2018).

These readmissions and deaths are avoidable poor patient outcomes, according to

healthcare agency experts (McCauley et al., 2021). Healthcare organizations need strong

leadership to influence these statistics in a positive direction, ensuring that all staff are

competent, following patient bundles and safety protocols, engaged, and emotionally

invested in harm reduction (Ree & Wiig, 2020).

Pandemic Influences on Harm

The World Health Organization's dashboard published a total of 623,893,894 cases of Covid-19 ("covid") world-wide were reported publicly as of October 2022 (WHO, 2019). Over a 2-year period, this groundswell of critically ill patients overwhelmed acute hospitals. Research psychologists are studying the impact driven need for a positive shift in leadership understanding, compassion, and engagement with staff in order to retain employees. We are nearing the end of the global pandemic, so not all research has been concluded specifically on the secondary impacts of covid. Studies conducted by Kim-Pong Tam argued the need to collectively focus on processes happening with greater transparency and inclusivity during large scale events such as a pandemic. Tam called upon other social psychologists to quantify impacts of the pandemic on leadership positions to learn how to adjust leader engagement and communication to retain critical staff by minimizing their fear of the unknown or mis-perceptions (Tam et al., 2021). Staff retention has been linked as a critical need for safe patient care prior to the pandemic, but was magnified during the pandemic as seen by massive resignations by clinical staff to stay at home or to travel for increased compensation. Staffing turnover reached 51% during the height of the pandemic, yet patient volumes and specifically covid positive inpatient volumes pressed hospitals as much as 21% beyond normal capacity (WHO, 2020).

An early pandemic study by Simard and Parent-Lamarache (2022) utilized a mediation and moderation analysis of 921 healthcare workers during 2021. The study intent was to understand reasons staff were leaving healthcare using the job-demands resource model as the basis of their analysis. According to this model, as work demands

increase, employee energy levels decrease, leading to a significant decrease in the feeling

of psychological well-being. The researchers administered a validated survey tool using a

Likert scale, which gathered data for the feelings of wanting to quit their job,

psychological safety and well-being, and support from the employee's direct leader. Of

the population surveyed, only 37.64% felt psychological well-being was adequate.

Abusive leadership, defined by the study as a leader who is aggressive, not transparent

and expects too much from the employee, measured as a high influencer in the decision

to quit (p = .034). The authors of this study concluded that leaders must be sensitive to

their leadership style and possess abilities to be genuinely compassionate to staff needs in

order to retain staff who have critical skills and abilities needed for critical patient care

during emergent long-term periods of time, such as a pandemic (Simard & Parent-

Lamarche, 2022).

Drive to Improve Patient Outcomes

Since the 2000 publication of "To Err is Human: Building a Safer Health System"

by the Institute of Medicine, healthcare organizations have been striving to improve

patient outcomes, reducing avoidable harm, through a myriad of strategies and programs

(Care, 2018). At the heart of the original IOM publication and subsequent republications

is the need to establish leadership with competency regarding patient safety outcomes.

Studies have shown that there is a positive relationship (t-statistic = 2.57) between the

employee and his/her supervisor and their perceptions/beliefs of their unit and therefore

these beliefs affect the level of engagement of the employee (Parr et al., 2021a). Studies

also depict if employees feel connected to their leader and their organization through

relationships built on trust, transparency, and communication, engagement is improved

and there is at least a perception of positive unit patient safety outcomes (Romi et al., 2022). Hence, healthcare leaders cannot focus only on employee productivity performance elements, but also must focus on employee sense of purpose and connection to the patient and organization's mission in order to reduce patient harm and improve patient outcomes over time (Brunetto et. al., 2014).

Patient Outcomes Defined. Patient outcomes, synonymously referred to as patient safety outcomes, were defined by the Institute of Medicine and Lucian Leape (Leape & Berwick, 2005). Patient safety outcomes are any patient care outcome that was intended or planned. Poor or bad patient safety outcomes are those outcomes that were not intended or planned, but occurred because of process gaps, human errors/human factors, or other failures. Poor patient safety outcomes most often measured are unintended harm events, for example, an incorrect medication or medication error, hospital acquired conditions, such as a pressure wound onset that was not present upon patient arrival to the facility, and HAI's such as CAUTI or CLABSI (CDC, 2020). Unintended poor patient safety outcomes equate for a large portion of unplanned resource utilization in healthcare, impacting patient recovery and mortality, hospital reimbursement, and longevity (Griffith, 2017).

Cost of Poor/Bad Patient Outcomes. Agency estimates of the cost of poor patient outcomes varies. The average cost of a medication error is $5,000.00, with estimates of over 2.6 million medication errors reported in 2019. One recorded litigation won in court from a medication error was awarded $29 million in compensation (ECRI, 2021). It is estimated that poor patient outcomes resulting from avoidable harm equates to $203 billion per year (AHA, 2022). Even though healthcare focus on harm reduction has

prevented many bad outcomes including deaths, significant improvement opportunities

remain. Because of the frequency of poor patient safety outcomes, these measures are

required to be externally reported to the Center for Medicare and Medicaid Services

(CMS) and the Center for Disease Control's (CDC) National Safety Healthcare Network

(NHSN) for payment reimbursement or penalty, should performance indicate less than

average performance and improvement for each hospital's patient safety outcomes (Ziran

& O'Pry, 2020).

        Why Outcomes Matter to Healthcare Leaders. All levels of healthcare leaders

have direct or implied responsibility for patient outcomes by nature of their title and

functionality (Kumar, 2013). Each hospital's Board of Governor members have ultimate

responsibility for the organizational performance. The "organizational performance" is

largely defined as patient safety outcomes, financial vitality, and business volume (Norris

et al., 2017). C-Suite Leaders, Service Line Leaders, Unit Directors, and Managers all

have a vested interest in patient outcomes as a measure of the effectiveness of their work

performance as teams and as individuals (Pronovost et al., 2006). Positive performance,

including good patient outcomes, provides financial, intellectual, and emotional benefit to

leaders by means of pay increases, pay bonuses, work longevity, and employee

recognition. Poor outcomes may promote extreme stress over time or burnout, emotional

trauma, loss of bonuses and denied pay increases, and potentially loss of employment due

to downsizing of a service line or even a hospital closure (Washburn, 2017). Ideally,

leaders are engaged in helping the healthcare organization achieve its mission and vision

of improved health for its community members (Ghio et al., 2021). With loss of this

sense of engagement from purpose, including personal and professional satisfaction,

leaders may feel devalued or mis-aligned, creating emotional baggage, prompting them to seek employment elsewhere for fulfillment (Parr et al., 2021a).

   External Ramifications. Patient safety outcomes reported to external agencies provide the basis for pay for performance programs sponsored by CMS (CMS, 2019). External data reporting allows for scorecard performance tracking by external performance programs such as Leapfrog, which uses a complex algorithm to calculate a "safety letter grade" for all hospitals that chose to participate in the program (Crandall et al., 2018). These and other metrics help inform the public of the consistency in practice outcomes and safe practices within healthcare organizations. Such reliability data can help a patient or family make the decision to proceed with services or choose another provider and location (Pronovost et al., 2006). Poor patient outcomes over time can decrease patient volumes and impact revenues or close a hospital (Becker's, 2021).

   Measures of Patient Outcomes and Engagement. Healthcare data presents many options for patient outcome measurement and reporting based on standard definitions, timeframes, and reporting parameters for consistency and reliability in data comparison both internally for improvement efforts and between healthcare organizations for benchmarking (AHRQ, 2017). For the purposes of this study, we will focus on measures related to the safety of care by examining AHRQ Patient Safety Engagement Survey data and NSHN reported patient CAUTI and CLABSI data, both for January 1, 2022 through December 30, 2022 for 24 acute care hospitals within Universal Health Services, Inc. These two representations of safety of care data have validated, nationally accepted methods, discreet timeframes and methods for measurement, and are indicative of both cultural influences and behaviors and patient safety outcomes (AHRQ, 2017).

AHRQ Survey on Patient Safety Culture. AHRQ's Patient Safety Engagement Survey is a nationally recognized survey designed to capture elements that measure the culture of an organization regarding its patient safety environment and opportunity to positively influence patient outcomes (AHRQ, 2020). AHRQ's survey includes questions pertaining to perceptions of leadership engagement, communication, and presence, as well as the freedom and the psychological safety to report patient harm, disclose an error to avoid patient harm, or to use a harm event for organizational learning and patient outcome improvement. The Patient Safety Engagement Survey is recognized as a healthcare national patient safety best practice, and AHRQ provides resources for interpretations of the statistical results and support creating action plans for intentional improvement of unit or organizational safety culture (AHRQ, 2017). For this research study, designated question results that correlate with perceptions of leadership engagement from 24 acute care hospitals will be analyzed statistically, seeking to understand the relationships, if any, to those same units with two types of hospital acquired infections, CAUTI and CLABSI, from NSHN's data base from January 1, 2021 to December 30, 2021.

NSHN Hospital Acquired Infections: CAUTI and CLABSI. Hospital acquired infections, CAUTI and CLABSI, are two avoidable patient outcome infections that are measured and monitored through required mandates by CMS, but are somewhat common within acute hospitals (CDC, 2017). Data for these infections are entered into the NSHN database and are part of programs such as national programs such as pay for performance and Leapfrog, among others. While other hospital acquired infections are also monitored and reported, these particular patient outcomes have been chosen for this study due to the

commonality of their presentation and the data available regarding their estimated cost

per occurrence. In practice, CAUTI and CLABSI are patient outcomes that are avoidable

by following patient care bundles for infection prevention (Leape & Berwick, 2005).

These care bundles, defined as a small, straightforward set of evidence-based practices—

generally three to five, that, when performed collectively and reliably, have been proven

to improve patient outcomes (IHI, 2012). Because patient outcomes are poor, there are

culture of safety gaps or possibly process lapses that allow these plans of care to not be

fully, consistently executed for every patient and the healthcare leader may be part of this

culture (Schreiber et al., 2018). The cross examination of these facility units with

CAUTI's and CLABSI's with Patient Safety Engagement Survey may help explain any

relationships or differences in perceptions of leadership engagement and outcomes in

these areas.

Theory Relevant to Healthcare Leadership Examination

      Transformational Leadership Theory. There is a need for leadership model

adjustments in healthcare as the landscape for healthcare continues to quickly advance

and innovate (Shepherd et al., 2014). Task-based, management style leadership is no

longer as effective with high rates of turnover and lack of employee loyalty (Lee et al.,

2019). Lack of adequate succession planning and promotions from within has

complicated the abilities to lead versus manage and creating innovative environments for

problem solving is a rarity (Tschannen et al., 2021). Transformational leadership theory,

as defined by James V. Downton in 1973 and elaborated by James Burns in 1978,

promotes optimal performance through the "4 I's Model" as seen in Figure 1. The

transformational leader has the competency and the proven ability to provide

inspirational motivation, intellectual stimulation, individual consideration, and idealized

influence to his/her employees (Ree & Wiig, 2020).

Figure 1

Transformational Leadership 4-I's Model
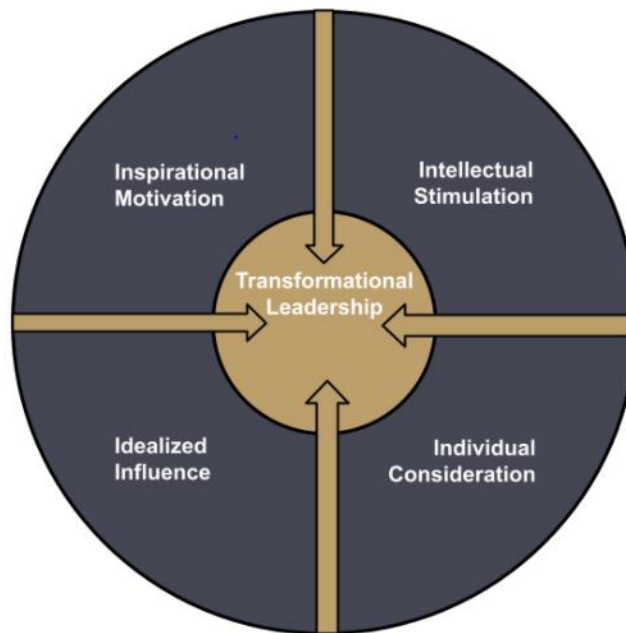
Note: The elements of the Transformational Leadership Model: Intellectual Stimulation,

Individual Consideration, Idealized Influence, Inspirational Motivation, contribute to

building lasting engagement within the work unit.

https://positivepsychology.com/transformational-leadership/

The ability to exhibit care and passion not only for the employee's job

performance but also to inspire their commitment to a cause and to be invested in their

intellectual learning and growth are paramount to the engagement of the employee and

the promotion of a positive safety culture (Ree & Wiig, 2020). Such leaders are

motivational and inspiring, moving employees to often work longer hours, think

creatively to solve problems, and to give extra effort (Heller & Harrison, 2021). Using

both reliability and regression analyses, a study of 107 respondents showed that

transformational leadership had a strong correlation (r = .714) with employee

engagement, satisfaction, and willingness to do extra duties (Chin et al., 2019). Such

leader commitment, leading by example and investment in employees encourages

common goals, willingness to be flexible, and change with environmental business needs.

The investment is first in employee by the leader, and subsequently the employee is

invested in the patient outcomes that help the organization thrive to meet its vision and

mission of caring for its patient population (Heller & Harrison, 2021).

Healthcare Leaders in Acute Hospital Settings

As with most any industry, healthcare organizations rely on their leadership teams

to perform well operationally. These leadership roles in healthcare are often filled

through promotions from within the organization (Vaughn et al., 2019). Newly promoted

healthcare leaders are responsible for patient safety outcomes, daily operations and

staffing, and the financial health of their facility. Successful leaders in healthcare may

have traits or characteristics similar to other industry leaders, but they also must be agile

and strategic to keep ahead of the volatile economic landscape changes within healthcare

(Parr et al., 2021a). As a front-line manager, giving directions for discreet tasks may be

the primary role of a clinical leader at the bedside with direct patient care supervision

(Cowie et al., 2020). As promotions occur within the healthcare organization, the need

for management transitions to the need for leadership (J & Mary, 2008). Those who were

comfortable delegating discreet tasks may now find strategic planning and establishing a

vision and mission for zero avoidable harm to be a struggle (MacNeill et al., 2021).

Because of the organizational structure complexity and silos within healthcare

organizations, intimate understanding of front line care processes with patients is seldom known by high level leaders, such as C-Suite employees (Mustafa et al., 2019). The extension of emotional commitment and servant leadership from leader to staff member can provide the impetus for good decision making to positively influence patient care outcomes (Adelman, 2012).

Knowledge of the complexity of healthcare systems, evolving markets, pay structures, and patient outcomes are paramount for successful healthcare operations (Weberg, 2012). Such complexity calls for an organizational structure unlike the traditional healthcare top-down power pyramid (Roussel et al., 2016). The necessity for agility to evolve and innovate is a challenge for most current healthcare leaders, as is the balance between care, compassion, and driving for results (Mosadeghrad, 2013). Such innovations and streamlining of processes may produce efficiencies that allow more time to be spent on basic care principles at the bedside, promoting positive patient outcomes (Saver et al., 2015).

What is a Healthcare Leader?

Leaders in healthcare are defined as those leading healthcare operations or supportive services that impact patient episodes of care (CDC, 2019). Leaders are generally allocated by title and scope of responsibility by their job description, ranging from C-Suite to the Clinical Unit Manager. For purposes of this study, all leader positions will be considered, as they impact culture of safety for patient care and could impact CAUTI's and CLABSI's. The Board of Governor members will not be included within this study as these leaders are not part of daily patient care nor support services that help provide care to patients.

Typical Hospital Organizational Structure and Degree of Influence

According to the American Hospital Association (AHA) Fast Facts on United States Hospitals, the average acute hospital has an average leadership team of 110 leaders, which includes the C-Suite and all leaders down to Unit Managers (AHA, 2022). As the position or title increases, so does the scope of influence. For example, a Unit Manager has only responsibility for discreet tasks and functions on that unit of assignment, whereas the Clinical Team Lead may have total unit performance responsibility for several units or service lines and the C-Suite has responsibility for the entire hospital (Sexton et al., 2018). In totality, all leadership roles exist to care for patients, either directly or indirectly, through direct or indirect service. From the AHA Fast Fact publication, there are 6,093 acute care hospitals in the United States in 2022 (AHA, 2022). Based on this publication, the estimated number of healthcare leaders equates to 670,230 people in leadership roles that might positively impact patient outcomes through perceived positive engagement by the leader.

Typical Acute Hospital Leader Profile

According to AHA (2022), the majority of senior level leadership roles in acute care hospitals in the United States are male, Caucasian, masters prepared with backgrounds in finance, ages 42 - 61. Other leadership positions, specifically clinical roles in direct patient care areas, are largely promoted from within the organization, providing as much as 67% of clinical leader roles of manager or director (AHA, 2022). These internal promotions are rarely supported with management training and supportive decision-making competency; similarly, internal promotions don't often include effective communication or leadership classes for these leaders (Adelman, 2012).

Acute Hospital Study Emphasis

When examining healthcare leadership and its impact on patient outcomes, acute

hospitals are an important area of emphasis. The need to examine acute hospitals is based

on the volume of patient stays and patient safety outcomes reported by these facilities,

and the magnitude of potential change implications should any relationship between

leader engagement and patient safety outcomes result from statistical analysis. The

patient volumes in acute hospital settings are greater than in other facility types, with

33,356,852 acute care admissions in 2021, with total operating expense (including costs

of bad outcomes) of $1,213,881,001,000 (AHA, 2022). Comparatively, behavioral health

hospitals are fewer in number and have fewer beds, thus 11,498,672 patient admissions in

2021 (AHA, 2022).

Economic Pressures and Healthcare Staffing, Including Staffing and Leadership

Positions

Healthcare employees are in grave demand due to an increase in the patient

population across the United States since 2011 (Emanual, 2018). Organizations have

experienced astronomical turnover rates as nurses leave their positions to become "travel

nurses" for a salary that is often multiplicative of their standard rate of pay (Occupational

Outlook Handbook: Registered Nurses, 2020). In fact, between 2016 and 2019, the

average hospital turned over 83% of its nursing staff and in 2020 the average RN

turnover rate was 38.9% (Becker's Healthcare, 2022). Such frequent and significant

changes in staffing introduce great degrees of variation in competency and knowledge of

evidence bases care practices within the nursing units, therefore making leadership even

more crucial to daily operation and care reliability (Roussel et al., 2016). Leadership

compassion, influence, and engagement may be the glue of sustainability to motivate and

retain critical patient care employees in order to improve patient outcomes (Rodriguez et

al., 2017).

Issues with Staffing

High staffing turnover rates create challenges with consistent patient care

execution. New nurses may be in unfamiliar roles. Leaders who have not been at the

bedside for some time are now forced to flex into staffing roles, and brand new nurses

who may have experienced shortened preceptor engagement are thrown into the patient

care role at the bedside out of necessity (Lavoie-Tremblay et al., 2022). All of these

transitions occurred at an accelerated rate during Covid, adding to the stress and

psychological safety breakdown of leadership teams and staff. Staffing turnover for all

roles in healthcare increased to 65% in some locations, up from 8% - 16% in most

instances (Lavoie-Tremblay et al., 2022). With turnover rates so high, nursing

competencies posed tremendous issues for hospitals, who were beyond maximum patient

capacity with limited resources. Communication changes during the pandemic came at a

fast and furious pace, leaving some leaders confused, fearful, and exhausted, forcing

them to do the bare minimum for patients as acuity skyrocketed and nursing shortages

grew (Parr et al., 2021b). Many clinical leaders left long tenure positions to become

travel nurses, attracted by the inflamed rates of pay triggered by the economic need for

more nursing interim roles. Subsequently, nurses with less training and experiences were

often moved up to backfill these leader roles as much as 24% of the time (CDC, 2020).

This statistic may increase once research is published to include the entire Covid

pandemic period.

Need to Train, Lack of Competency

As published in Becker's Healthcare (2021), healthcare has experienced cumulative nursing staffing turnover rate of 83% since 2016; therefore, competency development and institutional knowledge is no longer retained in acute hospitals. The foundations of safe patient care must be re-established with a workforce that is largely new and unexperienced (Becker's, 2021). Development of a trained, skilled, and therefore competent workforce will require an investment of time and other resources to make marked impact on positive patient outcomes and acute hospital longevity. The healthcare leader is a vital part of this new foundation establishment, setting the expectation for positive patient outcomes through daily engagement and personal example.

Increased Patient Acuity and Employee Burnout

National healthcare agencies have reported high rates of resignation and turnover with 25% of these clinical resignations listing burnout as their primary cause (Tschannen et al., 2021). The stress of increased acuity from Covid positive patients, the pressures from working short staffed for extended periods of time, and added pressures of only doing the bare minimum for patients when overcapacity have significant negative emotional impacts on healthcare workers (Aceves-González et al., 2021). Working long hours, double shifts to cover call-outs or to cover for being short staffed have added to employee and leader exhaustion and the ability to make good decisions for patient care (CMS, 2020). Because of fear of disease exposure, many patients delayed healthcare appointments, escalating their condition to a point that they required hospitalization.

Patient acuity levels have grown steadily across the nation since January 2020 (CMS, 2022).

Financial Impacts Associated with Staffing/Leader Challenges

As economic changes fuel the need for healthcare efficacy and efficiency across the nation, the pressure to understand ways to impact these patient outcome statistics can determine overall business health and longevity (Polonsky, 2019). Because of economic pressures, 134 rural hospitals have been forced to close in the United States in 2020, leaving those populations without access to health services within their community (Becker's Healthcare Review, 2021). Hospital Pay for Performance Programs and other incentive based programs have not provided the financial stability from improved outcome incentives as intended (MacNeill et al., 2021). The Affordable Care Act's interdisciplinary care model has not promoted a national reduction in preventable harm and sustained positive patient outcomes as part of the program design intent (CMS, 2020). In fact, health expenditures for poor outcomes have increased more than 11% each year nationally, since 2015, in spite of national programmatic efforts for improvement (CMS, 2018).

Overtime Pay for Interim Staff and Leaders. According to Becker's Healthcare Review (2021) in October 2021, the average pay for an interim RN was $4,000 per week, and the average pay for interim leadership was $5,000 per week. Further, early data estimates showed that a hospital would lose $3.6 million to $5.6 million each year due to staffing shortages, turnover, and utilization of interim staff. The average cost of turnover for each bedside nurse equates to $40,038, which does not include replacement staff

(Becker's, 2021). The American Nurses Association projections for nursing turnover

financial loss are more than $7 billion by the end of 2023 (Rosa, 2021).

Patient Outcome Improvement Strategies

Covid may have shifted the focus of healthcare organizations from improving all

patient safety outcomes to keeping patients alive (CDC, 2021). The pandemic magnified

safety challenges already present in care institutions. Many forums across the nation,

such as AHA and the National Association of Healthcare Quality (NAHQ), are focusing

on rebuilding foundational safety practices through development of competencies and

baseline understanding of what patient outcomes mean and how they can daily be

achieved daily through intentional, standardized work (Wilson et al., 2005). For

healthcare organizations to engage in such foundational building initiatives, the senior

leaders must recognize and champion the need for safe practices, understanding that good

patient safety outcomes also provide stronger fiscal year performance and profit margin

(Aceves-González et al., 2021).

Culture of Safety

With a national mortality rate of 86 persons per 100,000 population or CLABSI

and mortality rate of 71 persons per 100,000 population for CAUTI in 2016, it is

imperative to reduce avoidable patient harm by all means possible (AHRQ, 2017). A

culture of safety is defined as shared beliefs, commitments, and attitudes on patient safety

and the focus on error prevention through systemic solutions to prevent error from

occurring (ECRI, 2020). The National Patient Safety Foundation lists leadership

engagement and influence as the top focus of eight driving factors to improve patient

outcomes within healthcare organizations (ECRI, 2020). Effective leadership engagement

is critical for strengthening a culture of safety and for care integration of evidence-based

best practices. Leader engagement shows a strong correlation to positive patient safety

outcome measures (Richards, 2020). Studies show that perceptions of leadership

engagement can positively influence ($r = .714$, $p = .01$) employee pride and contribution

to mission, possibly impacting patient outcomes (Chin et al., 2019).

Potential Transformational Leadership Implications

Transformational leadership theory skills and abilities may impact healthcare

organizations by improving leader engagement, or perceptions of engagement, through

investment and encouragement of his/her staff members (Richards, 2020). If attributes of

healthcare leadership and the ability to engage in positive relationships with staff can be

enhanced through the leader assessment and the hiring process, education, role modeling,

and skills development, then shifts in leader-staff relationships may very well have a

positive impact on the culture of safety in employee commitment, care, and patient

outcomes. Such improvements over time could change the landscape of healthcare,

provide safer, more reliable care for patients, improve profit margins, reduce turnover,

reduce readmissions and mortality, and eliminate hospital closures because of financial

loss due to payment penalties from bad patient outcomes (Oster, 2017). Further, resulting

cost savings could be invested in additional education, equipment, services, and much

needed treatment options for these facilities. Finally, the cost savings could be rolled

down to the patient, making care affordable and improving care access and health equity

for all patient populations (Saver et al., 2015).

Gaps in the Literature

There are substantial gaps in the literature regarding leadership engagement and perceptions of engagement on positive patient safety outcomes. Most of the literature available focuses on the mid-level manager or the nursing leader. There is little research regarding the influences of C-Suite or other senior leader level engagement and the effect of that engagement on patient outcomes. There are studies that correlate leader engagement to employee engagement and studies that correlate employee engagement to improved patient outcomes, but little of the direct influence of senior leader to patient outcomes. The current literature for leadership engagement in healthcare is deficient in comparison to other industries or service sectors. The complexity of healthcare systems and organizations makes such studies difficult. Healthcare data abounds, but it has been coded, classified, grouped, and submitted after some version of scrubbing in order to remove personal health information and to meet many slightly different data definitions (CDC, 2021). Thus, healthcare data from third party agencies may be somewhat "normalized" as a result of these data reporting requirements. Lastly, little research exists to quantify the effects of engagement perceptions in a tangible means in order to affect change for improvement of outcomes.

Chapter 3

Methodology

The purpose of this study is to examine relationships between perceptions of acute healthcare leadership engagement and CAUTI and CLABSI patient safety outcomes in 26 UHS, Inc. acute care hospitals located in the United States. This research is a retrospective, ecological study that will analyze two performance data sets. The first data set is the survey results from the Culture of Safety Survey as developed by AHRQ (AHRQ, 2017). The Culture of Safety Survey measures perceptions of organizational culture related to patient safety, including the leader's level of engagement with their staff through presence, communication, support, and prioritization of patient safety awareness and reporting. The survey has been recognized as best practice in healthcare patient safety and has been administered across the United States for nearly a decade (Cosgrove et al., 2013). The AHRQ Culture of Safety Survey questions are shown in Appendix A.

The second data set used in this study is CAUTI and CLABSI data from NHSN's database for the same 26 UHS, Inc. acute hospitals during 2021 (CDC, 2021). This data set includes reported HAIs by facility, infection type, and unit location. Such data and corresponding data reports are validated by CMS and are used broadly in many payer programs and data tracking systems, ensuring reliability and consistency of this data set (CDC, 2017).

This chapter will review the research design, sampling methods, participants, and procedure in order to test each hypothesis and answer the research questions outlined in the Introduction, using quantitative methodologies.

Study Design

   This study is a retrospective ecological study and statistical analysis. Both the

AHRQ Survey and NSHN data sets are from 2021 at UHS, Inc. These data sets will be

statistically compared to test hypotheses and to answer six research questions.

Target Population

   The study population for the 2021 AHRQ Survey data set includes all surveys

submitted by employees of 24 UHS, Inc. acute care hospitals. The data set includes a

total of 11,126 survey responses. Select questions within this survey will be analyzed

based on their association with the research questions and hypotheses. These survey

questions are shown in the variable and question crosswalk, represented by Table 1.

There are a total of 456,166 records in this data set.

Table 1

Research Variable Crosswalk

Variable	AHRQ Survey Questions
Perception of Leadership Engagement (PLE)	B1, B3, C1, C2, C3, C6 F 1, F2, F3
Patient Care Influence (PCI)	B2, C4, C5, C7-R
Culture of Safety (COS)	A6, A9, A10, A11, A13, A14 D1, D2 A1-R, E1-R, A12-R
Perception of Safety Culture (POSC)	F4, F5, F6
Perceptions of Leader Presence (LPRES)	B3, B1-R, B2 F1, F3-R, F2
Relation between Leader and Staff (REL)	A10 C5, C6
Transformational Leadership Characteristic Perceptions (TLC)	B1, B3-R F1, F2, F3-R

The AHRQ survey has specific questions related to perceptions of leader engagement, leader presence, and unit culture promoted by the leader. These questions will be used to statistically examine infection rates within the same facility locations.

This research study also includes NSHN data for all patients who have acquired a CLABSI or CAUTI as an admitted patient within UHS, Inc. during the time period of January 1, 2021 through December 30, 2021. This data set consists of infection type, facility, and unit, providing a total of 578,136 records.

Sampling

The research study will use the full data set for the questions of the survey relevant to the study hypotheses as presented in Table A above. Similarly, the study will utilize all CLABSI and CAUTI data from NHSN for time period of 2021. Study of the acute population in full will provide a more robust statistical analysis for hypothesis testing. Both sample sizes are large enough for statistical significance determination.

Inclusion

The 2021 AHRQ Culture of Safety Survey was available for all UHS, Inc. employees. Employees who do not speak English as their primary language were offered the survey in Spanish or their native language, with the respondent results coded into the data base by the survey vendor. The survey was available to all employees regardless of age, tenure, sex, education level, position, title, language, or ability. The NSHN data set will include all CLABSI and CAUTI data for UHS, Inc. acute hospitals for 2021.

Exclusion

Both the AHRQ and NSHN data sets utilized in this study for 2021 represent

acute care hospitals. Behavioral health hospitals have been excluded from this research

study.

Data Collection Process

The completion of the AHRQ survey was anonymous at the individual hospital

level. That is, there are no identifiable data within this data set, other than hospital,

service line, or unit. The full survey results were collected and analyzed by AHRQ, the

survey provider. AHRQ released the survey report, but also made the detailed data set

available to UHS, Inc. for improvement purposes. These raw data files were shared with

the researcher (Appendix B, Letter of Consent). The survey data were available in excel

file, by hospital. The principal investigator saved these data files on the company server,

in a password protected folder for use. The AHRQ data will be copied from individual

excel files by hospital into one collective excel file for uploading into SPSS for statistical

analysis, as outlined in Figure 2.

Figure 2

AHRQ Data Retrieval Process
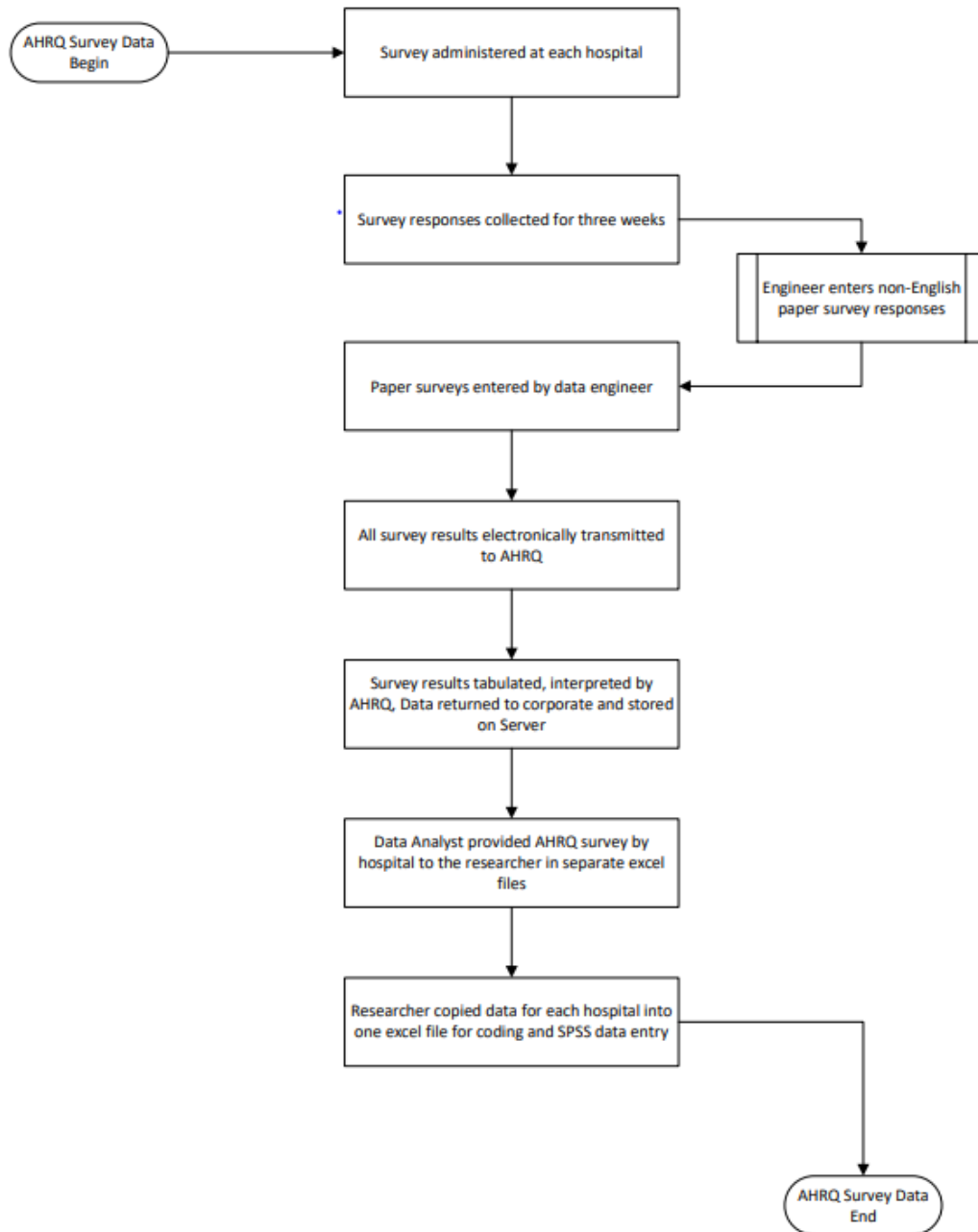
The NSHN data representing CAUTI and CLABSI infections were provided by

the Infection Prevention and Control department, pulling data reports from the NSHN

database, in excel format. The NSHN data has no patient identifiers. The NSHN data is

defined per Table 2.

Table 2

Data Dictionary NSHN Data

Data Element	Definition	Coded As
orgID	Facility discreet identifier – number (Facility)	F1 - F26
CAUTI Rate	Avoidable infection - Catheter associated urinary tract infection	CAUTI
CLABSI Rate	Avoidable infection - Central line blood stream infection	CLABSI
Location	Unit location within the facility where the infection occurred	A1 - A34
Infcount A	Raw number of CAUTI infections for that specific unit and location during 2021	PSOTOT
CCN	CMS Control Number – used for facility identification in business licensing	Not used
Facility	Hospital Business Name	F1 - F26

Similar to the AHRQ data, the NSHN data was saved by the principal investigator

in a password protected folder for research use, as depicted in Figure 3.

Figure 3

NSHN Data Process
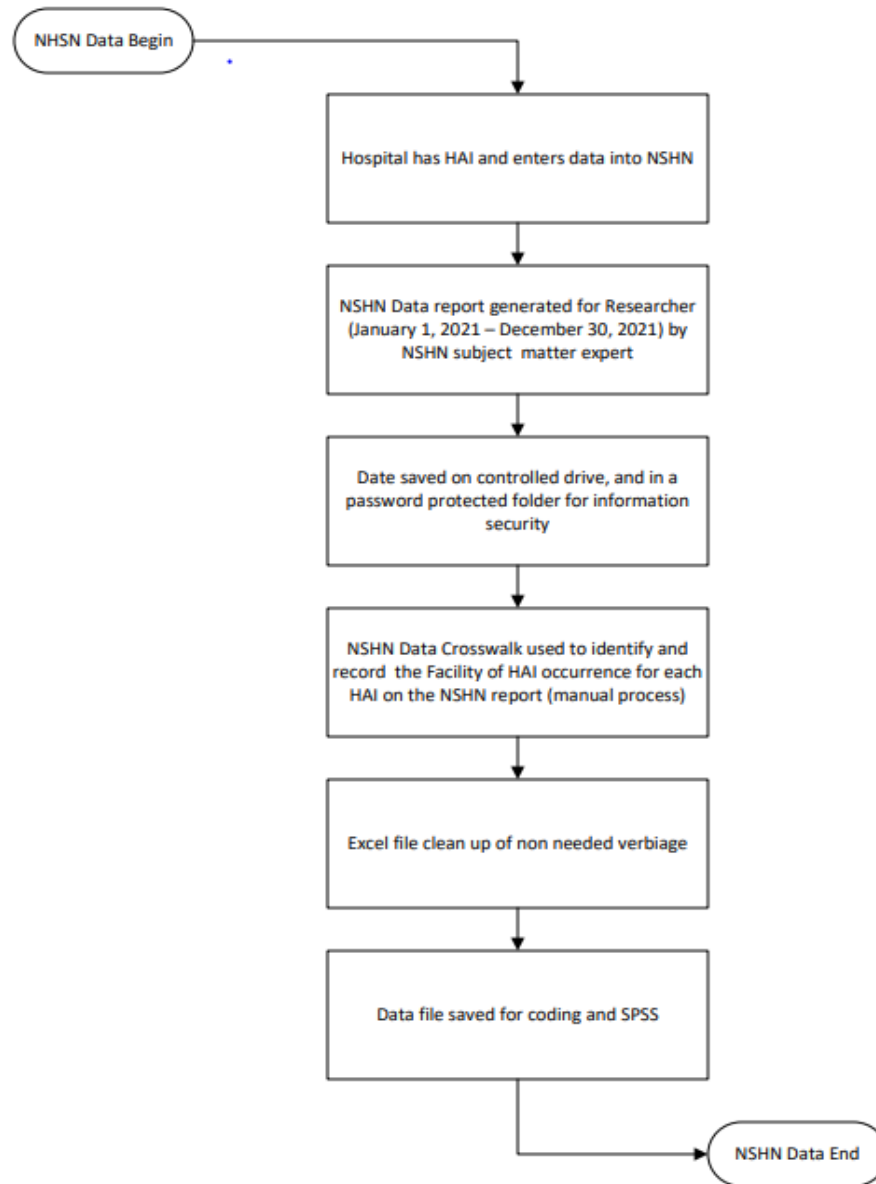
These data sets will be analyzed using perceptions of leader engagement performance by location in comparison with unit performance in terms of infection rates for CAUTI and CLABSI to understand any statistical relationship between engagement and patient safety outcomes.

Data Management and Security Considerations

Data analysis work in progress and all supportive documentation will be stored on the secured drive with limited access and will be encrypted for an added layer of confidentiality and information protection during the research process.

Data Analysis

The data from the AHRQ survey and the data from NHSN from 2021 will be entered into and analyzed through a coding and statistical analysis process, utilizing IBM's Statistical Package for the Social Sciences Software (SPSS) Version 18. Statistical tests will determine the degree of relationship, if any, between the Dependent Variables (DVs) and the Independent Variables (IVs). Table 3 represents the data analysis plan for each of these variables. Table 4 represents the associated code book that defines each variable within the Data Analysis Table.

Table 3

Data Analysis Table

	Hypotheses	**IV(s)**	**IV(s) Data**	**DV(s)**	**DV(s) Data**	**Statistical Test**
RQ1	*Is perception of leader engagement related to perceived patient care?*					
H1.1a	Perception of leader engagement significantly relates to perceived patient care.	PLE	Continuous	PCI	Continuous	Correlation
RQ2	*Is perceived leader engagement related to CAUTI and CLABSI rates?*					
H2.1a	Perceived leader engagement is significantly related to CAUTI and CLABSI rates.	PLE	Continuous	CAUTI and CLABSI Rates	Continuous	Correlation

RQ3	**Is perception of leader presence, communication, and visibility related to CAUTI and CLABSI rates?**					
H3.1a	Perception of leader presence, communication, and visibility is significantly related to CAUTI and CLABSI rates.	LPRES	Categorical	CAUTI and CLABSI	Categorical	Correlation
RQ4	**Is perception of leader engagement related to a perceived culture of safety?**					
H4.1a	Perception of leader engagement is significantly related to a perceived culture of safety.	PLE	Continuous	PCOS	Ordinal	Correlation
RQ5	**Is a perceived relationship between Leadership and Staff related to CAUTI and CLABSI rates?**					
H5.1a	A perceived relationship between Leadership and Staff is significantly related to CAUTI and CLABSI rates.	REL	Continuous	CAUTI and CLABSI Rates	Continuous	Correlation
RQ6	**Is perception of characteristics modeled by transformational leadership theory related to CAUTI and CLABSI rates?**					
H6.1a	The perception of characteristics modeled by transformational leadership theory is significantly related to CAUTI and CLABSI rates.	TLC	Continuous	CAUTI and CLABSI Rates	Continuous	Correlation

Table 4

Variable Codebook

Question #	Issue	Category	Code	Data Type
Note: Missing responses will be coded as "99"				
Facility	What facility is this survey associated with?	Facility	F1-F26	Categorical (nominal)
Unit/Area	What is your area of work?	Work Location	A1-A34	Categorical (nominal)
AHRQ Section A: Work Unit	In this unit we work together as an effective team?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	In this unit, staff feel like their mistakes are held against them?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	When an event is reported in this unit, it feels like the person is being written up, not the problem?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	There is a problem of disrespectful behavior by	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree	Discreet (ordinal)

	those working on this unit?		4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	
	When staff make errors, this unit focuses on learning rather than blaming individuals?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	The work pace in this unit is so rushed that it negatively affects patient safety?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	In this unit, changes to improve patient safety are evaluated to see how well they worked?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	In this unit, there is a lack of support for staff involved inpatient safety errors?	COS	1: Strongly disagree 2: Disagree 3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	Discreet (ordinal)
	This unit lets the same patient	COS	1: Strongly disagree 2: Disagree	Discreet (ordinal)

	safety problems keep happening?		3: Neither agree or disagree 4: Agree 5: Strongly agree 6: Don't know/Doesn't apply	
AHRQ Section B: Leader	My supervisor, manager or clinical leader seriously considers staff suggestions for improving patient safety	SUGG	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	My supervisor, manager or clinical leader wants us to work faster during busy times, even if it means taking shortcuts.	FAST	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	My supervisor, manager or clinical leader takes action to address patient safety concerns that are brought to their attention.	SAFE	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
AHRQ SECTION C: Communication by Leader	We are informed about errors that happen in this unit	ERROR	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	When errors happen in this unit, we discuss	PREVENT	1: Never 2: Rarely 3: Sometimes	Discreet (ordinal)

	ways to prevent them from happening again		4: Most of time 5: Always 6: Don't know/Doesn't apply	
	In this unit, we are informed about changes made to event reports after events.	CHANGE	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	In this unit, staff speak up if they see something that may negatively affect patient care.	SPEAK	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	When staff in this unit see someone with more authority doing something unsafe for patients, they speak up	POWER	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	When staff in this unit speak up, those with more authority are open to their patient safety concerns.	OPEN	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	In this unit, staff are afraid to ask questions when something does not seem right	FEAR	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always	Discreet (ordinal)

			6: Don't know/Doesn't apply	
AHRQ SECTION D: Reporting Safety Events	When a mistake is caught and corrected before it reached the patient, how often is this reported?	POSC	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	When a mistake reaches the patient and could have harmed the patient, but did not, how often is it reported?	POSC	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
AHRQ SECTION E:	How would you rate your unit/work area on patient safety?	POCS	1: Poor 2: Good 3: Fair 4: Very Good 5: Excellent	Discreet (ordinal)
AHRQ SECTION F: HOSPITAL MANAGEMENT	The actions of hospital management show that safety is a top priority.	POSC	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	Hospital management provides adequate resources to improve patient safety.	RESOURCES	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	Hospital management	INTEREST	1: Never 2: Rarely	Discreet (ordinal)

	seems interested in patient safety only after an adverse event happens		3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	
	When transferring patients from one unit to another, important information is left out	INFOMISS	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	During shift changes, important patient care info is left out.	CAFREMISS	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)
	During shift changes, there is adequate time to exchange all key patient care info.	TIME	1: Never 2: Rarely 3: Sometimes 4: Most of time 5: Always 6: Don't know/Doesn't apply	Discreet (ordinal)

Institutional Review Boards

Institutional Review Board (IRB) approval is not needed by UHS, Inc. because

the study as defined meets the criteria of a quality improvement study and the researcher

is an employee of UHS, Inc. No discreet, identifiable data is being shared or transmitted

and results of the study will be shared organizationally for learning opportunities. A

Letter of Consent, as shown in Appendix B, was granted by UHS, Inc., and submitted to Radford University Carilion's International Review Board for consideration.

Limitations

This study is limited in the inability to associate survey responder directly with the outcome of his/her leader and patients. It is limited in the availability of other research that links engagement with outcomes. The different fields in these two data sets impose limitations because of the variation in terms and the degree of complexity in variable definition.

Delimitations

The differences in data set fields have been addressed by development of the Research Variable Crosswalk in Table 1 and coding efforts shown in the Data Analysis Table 3. Different statistical methods will be utilized to determine validity and reliability of testing assumptions.

Chapter 4

Results

The purpose of this chapter is to present the survey findings and the analyses to the research questions presented in the previous chapter. This study analyzed retrospective data from the AHRQ Culture of Safety Survey and NHSN Infection data sets from 2021 for Universal Health Services, Inc. acute care hospitals. The study sought to understand any existing relationships between perceptions of leadership engagement, as characterized by the transformational leadership theory and patient safety outcomes, specifically CAUTI and CLABSI infection rates. The results of this study may be utilized to strengthen leadership engagement models and competency programs to increase patient safety outcomes in acute hospitals. The chapter is divided into methods, sampling methodology, and results from SPSS analyses to interpret and answer the research questions. The summary provides a high-level overview of test results.

Data from both data sets were transferred to Microsoft Excel and coded per the Codebook found in the Methods section of this study. The final Microsoft Excel Data spreadsheet containing the coded, final data set was uploaded into IBM's Statistical Package for Social Sciences (SPSS) version 28. Cronbach's alpha analysis was used to determine the reliability of the variable components as defined within the AHRQ question grouping assumptions (Figure 4).

Figure 4

Cronbach's Alpha Variable Testing Process
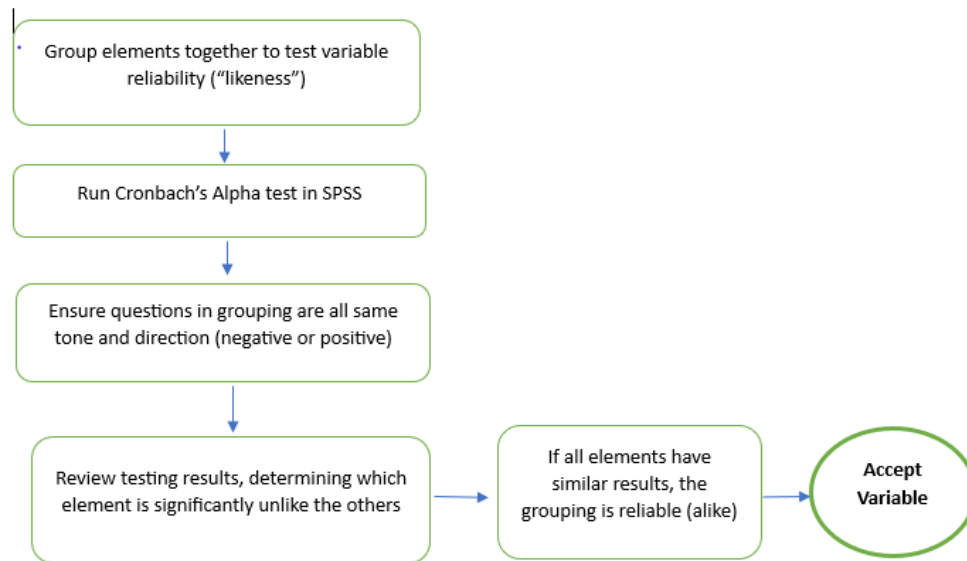
Once reliability was determined, inferential statistics were utilized to test correlations between dependent and independent variables to understand if relationships existed to answer each of the research questions.

Sample

All CAUTI and CLABSI infection rates from all acute hospitals reported in 2021 were utilized in the NSHN data set. Similarly, all respondent data for the AHRQ Culture of Safety Survey for 24 acute hospitals were included in the AHRQ data set and study analysis. A total of 456,166 data records for 24 facilities were examined within this study.

Results of the Study

Statistical analysis revealed associations between dependent and independent variables, as follows.

Research Question #1: Is perception of leader engagement related to perceived patient care?

Alternative Hypothesis H1.1a: Perception of leader engagement is significantly related to perceived patient care.

During the 12-month period of 2021 examined for UHS, Inc. acute care hospitals, Pearson correlation analysis determined there was a statistically significant positive relationship between perceptions of leadership engagement and perceived patient care, $r(22) = .639$, p < .001. This indicates that as perceived leadership engagement increases, so does the perception of patient care, as seen in Figure 5.

Figure 5

Relationship Between Perceived Leader Engagement and Perceived Patient Care
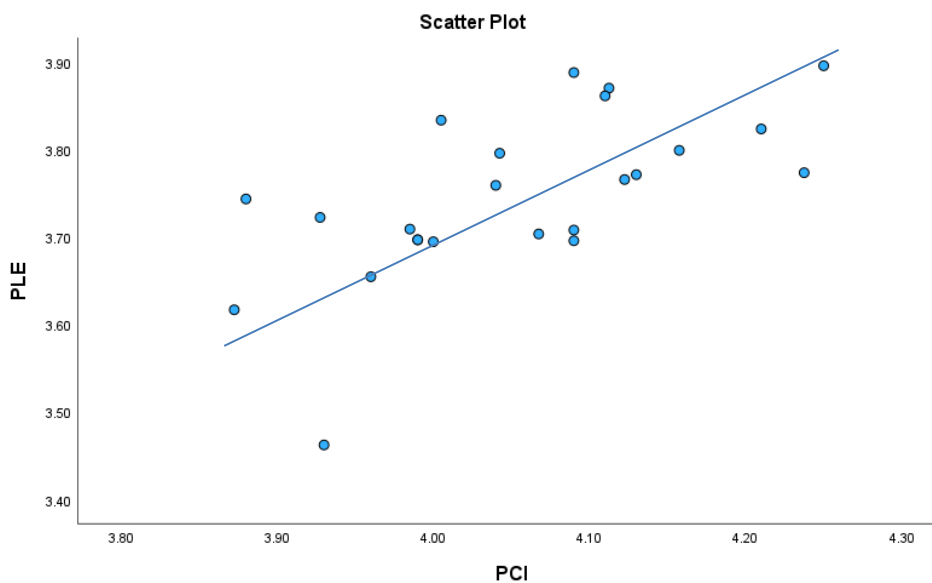
Research Question #2: Is perceived leader engagement related to CAUTI and CLABSI

rates?

Alternative Hypothesis H2.1a: Perceived leader engagement is significantly

related to CAUTI and CLABSI rates.

Pearson correlation analysis revealed a positive relationship between perceived

leader engagement and CLABSI rates, $r(22) = .366$, p $= .079$, and a slight negative

correlation between perceived leader engagement and CAUTI rates, $r(22) = -.145$, p $= .5$.

Based on this data, as perceived leader engagement increases, so do CLABSI rates,

slightly (Figure 6). As perceived leader engagement increases, CAUTI rates ever so

slightly decrease (Figure 7), which could be due to random variation.

Figure 6

Relationship Between Perceived Leader Engagement and CLABSI Rates
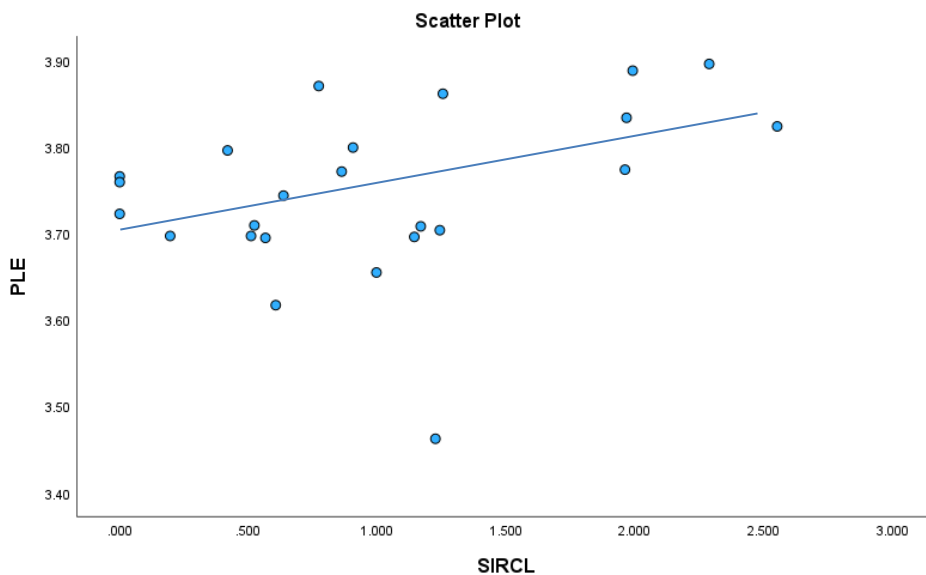
Figure 7

Relationship Between Perceived Leader Engagement and CAUTI Rates
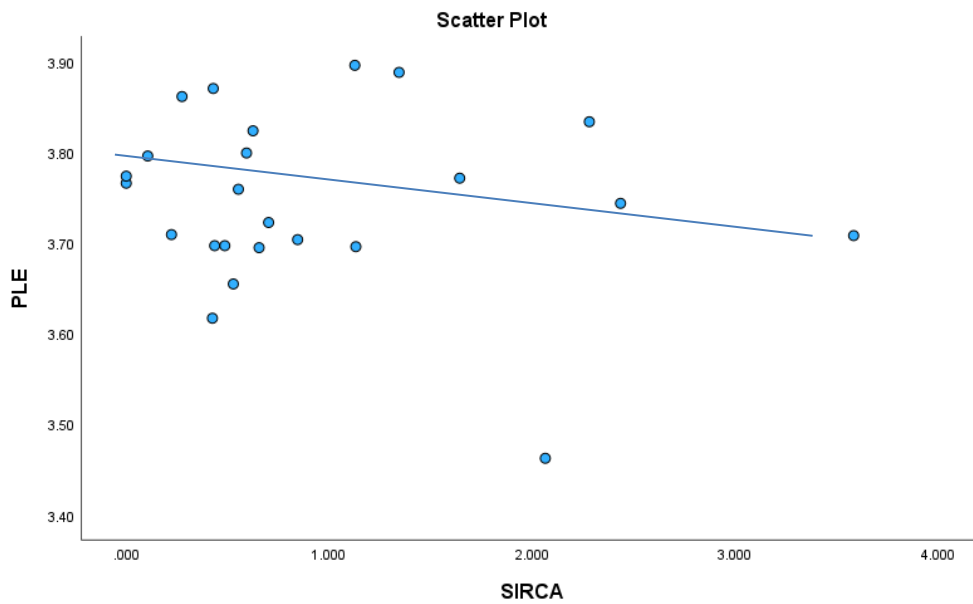
Research Question #3: Is perception of leader presence, communication, and visibility related to CAUTI and CLABSI rates?

Alternative Hypothesis H3.1a: Perception of leader presence, communication, and visibility is significantly related to CAUTI and CLABSI rates. When testing for relationships between perceptions of leader presence and CAUTI rates, there was a negative correlation, $r(22) = -.098$, p = .649. Pearson correlation analysis showed a positive statistically significant correlation between perceptions of leader presence, communication, and visibility and CLABSI rates, $r(22) = .444$, p = .03. Therefore, as the perception of leader presence, communication, and visibility increases (Figure 8), CLABSI rates also increase, and CAUTI rates decrease slightly (Figure 9).

Figure 8

Relationship Between Perceptions of Leader Presence and CAUTI Rates
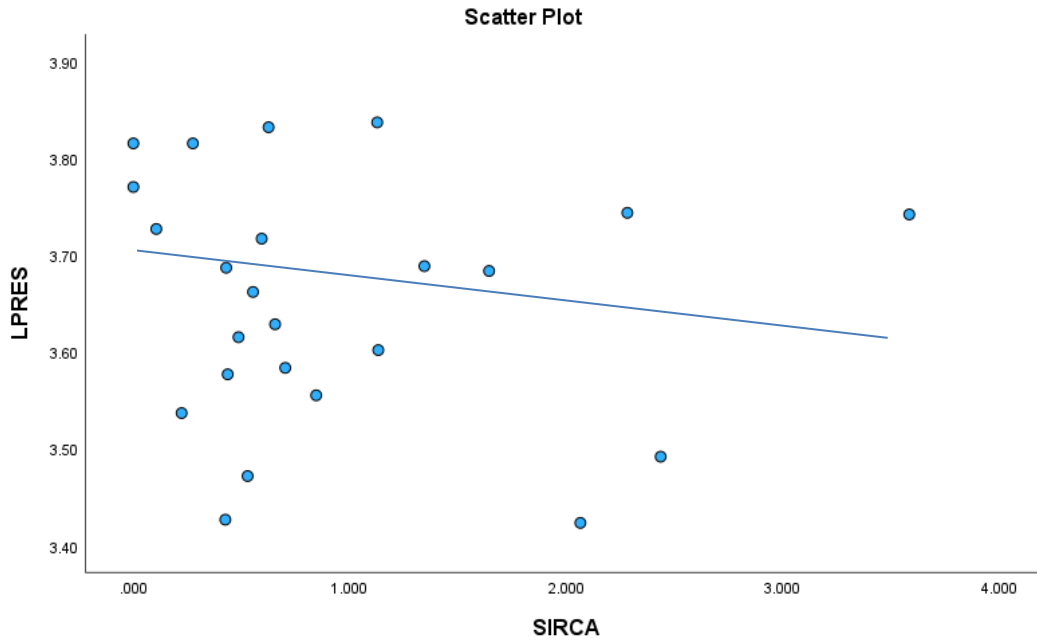
Figure 9

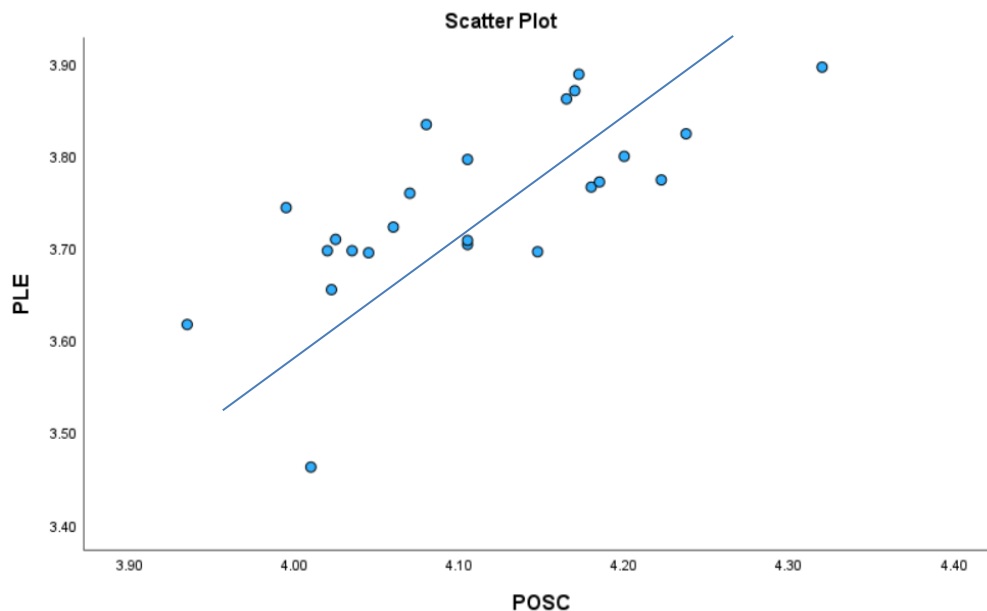*Relationship Between Perceptions of Leader Presence and CLABSI Rates*
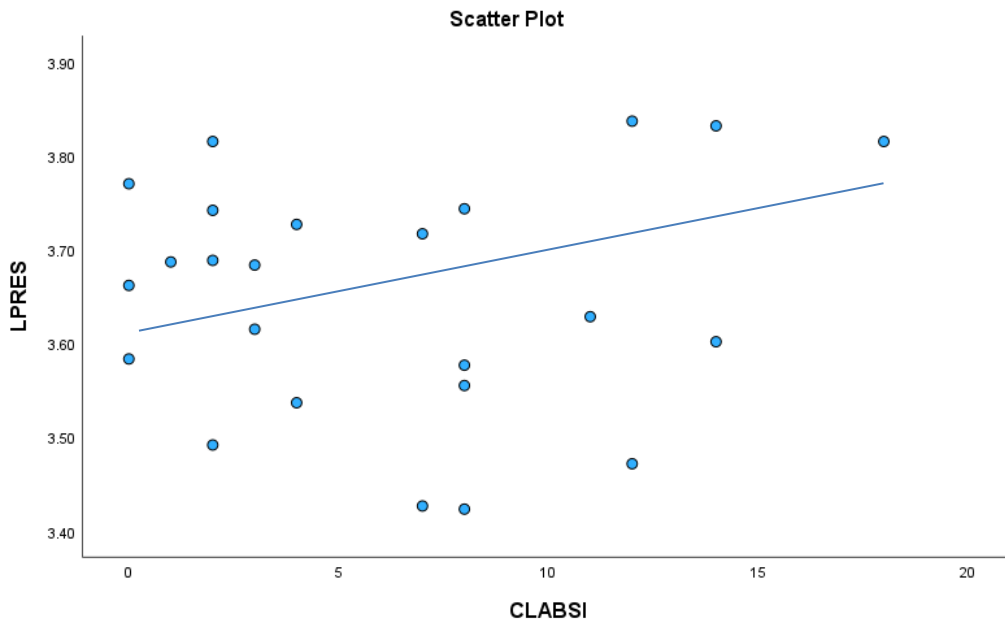
Research Question #4: Is perception of leader engagement related to a perceived

culture of safety?

Alternative Hypothesis H4.1a: Perception of leader engagement significantly

relates to a perceived culture of safety.

From Pearson correlation testing of both variables, the perception of leadership

engagement was strongly, positively, statistically significantly associated with

perceptions of safety culture, $r(22) = .713$, $p < .001$ (Figure 10). It is important to note

that variable perceived culture of safety reflects patient safety and specifically, patient

handoffs, and is distinctly different than variable defined as culture of safety, which by

nature of the question grouping from AHRQ implicates unit culture and morale. Culture

of safety research discoveries will be noted in the discussion section of this paper.

Figure 10

Perception of Leadership Engagement Relationship with Perceived Culture of Safety

Research Question #5: Is a perceived relationship between leadership and staff related to CAUTI and CLABSI rates?

Alternative Hypothesis H5.1a: A perceived relationship between Leadership and Staff is significantly related to CAUTI and CLABSI rates.

Pearson correlation analysis of perceived relationship between leadership and staff and CAUTI rates showed a negative relationship, $r(22) = -.102$, p = .635 (Figure 11), and analysis between perceived relationship between leadership and staff and CLABSI rates presented a significant, positive relationship, $r(22) = .490$, p = .015 (Figure 12). CAUTI rates decrease as perceived relationships between leader and staff increase. Conversely, CLABSI rates increase as perceptions of leadership and staff engagement also increase.

Figure 11

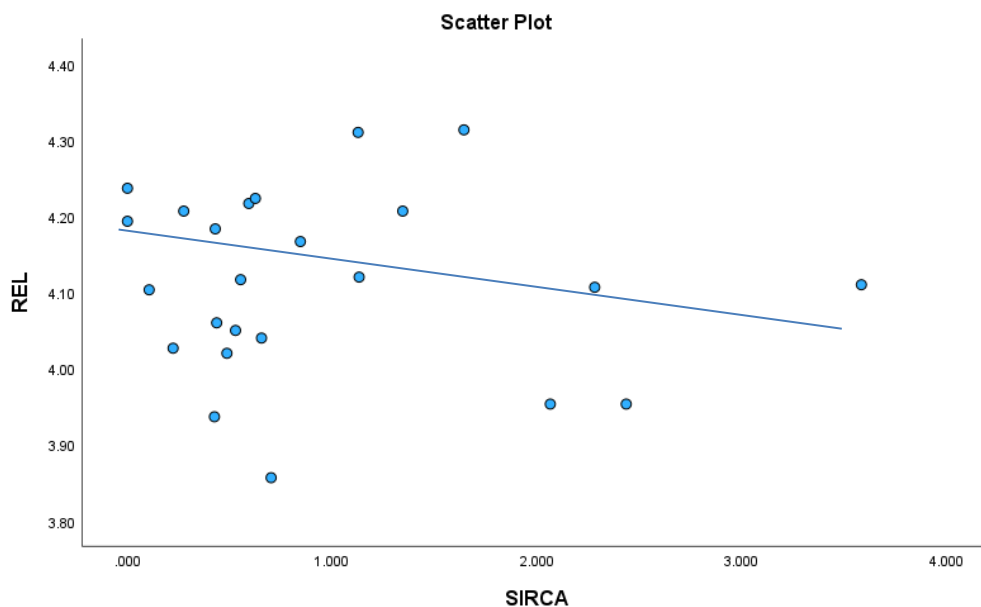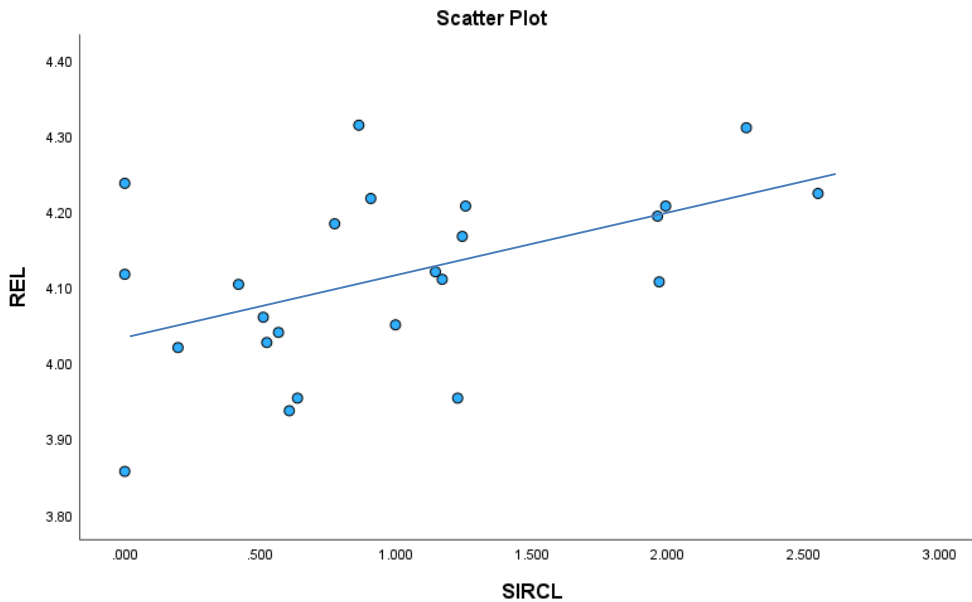*Relationship Between Perceptions of Leadership and Staff Relationships and CAUTI Rates*

Figure 12

Relationship Between Perceptions of Leadership and Staff Relationships and CLABSI

Rates

Research Question #6: Is perception of characteristics modeled by the transformational

leadership theory related to CAUTI and CLABSI rates?

Alternative Hypothesis H6.1a: The perception of characteristics modeled by

transformational leadership theory is significantly related to CAUTI and CLABSI

rates.

When examining the variable perceptions of characteristics modeled by the

transformational leadership theory (TLC) for any relationship with CAUTI rates, a minor

negative correlation existed with CAUTI rates, $r(22) = -.134$, p $= .532$ (Figure 13), and a

significant, positive correlation existed with CLABSI rates, $r(22) = .460$, p $= .024$ (Figure

14). As perceptions of characteristics modeled by the TLC increase, CAUTI rates

decrease, and CLABSI rates increase.

Figure 13

Relationships Between Perceptions of Characteristics Modeled by Transformational
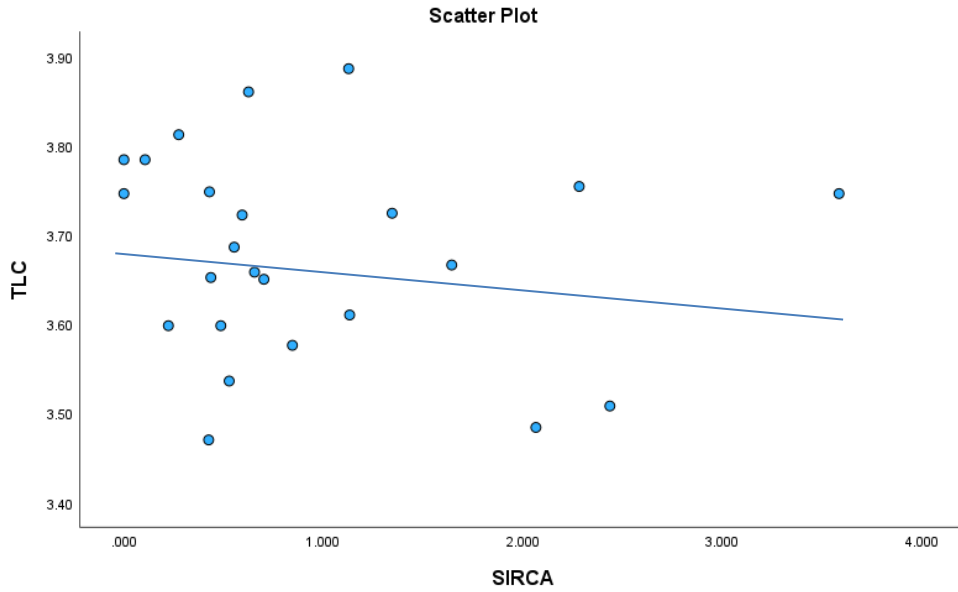
Leadership Theory and CAUTI Rates

Figure 14

Relationships Between Perceptions of Characteristics Modeled by Transformational
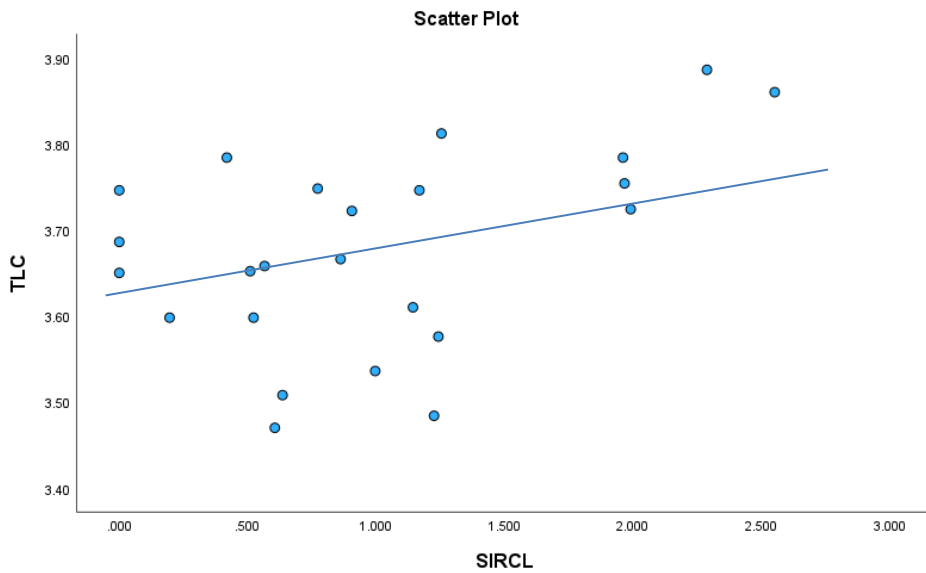
Leadership Theory and CLABSI Rates

Table 5

Summation of Statistical Analysis Results

Hypothesis	Statistical Result
H1.1a: Perception of leader engagement is significantly related to perceived patient care.	$r(22) = .639$, p $< .001$**
H2.1a: Perceived leader engagement is significantly related to CAUTI and CLABSI rates.	CAUTI: $r(22) = -.145$, p $= .5$ CLASBI: $r(22) = .366$, p $= .079$
H3.1a: Perception of leader presence, communication, and visibility is significantly related to CAUTI and CLABSI rates.	CAUTI: $r(22) = -.098$, p $= .649$ CLABSI: $r(22) = .444$, p $= .03$*
H4.1a: Perception of leader engagement significantly relates to a perceived culture of safety.	$r(22) = .713$, p $< .001$**
H5.1a: A perceived relationship between Leadership and Staff is significantly related to CAUTI and CLABSI rates.	CAUTI: $r(22) = -.102$, p $= .635$ CLABSI: $r(22) = .490$, p $= .015$*
H6.1a: The perception of characteristics modeled by transformational leadership theory is significantly related to CAUTI and CLABSI rates.	CAUTI: $r(22) = -.134$, p $= .532$ CLABSI: $r(22) = .460$, p $= .024$*
$p < .05$ **$p < .001$**	

In summary, perceptions of leadership engagement and leadership presence were associated with CAUTI rates, perceptions of safety culture, perceptions of patient care, and characteristics of transformational leadership theory. Possible theories for these associations and intriguing differences in CLABSI associations will be discussed in the next chapter.

Chapter 5

Discussion

Within Chapter 5 is a discussion of the study findings reported in Chapter 4, with possible theories, discussion of the findings, and possible implications for change. It also includes recommendations for future studies and concludes with a final statement on the importance of leadership engagement in terms of patient safety outcomes.

It is peculiar to note there was marked difference in CAUTI and CLABSI in their statistical analysis results with other variables, specifically that study results showed a negative association with CAUTI and a positive relationship with CLABSI for all research question analyses (see Table 15). CAUTI and CLABSI are both preventable infections (CDC, 2022), and this decrease in CAUTI rates was a reduction in avoidable patient harm. CAUTI prevention is largely a nurse driven protocol with elements easier to visualize, such as foley lines, which may influence these results. CAUTI frequency of occurrence is greater than CLABSI for the acute study population, yet there was a marked increase in CLABSI rates during 2021. Workflow changes driven by the pandemic may have also contributed to the study results, specifically lack of competencies regarding CLABSI prevention protocol with nursing shortages and clinical leaders filling staffing positions.

Study findings confirmed there was a significant, positive relationship between perceptions of leadership engagement and perceived patient care [$r(22) = .639$, $p < .001$]. The general perceptions of increased leadership engagement and presence, defined as communication, personal connection, and time spent with staff, are positively associated with staff perceptions of how safe patient care is on the unit and in the facility.

Additionally, findings showed that perception of leadership engagement was significantly, positively related to a perceptions of safety culture [$r(22) = .713$, $p < .001$] defined as patient handover and patient logistic communications between units as worded in the AHRQ Culture of Safety Survey (AHRQ 2021). Thus, as perceptions of leadership engagement increased, so did the communications and logistics during patient handover within this study period. Conversely, as perceptions of leadership engagement and leader presence increased, culture of safety decreased. Culture of safety can be defined as unit morale, culture, and degree of unit dissatisfaction, per the AHRQ Survey (AHRQ, 2021). As leaders were more engaged and increased their presence on the patient care units, morale and culture within the unit declined.

Discussion of the Results

Study result implications are meaningful to healthcare systems in defining or adjusting leadership models to optimize organizational performance, improve patient outcomes, and to reduce harm in acute settings. Improved outcomes help the organization achieve its mission and vision of improving health and provide financial stability for continued operation (AHA, 2022).

Prior to the pandemic, many healthcare organizations exhibited better performance metrics than during the pandemic (AHA, 2022). While economic pressures, turnover, and other external influences are all recognized as operational impacts to patient care, organizations are beginning to assess other areas of opportunity to improve patient outcomes with a refocus on avoidable patient harm and patient safety outcomes (CDC, 2022). Healthcare is a complex organization, with many matrixed relationships and influences on staff (AHA, 2022). Research suggests the model for healthcare

leadership roles requires shifting from dissemination of directly managed tasks to accountability for building cultures where every member thrives and desires to achieve the organization's mission and vision (Molinaro, 2020). The study data confirmed that perceptions of transformational leadership theory characteristics were positively, statistically related to increased perceptions of patient safety culture [$r(22) = .830$, $p <$ .001]. The data also shows a statistically significant reduction in CAUTI rates when leadership engagement and presence increased [$r(22) = -.145$, $p = .5$; $r(22) = -.098$, $p =$ .649]. We may surmise, therefore, that frequent engagement and communications, investing in staff, building a positive vision, and personal connection are meaningful, measurable associations in improvement of patient outcomes, specifically CAUTI rates.

Our study data did show that CLABSI rates were positively associated with increased perceptions of leadership engagement [$r(22) = .366$, $p < .079$] and perceptions of leader presence [$r(22) = .444$, $p = .030$]. It is an intriguing point that CLABSI rate increased during a time of increased perceived leadership engagement and leader presence. One plausible explanation may be that CLABSI infections occur less frequently; therefore, leaders do not address them as timely or have as much focus on this infection rate as the CAUTI infection rates (study data showed that CAUTI rates decreased as perceptions of leadership engagement and leader presence increased; see Table 15).

Another possible explanation may be that the process for validating a CLABSI can take longer than validation of a CAUTI. This time lapse may have reduced the sense of urgency by the leader as other priorities presented themselves. Additionally, the processes for prevention of CAUTI and CLABSI are different clinically, with CAUTIs

having more visibility to the foley line position and days inserted. One major tactic in

preventing a CAUTI is to get the foley catheter removed as soon as possible (CDC,

2022). The CAUTI foley removal process is a nurse driven protocol, indicating the nurse

may make the decision to remove the foley based on patient care indicators, whereas

CLABSI processes are largely driven by the provider. These prevention differences may

make it more challenging for the leader to influence improved care prior to infection

onset. Providers within the organization of study are contracted providers, which may

present a challenge when attempting to influence treatment protocol changes (Molinaro,

2020). Lastly, 2021 was a year of extremely high clinical staff and leader turnover and

high acuity patients, many who were covid positive, requiring ICU care with isolation

precautions. As staffing and all leaders changed to adjust to patient care needs, patients

with central lines who had CLABSI infections may not have received the proper dressing

changes or infection prevention care due to stretched staffing and high nursing to patient

ratios. Many leaders transitioned to staffing during this time to support patient care. The

more intricate care for CLABSI prevention may have suffered because of these

adjustments.

A different theory may be that the perceptions of leadership engagement and

leader presence were perceived negatively on the units, during the staffing challenges and

other cultural dynamic during the pandemic. This could have been an issue of trust, thus

when leaders rounded it perceived as only happening when there was an issue with a

CLABSI infection. The staff may have interpreted leadership engagement and presence

as only occurring when something went wrong, and perhaps felt that they were not as

able to prevent a CLABSI due to the provider's unwillingness to remove the central line.

A culture of fear and retaliation may have influenced hesitancy to escalate, thus

perceiving the increased leadership engagement and presence as negative or punitive at

the unit level. Consistent leader communication, rounding, and engagement are required

to expel situations of mistrust (Molinaro, 2020).

The positive study relationships between perceptions of leadership engagement

and perceptions of patient care [$r(22) = .639$, $p < .001$] may have been an overall

perception of improved care by simply having more leaders present. During the

pandemic, some clinical leaders worked in staffing positions or worked to support staff

who were overwhelmed by higher-than-average patient loads. Some leaders, depending

on their position within the organization, did not engage with unit staff due to infection

prevention concerns. It is important to note that this study did not differentiate between

leadership levels. Having a unit leader join staff in caring for high patient workloads may

have increased employee morale during this study period.

During evaluation of study data, differences in two variables became relevant,

outside of the primary research questions. Perceptions of safety culture, primarily related

to the handover and communication that occurred during patient logistics and culture of

safety, which related more to the unit culture and morale, per the AHRQ question

content, provided interestingly different results. There were positive relationships with all

study variables when analyzed with perceptions of patient safety. However, all analyses

with culture of safety were negatively correlated. In other words, all perceptions of

leadership engagement, leader presence, relationships between leader and staff, and

transformational leadership characteristics were all significantly, negatively related to

culture of safety [$r(22) = -.184$, $p = .389$; $r(22) = -586$, $p = .003$; $r(22) = -327$, $p = .118$;

r(22) = -576, p = .003, respectively]. One possible theory is that leaders were not often

present on the units during this time period unless there was a negative communication or

issue. Possibly, their presence and engagement were minimal at best, so that any

engagement or presence was felt as punitive. This decline in unit morale with leader

presence and leadership engagement may have been founded by feelings of fear from the

pandemic and frustrations of being overworked from changes in staffing and increases in

work demand.

Relationship of the Findings to Prior Research

This study did not reveal any published literature pertaining to perceptions of

leadership engagement and leader presence relationships with patient safety outcomes.

There are studies on leadership engagement influence on staff engagement, staff

turnover, or staff satisfaction, but not outcomes directly. Current studies in motion

supported by grant funding are to better understand the longer-term impacts of the

pandemic on healthcare and the economy (CDC, 2022). These future study results may

reveal more direct influences from leadership engagement and presence on patient safety

outcomes, as a means for continual improvement and avoidable harm reduction.

Implications for Future Practice, Research, Relevance, and Policy

The sample for this study included all NSHN reported data and all respondent

data for AHRQ culture of safety surveys for 24 hospitals within the UHS. Inc. Acute

Division. The data was analyzed at the facility level, not the unit level, based on the way

the AHRQ data was collected. One future study recommendation is to obtain the unit

level data for the next cycle of research to understand if differences exist in these same

variable associations at the unit level. Once the unit level study is concluded, there may

be value in assessing the performance at the overall regional level, as regions have

similarities in culture and administrative oversight. Regional specific data would be

insightful information to improve the recruitment, onboarding, and hiring processes for

leaders, helping to set a model for engagement and presence with staff, to influence a

positive culture where outcomes are paramount (Molinaro, 2020).

   While additional research is strongly desired, the implications of this study are

still promising. Healthcare organizations have an opportunity to define positive

leadership engagement and presence, and model it daily, not just in a pandemic or when

something bad happens, like a CLABSI. Leader communication, personal connection,

transparency, and connection to purpose, as depicted by the transformational leadership

theory characteristics, showed positive correlations to perceptions of patient care,

CAUTI, and perceptions of safety culture [$r(22) = .822$, $p < .001$; $r(22) = .830$, $p < .001$].

Hiring leaders who have demonstrated abilities to establish a vision and develop strong

relationships through engagement may change the association with fear on units when

leader presence increases. Educating leaders on their role in establishing a vision of zero

avoidable harm through these characteristics and behaviors may positively influence

patient outcomes (Molinaro, 2020). Frequent, recurring leader rounding on units must

become a normal activity for leaders to promote trust and confidence through focus on

employee recognitions, achievements, and other positive conversations. Protocols for

leaders should be developed by large healthcare organizations as functions of leadership

can vary by region and facility. Leader ownership and accountability, staff influence,

vision creation, and responsibility for outcomes may be a shift for some healthcare

leaders, as opposed to owning financial performance alone (Molinaro, 2020).

Healthcare organizations may also benefit from administering an escalation communication process for CLABSI and other patient harm events. This escalation should be timely and transparent to providers, leaders, and staff in order to prevent avoidable harm. Leader rounds, patient safety huddles, and other forums can offer a timely opportunity to resolve a safety concern. In situations of provider disagreement regarding a treatment plan to prevent harm, a multi-disciplinary huddle may provide a path forward for infection intervention. Should future studies at the unit level show that CLABSI associations increase due to provider hesitations or resistance, data trends should be reviewed at medical staff and other appropriate forums to change behaviors. Provider performance metrics should include such events if provider decision or behavior related.

The number of facilities that were analyzed and the one-year time period for this study are limitations of the study. Having one acute system included in the study is also a limitation. The same study repeated with data pre-pandemic and post-pandemic data and timeframes may have additional learning opportunities to understand these leadership engagement perceptions and their effect on patient safety outcomes, should they exist.

Future studies should be analyzed at the unit level to understand leadership at a more direct level. It would also be conducive to open the research variables to other HAIs to determine if differences in those relationships and perceptions of leadership engagement and leader presence. If data from other healthcare organizations could be accessed and studied, there may be an opportunity to understand key differences in the organizational culture, structure, and leadership engagement opportunities between health systems. Lastly, other studies may utilize healthcare externally reported performance data

with the AHRQ Survey to understand relationships between leadership engagement and

different categories of patient safety outcomes, such as falls with injury or pressure

wounds.

Conclusions

Leadership engagement matters. As perceptions of leadership engagement and

presence increased in this study, CAUTI rates decreased, reducing avoidable harm to

patients. As perceptions of leadership engagement and presence increased, perceptions of

patient care increased as did safety culture. Perceptions of leadership engagement and

leader presence in this study had a negative impact on unit culture and morale.

Leadership engagement can play an important role in improving patient safety outcomes

by reducing avoidable patient harm. More studies are needed to further understand the

factors driving the negative relationships between perceptions of leadership engagement

and leader presence related to CLABSI and the model of engagement for improved unit

morale and culture.

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Appendix A

AHRQ Culture of Safety Survey

Hospital Survey on Patient Safety (Version 2.0)

Instructions

This survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take about 10-15 minutes to complete. If a question does not apply to you or your hospital or you don't know the answer, please select "Does Not Apply or Don't Know."

- *"Patient safety"* is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of healthcare delivery.

- A *"patient safety event"* is defined as any type of healthcare-related error, mistake, or incident, regardless of whether or not it results in patient harm.

Your Staff Position

1. What is your position in this hospital?

   Select ONE answer.

   Nursing
   ☐1 Advanced Practice Nurse (NP, CRNA, CNS, CNM)
   ☐2 Licensed Vocational Nurse (LVN), Licensed Practical Nurse (LPN)
   ☐3 Patient Care Aide, Hospital Aide, Nursing Assistant
   ☐4 Registered Nurse (RN)

   Medical
   ☐5 Physician Assistant
   ☐6 Resident, Intern
   ☐7 Physician, Attending, Hospitalist

   Other Clinical Position
   ☐8 Dietitian
   ☐9 Pharmacist, Pharmacy Technician
   ☐10 Physical, Occupational, or Speech Therapist
   ☐11 Psychologist
   ☐12 Respiratory Therapist
   ☐13 Social Worker
   ☐14 Technologist, Technician (e.g., EKG, Lab, Radiology)

   Supervisor, Manager, Clinical Leader, Senior Leader
   ☐15 Supervisor, Manager, Department Manager, Clinical Leader, Administrator, Director
   ☐16 Senior Leader, Executive, C-Suite

   Support
   ☐17 Facilities
   ☐18 Food Services
   ☐19 Housekeeping, Environmental Services
   ☐20 Information Technology, Health Information Services, Clinical Informatics
   ☐21 Security
   ☐22 Transporter
   ☐23 Unit Clerk, Secretary, Receptionist, Office Staff

   Other
   ☐24 Other, please specify:

SECTION A: Your Unit/Work Area

How much do you agree or disagree with the following statements about your unit/work area?

Think about your unit/work area:	Strongly Disagree ▼	Disagree ▼	Neither Agree nor Disagree ▼	Agree ▼	Strongly Agree ▼	Does Not Apply or Don't Know ▼
1. In this unit, we work together as an effective team.	☐1	☐2	☐3	☐4	☐5	☐9
2. In this unit, we have enough staff to handle the workload	☐1	☐2	☐3	☐4	☐5	☐9
3. Staff in this unit work longer hours than is best for patient care	☐1	☐2	☐3	☐4	☐5	☐9
4. This unit regularly reviews work processes to determine if changes are needed to improve patient safety	☐1	☐2	☐3	☐4	☐5	☐9
5. This unit relies too much on temporary, float, or PRN staff	☐1	☐2	☐3	☐4	☐5	☐9
6. In this unit, staff feel like their mistakes are held against them	☐1	☐2	☐3	☐4	☐5	☐9
7. When an event is reported in this unit, it feels like the person is being written up, not the problem	☐1	☐2	☐3	☐4	☐5	☐9
8. During busy times, staff in this unit help each other	☐1	☐2	☐3	☐4	☐5	☐9
9. There is a problem with disrespectful behavior by those working in this unit	☐1	☐2	☐3	☐4	☐5	☐9
10. When staff make errors, this unit focuses on learning rather than blaming individuals	☐1	☐2	☐3	☐4	☐5	☐9
11. The work pace in this unit is so rushed that it negatively affects patient safety	☐1	☐2	☐3	☐4	☐5	☐9
12. In this unit, changes to improve patient safety are evaluated to see how well they worked	☐1	☐2	☐3	☐4	☐5	☐9
13. In this unit, there is a lack of support for staff involved in patient safety errors	☐1	☐2	☐3	☐4	☐5	☐9
14. This unit lets the same patient safety problems keep happening	☐1	☐2	☐3	☐4	☐5	☐9

Your Unit/Work Area

2. Think of your "unit" as the work area, department, or clinical area of the hospital where you spend _most_ of your work time. What is your primary unit or work area in this hospital?

Select ONE answer.

Multiple Units, No specific unit
☐1. Many different hospital units, No specific unit

Medical/Surgical Units
☐2. Combined Medical/Surgical Unit
☐3. Medical Unit (Non-Surgical)
☐4. Surgical Unit

Patient Care Units
☐5 Cardiology
☐6 Emergency Department, Observation, Short Stay
☐7 Gastroenterology
☐8 ICU (all adult types)
☐9 Labor & Delivery, Obstetrics & Gynecology
☐10. Oncology, Hematology
☐11. Pediatrics (including NICU, PICU)
☐12. Psychiatry, Behavioral Health
☐13. Pulmonology
☐14. Rehabilitation, Physical Medicine
☐15. Telemetry

Surgical Services
☐16. Anesthesiology
☐17. Endoscopy, Colonoscopy
☐18. Pre Op, Operating Room/Suite, PACU/Post Op, Peri Op

Clinical Services
☐19. Pathology, Lab
☐20. Pharmacy
☐21. Radiology, Imaging
☐22. Respiratory Therapy
☐23. Social Services, Case Management, Discharge Planning

Administration/Management
☐24. Administration, Management
☐25. Financial Services, Billing
☐26. Human Resources, Training
☐27. Information Technology, Health Information Management, Clinical Informatics
☐28. Quality, Risk Management, Patient Safety

Support Services
☐29. Admitting/Registration
☐30. Food Services, Dietary
☐31. Housekeeping, Environmental Services, Facilities
☐32 Security Services
☐33. Transport

Other
☐34. Other, please specify:

SECTION B: Your Supervisor, Manager, or Clinical Leader

How much do you agree or disagree with the following statements about your immediate supervisor, manager, or clinical leader?

	Strongly Disagree ▼	Disagree ▼	Neither Agree nor Disagree ▼	Agree ▼	Strongly Agree ▼	Does Not Apply or Don't Know ▼
1. My supervisor, manager, or clinical leader seriously considers staff suggestions for improving patient safety	□1	□2	□3	□4	□5	□9
2. My supervisor, manager, or clinical leader wants us to work faster during busy times, even if it means taking shortcuts	□1	□2	□3	□4	□5	□9
3. My supervisor, manager, or clinical leader takes action to address patient safety concerns that are brought to their attention	□1	□2	□3	□4	□5	□9

SECTION C: Communication

How often do the following things happen in your unit/work area?

Think about your unit/work area:	Never ▼	Rarely ▼	Some-times ▼	Most of the time ▼	Always ▼	Does Not Apply or Don't Know ▼
1. We are informed about errors that happen in this unit	□1	□2	□3	□4	□5	□9
2. When errors happen in this unit, we discuss ways to prevent them from happening again...	□1	□2	□3	□4	□5	□9
3. In this unit, we are informed about changes that are made based on event reports	□1	□2	□3	□4	□5	□9
4. In this unit, staff speak up if they see something that may negatively affect patient care	□1	□2	□3	□4	□5	□9
5. When staff in this unit see someone with more authority doing something unsafe for patients, they speak up	□1	□2	□3	□4	□5	□9
6. When staff in this unit speak up, those with more authority are open to their patient safety concerns	□1	□2	□3	□4	□5	□9
7. In this unit, staff are afraid to ask questions when something does not seem right..............	□1	□2	□3	□4	□5	□9

SECTION D: Reporting Patient Safety Events

Think about your unit/work area:	Never	Rarely	Some-times	Most of the time	Always	Does Not Apply or Don't Know
1. When a mistake is caught and corrected before reaching the patient, how often is this reported?	☐1	☐2	☐3	☐4	☐5	☐9
2. When a mistake reaches the patient and could have harmed the patient, but did not, how often is this reported?	☐1	☐2	☐3	☐4	☐5	☐9

3. In the past 12 months, how many patient safety events have you reported?

☐a. None
☐b. 1 to 2
☐c. 3 to 5
☐d. 6 to 10
☐e. 11 or more

SECTION E: Patient Safety Rating

1. How would you rate your unit/work area on patient safety?

Poor	Fair	Good	Very Good	Excellent
☐1	☐2	☐3	☐4	☐5

SECTION F: Your Hospital

How much do you agree or disagree with the following statements about your hospital?

Think about your hospital:	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Does Not Apply or Don't Know
1. The actions of hospital management show that patient safety is a top priority	☐1	☐2	☐3	☐4	☐5	☐9
2. Hospital management provides adequate resources to improve patient safety	☐1	☐2	☐3	☐4	☐5	☐9
3. Hospital management seems interested in patient safety only after an adverse event happens..	☐1	☐2	☐3	☐4	☐5	☐9
4. When transferring patients from one unit to another, important information is often left out	☐1	☐2	☐3	☐4	☐5	☐9
5. During shift changes, important patient care information is often left out	☐1	☐2	☐3	☐4	☐5	☐9
6. During shift changes, there is adequate time to exchange all key patient care information ...	☐1	☐2	☐3	☐4	☐5	☐9

Background Questions

1. **How long have you worked in this <u>hospital</u>?**

   ☐a. Less than 1 year
   ☐b. 1 to 5 years
   ☐c. 6 to 10 years
   ☐d. 11 or more years

2. **In this hospital, how long have you worked in your current <u>unit/work area</u>?**

   ☐a. Less than 1 year
   ☐b. 1 to 5 years
   ☐c. 6 to 10 years
   ☐d. 11 or more years

3. **Typically, how many hours per week do you work in this <u>hospital</u>?**

   ☐a. Less than 30 hours per week
   ☐b. 30 to 40 hours per week
   ☐c. More than 40 hours per week

4. **In your staff position, do you typically have direct interaction or contact with patients?**

   ☐a. YES, I typically have direct interaction or contact with patients
   ☐b. NO, I typically do NOT have direct interaction or contact with patients

Your Comments

Please feel free to provide any comments about how things are done or could be done in your hospital that might affect patient safety.

Thank you for completing this survey.

Appendix B

Research Letter of Consent

UHS Universal Health Services, Inc.
UHS of Delaware, Inc.

Radford University
801 E. Main Street
Radford, VA 24142

November 14, 2022

RE: Doctoral Capstone Project, Pamela S. Gordon, MBA, CPHQ, CPPS, FACHE

Faculty, IRB and Capstone Proposal Committee,

I am aware and give approval for the quality research study conducted by student, Pamela S. Gordon. The study will make use of coded, desensitized data from two secondary databases to statistically understand any relationship between the variables of engagement and outcomes. Pamela has utilized a UHS, Inc. faculty member/mentor as one of her committee members, Dr. Steven Pino, as well as her educational institution faculty member and committee chair, Dr. Jeannine Everhart.

The research Pamela will be conducting will be concluded at her home in Mission, Texas. She will use two data sets for a secondary analysis, working with a statistician to establish appropriate tests to identify and quantify any relationships between these data. First, NHSN data from January 1, 2021, through December 30, 2021, for CAUTI and CLABSI will be used, by facility, unit and shift. The data will be de-identified through coding efforts. This data set will represent all UHS, Inc. Acute care facilities. The second data set to be used is the AHRQ patient engagement survey, from the same time period of January 1, 2021 – December 30, 2021. This data will also be de-identified before receipt and also coded by the student investigator. No patient or employee names or identifying factors will be used from either data set. The AHRQ data will use key questions from the survey related to leader engagement, unit, and facility. Both data sets will be located on a protected server within UHS, Inc., in a secured drive and secured folder which only the Student Investigator has access to. When working from home, the student investigator will use VPN access to data. The data will be uploaded after coding into SPSS for statistical analysis and reporting. Reports will be saved onto the student's encrypted drive and access protected folder for educational program reporting use.

Because this study is a secondary quality study of two primary data sets, and because all identifying information has been removed prior to sharing with the researcher, there is no requirement for IRB approval.

I acknowledge and approve Pamela Gordon's research plan as stated. Pam's desire is to combine the learnings from the study to help promote the importance of leader engagement as it relates to patient safety outcomes. This work is supplemental to building a patient safety program foundation within our organization. Pam has discussed her project with me and I give her permission to proceed.

347 South Gulph Road | King of Prussia, PA 19406-0958 | 610.768.3300 | uhsinc.com

Created With Tiny Scanner

Sincerely,

Krista Burnell, Corporate Senior Director, Performance Improvement and Clinical Values

Appendix C

Letter of Determination

Institutional Review Board

(909) 469-5606 · irbsubmission@westernu.edu

DATE:	January 27, 2023
TO:	Pamela Gordon, MBA, CPHQ, CPPS, FACHE
FROM:	WesternU (Western University of Health Sciences) IRB
PROJECT TITLE:	[2012805-1] Does Leader Engagement Matter? The Relationship Between Perceptions of Leader Engagement and Patient Safety Outcomes in Acute Hospitals
REFERENCE #:	23/RFD/003
SUBMISSION TYPE:	Other
ACTION:	DETERMINATION OF NOT HS RESEARCH
DECISION DATE:	January 27, 2023

Thank you for your submission of Other materials for this project. The WesternU (Western University of Health Sciences) IRB has determined this project does not meet the definition of human subject research under the purview of the IRB according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Jennifer Baker at 909-469-5606 or jbaker@westernu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been issued in accordance with all applicable regulations, and a copy is retained within WesternU (Western University of Health Sciences) IRB's records.