EXPERIENCE OF NURSES IN CARING FOR PATIENTS WITH SHORT TERM INDWELLING URINARY CATHETERS DURING HOSPITALIZATION: A CHALLENGE TO RESHAPE CARING PRACTICES

By

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To the Faculty of Washington State University:

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EXPERIENCE OF NURSES IN CARING FOR PATIENTS WITH SHORT TERM INDWELLING URINARY CATHETERS DURING HOSPITALIZATION:
A CHALLENGE TO RESHAPE CARING PRACTICES

Abstract

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Hospitalized patients with indwelling urinary catheters are at risk for developing a Catheter Associated Urinary Tract Infection (CAUTI). CAUTIs increase length of stay, readmission, costs, and ultimately, contribute to patients’ quality of life and mortality. Despite infection prevention strategies, CAUTI remains a pervasive healthcare associated infection (HAI) throughout hospitals. A qualitative, hermeneutic, phenomenological study was used to interpret the meaning of nurses’ experiences in caring for hospitalized patients with short term indwelling urinary catheters. The goal of this study was to better understand nurse factors impacting infection prevention practices in hospitalized patients with indwelling urinary catheters. Two overarching patterns emerged from the analysis, Pattern One, “Shortcutting the Care Based on Competing Priorities to Get Through the Shift” and Pattern Two, “Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture”. In Pattern One, two themes were uncovered, 1) struggle to meet the demands of practice and 2) nurses’ perception of catheters. In Pattern Two, there were four themes found: 1) challenge in keeping up with Evidence Based Practice (EBP), 2) issues of staffing inconsistency and adequacy 3)
cultural consequences, including interaction with Licensed Independent Providers (LIP), and communication/collaboration within the healthcare team due to power differentials, and 4) professional apathy. These findings illuminate organizational opportunities for improving structures and processes in the quality of care delivered to patients with indwelling urinary catheters. Shortcuts and workarounds in practice lead to incomplete negative consequences to patients with indwelling urinary catheters. Nurse engagement in control over practice as well as leveling power differentials and improving collaboration between medical and nursing providers may reshape caring practices that align with nurse authenticity and improve patient outcomes. Quality care is only as good as the resources and system infrastructure that supports the nurses’ skills and knowledge of best practices.
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Dedication

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CHAPTER ONE
INTRODUCTION

Introduction

An estimated four million hospitalized U.S. patients each year undergo urinary catheterization, and a substantial percentage of them have developed a catheter-associated urinary tract infection (CAUTI) (Saint, Meddings, Calfee, Kowalski, & Krein, 2009). CAUTIs have been prevalent, costly, and dangerous. However, despite their impact on both patients and hospitals, to date no study has explored the lived experience of nurses who have worked with these patients and, who have been by far the leaders in inserting, managing, and removing indwelling urinary catheters (IUCs).

CAUTIs have had three significant impacts that make incidence reduction a compelling national healthcare priority.

- CAUTIs have been responsible for substantial morbidity. One in every 27 patients with an IUC who have bacteriuria may have developed bacteremia (Saint, 2000).
- CAUTIs have been responsible for substantial mortality. Patients with indwelling IUCs with bacteriuria may have been close to three times more likely to die than those patients without an indwelling urinary catheter (Platt, Polk, Murdock, & Rosner, 1982). Urosepsis, a life-threatening complication that occurred in patients with indwelling urinary catheters, leads to increased mortality if left untreated or in patients with comorbid conditions (Bernard, Hunter, & Moore, 2012; Blodgett, 2009; Chenoweth & Saint, 2013; Jacobsen, Stickler, Mobley & Shirtliff, 2008).
- CAUTIs are very costly to hospitals. As of October 2008, CAUTIs have been one of eight “never events” that occurred during hospitalization for which Medicare/Medicaid
(and by extension, many commercial insurers) have not reimbursed the hospital, skilled nursing facility, or long-term care facility.

CAUTI has been a common healthcare-associated infection (HAI) among adult patients in the U.S. (Magill et al., 2014). The Centers for Disease Control and Prevention’s (CDC) National Healthcare Safety Network (NHSN) indicates there have been almost 450,000 CAUTI events annually, accounting for more than 30% of acute care hospital infections (Gould et al., 2010). There have been 13,000 annual deaths from urinary tract infections (UTIs), and the total cost of care for CAUTI events has been estimated at more than $340 million annually (Edwards et al., 2009; Klevens et al., 2007).

While incidence of CAUTI has provoked a concerted effort to improve prevention, national data has indicated CAUTI rates increased by 6% from 2009 to 2013 (CDC, 2015a). Clearly, best practices for treating patients with IUCs who developed a CAUTI have not yet been fully understood and in fact rates have increased despite preventative efforts. Nurses have been the leaders in inserting, managing, and removing IUCs. Consequently, it is important to explore the phenomenon of the experience of nurses who delivered care to patients with IUCs. The current study was designed to investigate the lived experience of these nurses, nurses who have provided care to patients with IUCS in acute care hospitals and who often have been challenged by keeping up with the demands of managing complex patients in a dynamic healthcare environment. Nurse factors were identified based on these stories that may have influenced the reasons healthcare organizations continue to struggle with decreasing and/or eliminating CAUTI all together. For almost two decades national efforts to improve infection prevention practices in hospitalized patients with IUCs have not been proven successful in many hospitals despite education.
Problem Statement

Nurses have played an instrumental role in CAUTI prevention. Nurses not only insert catheters but also have overseen daily maintenance and surveillance of complications associated with IUCs. National efforts to reduce the incidence of CAUTI nationally have focused on minimizing risk factors through the following approaches: reduction in the length of time catheters are left in place, avoidance of inappropriate/unnecessary catheter placement, maintenance of a closed connection in the drainage system, better protocols for monitoring, tracking, and removal of catheters, and by closer attention to sterile technique to reduce introduction of bacteria at the time of catheterization (Gould et al., 2010).

To date, the framework within which CAUTI is viewed has assumed independent points of causality, namely, contamination at insertion or excessive antibiotic use or failure to monitor. The factors of nurses’ experience while caring for patients with an IUC and how this experience may impact CAUTI have been unexplored. Viewed in this way, the causality framework can shift from A or B or C to being A and B and C. Put another way, conceptualizing CAUTI as a problem best understood as a complex interaction between variables may be the most effective way to address this issue. Failure to consider nurses’ experiences as a factor has deprived the health care provider community an opportunity to better understand CAUTI and to advance practice toward the goal of maximum reduction in incidence.

Background

CAUTIs account for more than 30% of the nosocomial infections in hospitals (Blodgett, 2009; Parker et al., 2009; Saint et al., 2009, Gould et al., 2010). The CDC estimates that 75% of the hospital-acquired UTIs are a result of catheter use (CDC, 2015b). CAUTIs are associated
with prolonged length of stay, increased healthcare costs, and increased mortality and morbidity (Platt et al., 1982; Saint, 2000).

Patients who undergo urinary catheterization are at risk for 1) prolonged hospital stay, 2) secondary bacteremia/sepsis, 3) increased mortality, 4) late onset sequellae, e.g., metastatic osteomyelitis and meningitis, 5) formation of encrustations and obstruction to flow, 6) selection for multidrug-resistant organisms (MDROs), 7) urethral strictures, prostatitis and orchitis, and 8) reservoir for MDROs (Greene, Marx, & Oriola, 2008). Magill et al. (2014) surveyed 183 U.S. hospitals and found that 23.6% of hospitalized patients underwent catheterization. The 2011 CDC NHSN surveillance report says that 45-79% of critical care units with adult patients had IUCs (Dudeck, et al., 2011). Schuur, Chambers, & Hou (2014), in a study of 375,235 adult emergency department (ED) visits, found that 64.9% of the IUCs were unnecessary (95% CI = 56.9% to 72.9%). Elderly patients (over than 65 years old) are prime targets for unnecessary IUC placement and subsequent risk for CAUTI (Gardam, Amihod, Orenstein, Consolacion, & Miller, 1998; Gokula, Hickner, & Smith, 2004; Hazelett, Tsai, Gareri, & Allen, 2006). After 48 hours of IUC placement, patient’s risk for CAUTI increases by five percent for each day the catheter remains in situ (Guide to Preventing Catheter-Associated Urinary Tract Infections, 2014). Tambyah and Maki (2000) reported that for U.S. hospitals in the NHSN, the rate of CAUTIs per 1,000 catheter-days ranged from 1.2 to 4.1 in critical care units, 1.5 on general medical units, and 3.2 on surgical units.

While the risk of infection from an IUC is high, the level of vigilance to detect infection onset or unnecessary prolongation of catheterization is low. Saint et al., (2008) in a national study found that 56% of the hospitals surveyed lack monitoring processes for CAUTI, and 74% of the hospitals had no active intervention to control for duration of IUC placement in patients.
Intentional measures for managing and monitoring IUC placement in hospitalized patients vary and their absence places patients at greater risk of infection.

In 2008, a substantial policy shift, the identification of “never events”, emerged resulting in Medicare/Medicaid refusing to pay hospitals for hospital-acquired UTIs on the grounds that such infections were a preventable event. This policy was consistent with mandates in the federal 2005 Deficit Reduction Act of 2005 (Blodgett, 2009; Parker et al., 2009; Saint et al., 2009). The financial cost from CAUTIs and the subsequent financial burden within hospitals sparked an increase in CAUTI prevention measures and brought practice changes to the bedside. The costs associated with patients who develop UTIs from catheters while hospitalized vary based on the cost methodology (direct and indirect costs that each hospital system attributes to CAUTI). The cost per CAUTI ranges from $589 to $832 (Anderson et al., 2007; Scott, 2009; Tambyah, Knasinski, & Maki, 2002). Annually and nationally, CAUTI costs contribute an estimated $390 to $450 million using the Consumer Price Index (CPI) for inpatient hospital services (Table 1). The electronic collection of hospital data supports investigations of risk factors for CAUTI in states such as Washington. Despite financial and other incentives to reduce CAUTI, Washington State reported CAUTI rates that were 7% higher than the national average (CDC, 2016).

Table 1.

Aggregate attributable patient hospital costs for CAUTI

<table>
<thead>
<tr>
<th>Number of CAUTIs annually</th>
<th>Range of cost estimates based on 2007 consumer price index for all urban consumers</th>
<th>Range of cost estimates based on 2007 consumer price index for Inpatient hospital services</th>
<th>Range of estimate using consumer price index for all urban consumers (millions)</th>
<th>Range of estimate using consumer price index for Inpatient hospital services (millions)</th>
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<td>449,334</td>
<td>$749 - $832</td>
<td>$864 - $1,007</td>
<td>$340 - $370</td>
<td>$390 - $450</td>
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Note: Table adapted from Scott, R.D. (2009). The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention (cost paper).

Federal mandates prompted several hospital associations to forge partnerships with healthcare institutions to promote and implement CDC CAUTI prevention bundles and monitor CAUTI rates. The Washington State Hospital Association (WSHA) began what it termed “safety action bundle: catheter associated urinary tract infection” in 2012. The prevention bundle objective was to reduce CAUTI by 40% and reduce readmission rates by 20% in Washington by the end of 2014. Despite state hospital coordinated efforts to reduce CAUTI among hospitalized patients in Washington State, CAUTI remains a common healthcare-associated infection.

Despite the known risks associated with CAUTI, the avoidable morbidity and mortality, the financial penalties, and national emphasis on the issue, CAUTI remains a pervasive problem for hospitalized patients and health care professionals. The intractability of the problem suggests that we may not have correctly or fully identified the factors contributing to the development of CAUTI. Multiple studies have focused on independent risk factors for CAUTI, e.g., prolonged catheterization, female gender, advanced age, immunosuppression, diabetes, disconnection of the IUC, and non-sterile insertion technique (Flodgren et al, 2013; Gould et al., 2010). Thus, the extensive research on the numerous independent risk factors has not improved the ability to identify patients most at risk for developing CAUTI in the hospital setting.

No previous study to date explored nurses’ experiences in caring for patients with IUCs. Current CAUTI research is limited in its ability to identify which patients on which units, and within which hospitals, are at increased risk of developing a CAUTI. Understanding more fully the experiences of nurses who work with these patients may yield information useful in addressing the limitations cited earlier.
The study explored the lived experience of nurses who work with patients regarding insertion, management, and removal of IUCs. The study was designed to fill a significant gap in knowledge of the condition and provide the basis for better, evidence-based nursing care related to IUCs.

Research Question

Phenomenology governs the philosophical underpinnings of this research. Heidegger’s idea of Being or “Dasein” translates to how individuals derive meaning of a particular phenomenon as related to that phenomenon’s existence or interconnectedness to themselves and to others (Wrathall, 2005). This guiding philosophy of interpreting the meaning in the nurses’ experience of caring for patients with IUCs was the crux of this inquiry. Therefore, the research question for this study is: What is the meaning of the lived experience of nurses who care for patients with IUCs?

Research Aims

1. Describe and interpret the experience of nurses who care for patients with IUCs.

2. Describe the meaning of those experiences by identifying significant patterns and themes from the nurses’ narratives.

3. Uncover and illuminate nursing factors relevant to the care of patients who may develop CAUTIs.

Significance

This study was important at four levels: patient, policy, cost, and nursing strategy.

At the patient level, there is an urgent need to seek further reduction in the incidence of CAUTI. The American Nurses Association (ANA), the Joint Commission, the Association for Professionals in Infection Control and Epidemiology (APIC), CDC, among many other
organizations, have identified the essential need for hospitals to implement CAUTI prevention strategies and the unique role nurses may play in facilitating CAUTI prevention efforts (ANA, 2015b; CDC, 2015a; Greene et al., 2008, The Joint Commission, 2016). With more than 400,000 people a year affected, and 13,000 dying from CAUTI, this is a challenge that must be met. It is essential for hospitals to understand and maximize the role of bedside nurses and their contributions to addressing this problem.

At the policy level, solid evidence from nurse-level factors would enable the CDC, the Joint Commission, and other standard-setting organizations to provide further evidence-based guidance on new initiatives that could yield reduction in infection rates. Health policy efforts that support the quality and safety of patient care such as better staffing, increased allocation of healthcare resources, better health information management and services, all translate to more effective nursing practice, more collaborative work environments, and improved health care outcomes. Health care policy initiatives affecting how hospitals address these issues may mandate hospital accountability, responsibility and action for improving patient outcomes.

In refusing to pay for “never events” such as CAUTI, the Centers for Medicaid and Medicare Services (CMS) sought to create an incentive for hospitals and other healthcare facilities to take the actions needed to reduce these adverse events. This has drastically shifted a burden of approximately 333 million dollars annually to hospitals, many of which are already financially stressed. Mitigation of these costs can only be achieved with reductions in CAUTI incidents.

Finally, and very significantly, the results of this study provided a greater understanding of CAUTI that may enable them to positively affect patient outcomes, reduce patient morbidity, and help avoid patient mortality.
While it is unlikely that CAUTI will ever be fully eradicated, this study sought to explore that with a better understanding of the experience of nurses caring for patients with IUCs, the rate of CAUTIs may be significantly reduced, simultaneously yielding a large human and economic benefit. Evidence from this study can inform nursing practice, research, and education by shaping how nurses monitor and manage patients with IUCs and employ strategies in reducing CAUTI.

Definitions of terms

Terms defined for this study are as follows (CDC, 2015b; CDC, 2015c; CDC, 2018):

- **Healthcare-associated Infection (HAI):** The National Healthcare Surveillance Network (NHSN) defines HAIs as an infection that is acquired within an inpatient facility on or after the third calendar day of admission to an inpatient location where day of admission is calendar day 1.

- **Present on admission (POA):** The term POA is defined as the day of admission to an inpatient location (calendar day 1), the 2 days before admission, and the calendar day after admission (CDC, 2018; Gould et al., 2010).

- **Hospital-associated infections:** The term is synonymous with nosocomial infection. The definition from the World Health Organization (WHO), which is used for this study, is

  An infection acquired in hospital by a patient who was admitted for a reason other than that infection. An infection occurring in a patient in a hospital or other healthcare facility in whom the infection was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility” (Ducel, Fabry, & Nicolle, 2002).
• **Evidence Based Practice (EBP):** EBP is defined as “a problem-solving approach to clinical decision making within health-care organization(s) that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence” (Newhouse, Dearholt, Poe, Pugh, & White, 2007, p. 3).

• **Catheter Associated Urinary Tract Infection (CAUTI):** The CDC (2018) defines CAUTI as,

  A urinary tract infection (UTI) where an IUC was in place for > 2 calendar days on the date of the event, with day of device placement being Day 1 and an IUC was in place on the date of the event or the day before. If an IUC was in place for > 2 calendar days and then removed, the date of the event for the UTI must be the day of discontinuation or the next day for the UTI to be catheter associated (p. 7-2).

• **Asymptomatic bacteremic urinary tract infection (ABUTI):** According to the CDC (2018) an ABUTI can occur in a patient with or without an IUC who shows no signs or symptoms of a UTI but who has (1) a positive urine culture of no more than two types of bacteria greater than or equal to 100,000 CFU/mL and (2) a positive blood culture with at least one bacterium matching to the urine culture (p. 7-9).

• **Symptomatic urinary tract infection (SUTI):** According to the CDC (2018), there are three types of SUTIs, 1) catheter-associated, 2) non-catheter associated, and 3) catheter-associated and non-catheter associated in infants. This research is focused on adult patients with CAUTIs. Therefore, the definition for SUTI is based on adult patients with IUCs who develop a UTI. A SUTI exists when the patient has (1) an IUC in place for the entire day that the symptoms occurred with the IUC placed for greater than two calendar days, (2) had either a fever (greater than 38 degrees Celsius), suprapubic tenderness, or
costovertebral angle pain or tenderness, and (3) a urine culture with no more than two
different types of organisms and at least one of the organisms with bacteria greater than
or equal to 100,000 CFU/mL. A SUTI can also be diagnosed if any of the above
symptoms with an IUC no longer in place but the IUC was placed for more than two days
and IUC was removed the day of or the day before the date of the event and there is no
other recognized cause (p. 7-5-7-8).

- **Indwelling urinary catheter (IUC):** An IUC is defined as “a drainage tube that is
inserted into the bladder through the urethra, left in place, and is connected to a drainage
bag (including leg bags). These devices are also called Foley catheters. Condom or
straight in and out catheters are not included nor are nephrostomy tubes, ileoconduits, or
suprapubic catheters unless a Foley catheter is also present” (CDC, 2018, p. 7-2).

- **Hospital nurses:** Hospital nurses are defined as registered nurses (RNs) working within
an inpatient facility. Licensed practical nurses (LPNs) or licensed vocational nurses
(LVNs) may be considered hospital nurses in some acute care settings. Nationally,
LPNs/LVNs have been phased out of acute care settings over the last decade. However,
there may be some hospitals (i.e., rural areas, areas with RN shortages) utilizing
LPN/LVN as hospital nurses. Regardless, LPNs/LVNs work directly under the
supervision of the RN. For the purpose of this study, hospital nurses were exclusively
limited to RNs.

- **CAUTI Bundles:** A group of evidence based practices aimed at reducing IUC-associated
infections (Hanchett, 2012). The CAUTI *insertion* bundle includes three prevention
aspects to include:
- Verification of need prior to insertion (i.e., urinary retention/obstruction, severely ill/immobility, lack of bladder control, patient request/end of life, perioperative-selected surgical procedures, assisting with pressure ulcer healing for incontinent patients
- Insertion of urinary catheter using aseptic technique (i.e., hand hygiene, catheter insertion kit with sterile gloves, drape, cleaning supplies, sterile lubricant, sterile urinary catheter attached to drainage bag)
- Maintenance of urinary catheter based on recommended guidelines (i.e., secure catheter to prevent irritation of the urethra, maintain an unobstructed flow, maintain the drainage bag below the level of the bladder and off the floor, perform hand hygiene before and after each patient contact, provide individual labeled collection container at the bedside, review urinary catheter necessity daily, remove catheter promptly when not needed)

The CAUTI **maintenance** bundle is a daily checklist completed by the nurse for patients with IUCs as a prevention strategy for CAUTI onset to include the following:
- Daily documented assessment of need (yes or no)
- Tamper evident seal is intact (yes or no)
- Catheter secured-securement device in place (yes or no)
- Hand hygiene performed for patient contact (yes or no)
- Daily meatal hygiene performed with soap and water (yes or no)
- Drainage bag emptied using a clean container (yes or no)
- Unobstructed flow maintained (yes or no)
- Action to remove or continue (remove or continue)
• **CAUTI guidelines:** The guidelines that are associated with a decrease in CAUTI rates are (1) assessing the need for the catheter; (2) selection of proper catheter type and system; (3) using aseptic technique for catheter insertion and with sterile equipment; (4) educating patients, relatives, and healthcare professionals; (5) hand hygiene; and (6) early catheter removal (Bruminhent, Keegan, Lakhani, Roberts, & Passalacqua, 2010; Flodgren et al., 2013; Gould et al., 2010; Lo et al., 2008; Stone et al., 2014).

• **Magnet status:** The term *magnet status* is defined by the American Nurses Credentialing Center (ANCC) as an inpatient health care organization that is recognized for meeting the following goals:
  - Promotes quality in a setting that supports professional practice
  - Identifies excellence in the delivery of nursing services to patients/residents
  - Disseminates best practices in nursing services

➢ **Catheter maintenance guidelines:** The prevention guidelines instituted by the CDC in 2009 (Gould et al., 2010) regarding catheter maintenance are defined as follows:
  - Avoiding breaks in aseptic technique, disconnection, or leakage and replace the catheter and collecting system using aseptic technique and sterile equipment
  - Using urinary catheter systems with pre-connected, sealed catheter-tubing junctions
  - Maintaining unobstructed urine flow
  - Keeping the catheter and collecting tube free from kinking
  - Keeping the collecting bag below the level of the bladder at all times and avoiding resting the urine collection bag on the floor
- Emptying the urine collection bag regularly using a separate, clean collecting container for each patient
- Avoiding splashing and preventing contact of the drainage port with a non-sterile collecting container
- Using standard precautions during manipulation of the catheter or collecting system
- Employing mechanisms for reducing bacterial entry such as adding antiseptic devices to the catheter ports
- Avoiding the replacement of indwelling catheters or drainage bags at routine, fixed intervals
- Avoiding the use of antimicrobials routinely to prevent CAUTI
- Avoiding the use of antiseptics to clean the periurethral area; routine hygiene of cleansing the meatal surface during bathing or showering is appropriate
- Avoiding bladder irrigation with or without antimicrobials and routine instillation of antimicrobials solutions into the urinary drainage bags
- Clamping indwelling catheters prior to removal is not necessary (p. 322)

- **Quality improvement programs (QIPs):** QIPs are defined as hospitals that have designated programs designed to incorporate strategic CAUTI prevention measures to include (1) monitor appropriate use of IUC devices (i.e., system alerts or reminders to identify patients with IUCs and determine if the IUC is still warranted); (2) identify and remove unnecessary catheters (i.e., guidelines and protocols for nurse-directed removal of unnecessary IUCs); and (3) ensure hand hygiene compliance and proper care of IUCs (i.e., procedure-specific guidelines for IUC placement and removal, and
nurse-directed use of intermittent catheterization and use of bladder scanners) (Gould et al., 2010, p. 323).

- **Surveillance for CAUTI prevention:** Surveillance for CAUTI within hospital systems is defined by:
  
  - Identifying populations and/or units who have potential risk for CAUTIs
  - Using standard metrics for identifying and reporting CAUTIs (number of CAUTI per 1,000 catheter-days, number of bloodstream infections secondary to CAUTI per 1,000 catheter-days, catheter utilization ratio x 100)
  - Using the CDC criteria for identifying patients who have SUTI and ABUTI
  - Using routine screening of asymptomatic bacteriuria is not recommended
  - Providing regular feedback to nursing staff on CAUTI rates within their respective units (Gould et al., 2010, p. 324)

**Summary**

CAUTIs are a significant problem in the current healthcare environment. They contribute to significant morbidity and cost burdens. They thus represent a burden to patients, hospitals, and nursing staff. Extended efforts are a priority for the reduction in CAUTI incidence to alleviate the aforementioned burdens.

Because nurses provide the majority of care related to patients with catheters, identifying best practices and disseminating that information to nurses is an effective strategy that promises to yield considerable dividends. Identifying those best practices includes a thorough understanding of the phenomenon of the lived experience of nurses caring for patients with IUCs. This phenomenological study is needed to improve best practice in caring for patients with CAUTI through gaining a better understanding of nurses’ experiences working with these patients.
CHAPTER TWO
LITERATURE REVIEW

Healthcare-associated urinary tract infections (UTIs) are a pervasive, persistent, costly and sometimes deadly problem. An estimated five to ten percent of hospitalized patients will be affected every year in just the U.S., at a cost of more than $45 billion. Healthcare-associated UTIs are estimated to have caused more than 13,000 hospital deaths in 2002 (Klevens et al., 2007).

The vast majority of these nosocomial infections are associated with the use of urinary catheters. Despite strenuous efforts at both national and regional levels, the problem of CAUTIs persists, at a substantial cost in not only financial terms but also in reduced quality of life. The persistence of this problem suggests that either we have reached an irreducible minimum, or there is some combination of failure to conform to best practices and unidentified root causes.

This literature review presents a historical context for understanding UTIs, indwelling urinary catheters (IUCs), and the nursing role in caring for patients with IUCs.

Urinary Tract Infections

Under normal physiological conditions, urine is sterile. A UTI occurs when bacteria are present in the urine. The major causal pathogens for UTIs are *Escherichia coli* (about 80% of community-acquired infections), and *Staphylococcus saprophyticus* (10% to 15%). *Klebsiella*, *Enterobacter*, and *Proteus* species, and enterococci are less-frequently causes of uncomplicated cystitis and pyelonephritis (Ronald, 2002).

Bacteria in the urine can be indicative of urethritis, cystitis, or pyelonephritis. Such infections are common. For example, an estimated 40% to 50% of women will suffer at least one UTI in their lifetime (Foxman, 2002). The shorter length of the urethra in women may be a contributing
factor to their higher incidence of UTIs. Other subpopulations with greater-than-average vulnerability are the elderly (65 years of age or older), those with spinal cord injuries, those who are immune compromised, those with abnormalities of the urinary tract, and those who are catheterized (Saint et al., 2008). Factors contributing to susceptibility include genetics (Lomberg et al., 1986; Sheinfeld, Schaeffer, Cordon-Cardo, Rogatko, & Fair, 1989), congenital abnormalities (Shortliffe, 1997; Tiwari, Charlton, Anderson, Hermsen, & Rupp, 2012), the presence of a urinary obstruction (El-Dahr & Lewey, 1992) and prior UTI history (Stamm & Hooton, 1993). The focus of this literature review is nosocomial CAUTIs—UTIs that occur when a patient has an IUC while hospitalized. With the exception of people with recurrent UTIs, where bacteria may chronically adhere to the bladder walls, most cases of UTI begin at the external opening of the urethra. Bacteria stick to the walls of the urethra, multiply, and move up to urinary tract to lodge in the bladder. Catheterization increases the risk because of insertion-associated trauma as well as the introduction of a direct link between the sterile environment of the bladder and the non-sterile external environment.

Bacteriuria can exist at a subclinical level, with no presenting symptoms. However, even the presence of symptoms does not always indicate infection. Hooton, Roberts, Cox, and Stapleton (2013) found that 26% of premenopausal women (n = 202) diagnosed with acute cystitis had no organism growth in catheter specimens. Once symptoms are present and bacteriuria is confirmed, the condition is a symptomatic UTI (SUTI). A urinalysis (UA) is a sensitive test for ruling out a UTI. Untreated, the condition can become a bloodstream infection (BSI), which is often a life-threatening condition, or a lower urinary tract infection can progress to acute pyelonephritis with the potential for long-term kidney damage including kidney failure.
The overall incidence of UTIs is difficult to state with any degree of precision. UTIs are not reportable infections. In outpatient settings UTIs are often diagnosed without confirming lab results, and patients with UTI symptoms present in a variety of settings, from office visits to emergency rooms to urgent care and other outpatient settings. Half of all women report having a UTI at least once by the age of 32 years of age (Foxman & Brown, 2003). The 2006-2007 National Ambulatory Medical Care Survey estimated there were more than 10 million encounters for UTIs (Schappert & Rechtsteiner, 2011). UTIs are the most common type of healthcare-associated infection reported to the National Healthcare Safety Network (NHSN); about 75% are associated with a urinary catheter (CDC, 2015a).

**Indwelling Urinary Catheters**

IUCs are used in a variety of settings and for many reasons. Patients in hospital settings may have an IUC placed due to a surgical procedure, urinary retention and/or obstruction, a need to closely monitor urinary output, end of life comfort, and management of urinary incontinence when a sacral decubitus ulcer is healing (Bernard et al., 2012). Patients in community settings, e.g., homes, skilled nursing facilities, rehabilitation facilities may utilize IUCs for neurological or urological medical conditions impacting the function of the urinary system. Generally, IUC placement can be short-term (less than 30 days) or long-term (more than 30 days) depending on the chronicity nature of the underlying medical condition.

Urinary catheters have been used to drain the bladder for more than 3500 years (Feneley, Hopley, and Wells, 2015). Hippocrates refers to the use of malleable lead tubes in 400 BC, and renowned U.S. inventor Benjamin Franklin developed a meatal catheter in 1752 for use on his brother, who had bladder stones (Hirschmann, 2005). In 1855, Jean Francois Reybard developed a self-retaining catheter using a balloon. This was the forerunner of the now-ubiquitous Foley
catheter, which was first marketed in 1933 (Feneley et al., 2015). In the 1920s, IUCs were introduced in the *hospital setting* (Warren, 2001). The catheters were placed within the bladder, secured in the bladder with an intra-bladder balloon, and drained urine into a bucket. Three decades later, a plastic collection device at the end of the catheter tube was developed to create a “closed” system (Warren, 2001). IUCs have been used for various healthcare conditions including urinary retention, urinary incontinence, urinary obstruction, surgical procedures, procedures that require an empty bladder (e.g., pelvic ultrasound to rule out pregnancy complications), monitoring intake and output, specific neurological conditions or injuries that impact voluntary control of bladder function, presence of stage III or IV pressure ulcers that are not healing because of continual urine leakage, and improved quality of life during end of life care (Elpern et al., 2009; Gokula et al., 2004). The IUC has been a useful device for managing and monitoring urinary function.

There are many kinds of catheters, made of many materials. The focus in this study is IUCs, also termed “Foley” catheters. These are most frequently made of silicone, nitinol, nylon, polyurethane, polyethyleneterephthalate, and thermoplastic elastomers. Each material has advantages and disadvantages from the standpoint of mechanical durability, susceptibility to creation of biofilms, encrustation, patient comfort and overall infection risk.

The dominant Foley catheter consists of a tube about 400 millimeter (mm) in length with two or more channels, and an inflatable balloon at the insertion end. One channel is used to inflate or deflate the balloon with sterile water, using a syringe. The other channel is for the outflow of urine. Catheters are manufactured in a range of sizes, and proper size selection is an important part of the placement process workflow. Catheter size is expressed in French gauge, with French equal to the diameter of the catheter in millimeters.
Catheterization may be either suprapubic or transurethral. Suprapublic catheterization creates an artificial tract between the lower abdominal wall and the bladder; the transurethral catheterization is considered the simpler and safer approach (Feneley et al., 2015) and is thus the most frequently performed. Catheters may be either intermittent or indwelling. Intermittent (single event) catheterization, also, termed “In and Out”, may for example be used for a one-time instillation of chemotherapy or a method for relieving urinary retention secondary to spinal anesthesia. An indwelling catheter remains in place for days to weeks. It provides urinary drainage when a patient is either temporarily or permanently unable to void, or when there are physical or mental issues that make urination an involuntary act.

Catheterization typically begins with selection of the proper size catheter; smaller sizes (smaller French gauge) are more easily and comfortably placed, while larger sizes may be required for patients with hematuria or clots within the bladder. Following selection, the nurse then explains to the patient what will happen and what sensations to expect during placement of the catheter, and encourages the patient to be as relaxed as possible. The patient is typically placed in a supine position, legs apart. The nurse then drapes the patient, washes her/his hands, gloves with sterile gloves, and opens a single-use sterile catheter kit. The catheter tray should also contain disinfectant, cotton swaps, surgical drapes, lubricant, water, tubing, drainage bag and tape or securement device. All items should be properly cleaned and/or sterilized, as appropriate. Hospital catheterization kits also, have added antiseptic wipes for meatal cleansing used prior to sterile insertion of the catheter.

The genital area is cleansed, using disinfectant, working from the urethral opening outward to minimize contamination risk. Lubricant is applied to the distal 2-5 centimeters (cm) of the catheter tip. The catheter is then gently inserted into the urethral opening and fed through the
urethra and into the bladder. After urine begins to flow, the catheter is inserted approximately two inches more, to ensure that it is not against the neck of the bladder. If a balloon (Foley) catheter is being used, the balloon is then filled with approximately 10 mL of sterile water to keep the catheter tip from slipping out of the bladder. Sterile tubing is then used to connect the outflow channel to the drainage bag, secured with a securement device or taped to the inner thigh. The drainage bag is placed lower than the bladder, permitting drainage by gravity. Ensuring the IUC has no dependent loops or kinks that may impede urinary flow and cause backflow into the bladder is vital to decrease the likelihood of urinary stagnation and infection.

One of the physiological barriers to bacterial infection of the urinary tract is the normal functioning of the urinary production and excretion process. Adults produce an average of about 1500 ml of urine daily depending on oral fluid intake. The adult bladder has a capacity of around 300 ml before the urge to urinate occurs. The constant filling of the bladder and passage of urine reduces opportunities for bacterial colonization of the bladder or urethra.

Catheterization alters this process in ways that have a major impact on infection. The catheter tube substitutes for the urethra as the conduit for urine, and isolates the urethra from the flow of urine. When a Foley catheter without a valve is placed, there is continuous drainage of urine and thus an absence of the “tidal effect” that would normally function to sweep the bladder walls and minimize their colonization by bacteria. In the absence of the regular flow of urine, bacteria can propagate on both the interior and exterior of the catheter along the length of the urethral path, which provides direct access to the bladder. Nicolle (2014) states that 70% to 80% of all healthcare-acquired UTIs are attributable to use of an indwelling catheter.

While UTI is by far the dominant adverse effect associated with catheter use, it is not the only one. Among the other adverse effects from catheterization are ongoing reinfection due to
residual urine at the base of the bladder, below the balloon; developing antibiotic-resistant infections; urethral trauma during insertion or removal; sepsis; a broken balloon, necessitating surgical removal; catheter encrustation (formation of struvite crystals as a result of the conversion of urea to ammonia in the presence of certain bacteria); and bladder stones, from the same cause as catheter encrustation (Feneley et al., 2015; Warren, 1997).

Insertion of a urinary catheter is a routine nursing task, but one that requires considerable judgment and mechanical skill to perform without causing urethral trauma (Kashefi, Messer, Barden, Sexton, and Parsons, 2008). Such trauma can readily become a point of entry for bacteria, setting the stage for a catheter-associated bacteriuria. While some of the other adverse effects of catheterization are technique related, a number are not. Long-term effects of urinary catheterization include, urinary obstruction, urinary tract stones, chronic pyelonephritis (Warren, 2001). This has important implications for the prioritization and efficaciousness of programs and protocols intended to reduce the rate of CAUTIs in hospitals.

It is important to understand the context of CAUTI—what has been done and what has not been done in order to reduce infection rates. Only in this way can healthcare professionals make the best use of available knowledge and resources by not repeating what has been tried and found beneficial to patient outcomes.

Nursing Role

Nurses are at the forefront of CAUTI prevention and surveillance. There are three points of potential causality in CAUTI development including: 1) on insertion, 2) during maintenance and 3) on evaluation of daily need for removal. Nurses place IUCs, manage daily care and maintenance, and ultimately discontinue IUCs. The guidelines that are associated with a decrease in CAUTI rates are:
Assessing the need for a catheter

The selection of catheter type and system

Using aseptic technique for catheter insertion

Educating patients, relatives, and healthcare professionals

Hand hygiene and

Early catheter removal (Bruminhent et al., 2010; Flodgren et al., 2013; Lo et al., 2008; Stone et al., 2014).

The demands on nurses in the current healthcare and hospital environment are complex and multifactorial. Nurses now care for more patients and patients with higher acuity. Nurses must master, manage and use a wide array of ever-changing technology and they must conform to multiple regulatory and professional practices demands, and they must do it all with fewer non-licensed personnel to assist patients with the activities of daily living (ADLs). Nurses’ working conditions can impact infection risk with patients with IUCs (Stone et al., 2007).

Nurses are being asked to do more with less (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Lang, Hodge, Olson, Romano, & Kravitz, 2004). Research has shown hospitals that support nursing practice with lower patient-nurse ratios, educational opportunities, and collaborative work environments have better patient outcomes (Aiken, Clarke, Sloane, Lake, & Cheney, 2008). The single best predictor of in-hospital mortality, aside from patient characteristics, is nurse-to-patient ratios (Cho, Ketefian, Barkauskas, & Smith, 2003; Sasichay-Akkadechanunt, Scalzi, & Jawad, 2003). The fallout from caring for sicker patients with fewer resources is poorer patient outcomes. The nursing environment must be given close consideration when attempting to better understand the context of why patients develop HAIs.
It is also important to fully understand the contemporary nursing role in the entire catheterization process, and how that role is evolving with changes in the nursing and healthcare ecosystems. Nurses insert, manage, and remove IUCs. Traditionally, physicians are not part of the day-to-day management of IUCs. However, physicians do play a part in IUC placement and removal by determining the medical necessity of placement, ordering the IUC placement, and determining when an IUC should be removed. Understanding these roles and the point of intersection with the patient is important since nurses and physician each play a role in preventing patient complications with IUCs. The key distinction between the two roles is that nurses are the day-to-day managers of these devices. In recent years, hospitals are creating nurse driven Foley removal protocols that empower nurses to remove catheters based on medical necessity without a physician directed order. Bond (2016) found utilization rates of catheters were lowered (p = <.0001) after a RN driven Foley removal protocol was implemented.

Nursing responsibilities in preventing complications begin with determining the appropriate catheter size and type. Some patients may have allergies to particular chemicals and products used in either the aseptic solution used for the sterile insertion and/or the catheter composition. In an effort to reduce irritation and reaction from traditional latex catheters, Teflon-coated or hydrophilic-coated have been used. However, little is known about the long-term effects of the biofilm formation, how the various types of catheters may impact the biofilm formation, and the subsequent risk for infection or urethral tissue changes with use of these types of catheters (Newman, 2007). Also, nurses play a part in ensuring there is no trauma in the IUC insertion process, i.e., inflammation of the urethral meatus, urethral erosion or tearing, etc. (Newman, 2007). Nurses must determine the appropriate size and type of catheter tip. Catheter size ranges from a small diameter, 12 French (FR), to the standard diameter, 14-16 FR, and to a larger
diameter, 40 FR. For obvious reasons, determining the appropriate size may influence patient complications, i.e., irritation of the urethral lining, pain, urinary leakage, etc. The catheter tip shape varies from a curved tipped catheter known as Coudé or Tiemann to a standard, straight tipped catheter (Newman, 2007). This process of determining the correct size and shaped tip can take more than one attempt for the nurse depending on patient tolerance and unique patient characteristics. For example, a male patient with a history of an enlarged prostate may require a Coudé tipped catheter. Patient characteristics such as obesity, fragility, underlying orthopedic injuries, multiparas, immobility, diarrhea, can challenge infection prevention during the IUC insertion and maintenance process. Daily perineum and catheter care for patients with an IUC falls within the nurse’s scope of practice. This task can be delegated to non-licensed personnel; however, ultimately, the nurse is responsible for all delegated tasks to non-licensed personnel, which includes ensuring the perineum is appropriately cleaned daily and the catheter has been cleaned at least daily and as needed. Catheter securement to the upper inner thigh prevents meatal and urethral irritation, excessive tension on the catheter, bladder neck trauma, risk for urethral tearing, and increases comfort. Nurses are responsible for completing and documenting 1) daily perineum care, 2) catheter care once a shift, 3) a securement device is in place, 4) emptying urine from the reservoir bag before the bag is greater than two-thirds full and measuring the output, 5) ensuring the reservoir bag is below the level of the bladder at all times and 6) daily checks to evaluate the necessity of the IUC (Gould et al., 2010). Health care professionals must adhere to hand hygiene principles before and after manipulating the catheter and the use of gloves when handling or manipulating the catheter and reservoir bag as part of infection prevention.
Nurses are vital to preventing complications, e.g., infection and encrustation in patients with IUCs (Bernard et al., 2012; Oman et al., 2012; Newman, 2007; Morris, Stickler, & Mclean, 1999; Yoon, et al., 2013). Nurses carry out the CAUTI prevention bundle which includes, daily documented assessment of continued need, tamper evident seal intact, catheter secured-securement device in place, hand hygiene performed for patient contact, daily meatal hygiene performed with soap and water, drainage bag emptied, unobstructed flow maintained, and decision to remove or continue with using the IUC is documented (Hanchett, 2012). Any break in the bundle chain may increase infection risk for patients with IUCs.

**Literature Review: State of the Science**

The objective of this literature review was to explore the definition of CAUTI, the risks for CAUTI onset, prevention strategies, and costs associated with CAUTI.

A review of the literature was completed using the databases of CINAHL, PUBMED, Web of Science, Google Scholar, and the Cochrane Library. Search terms included "urinary catheter," "infection," "indwelling urinary catheter," "catheter associated urinary tract infection," "Foley catheter infection," "short term," "hospital," "acute care," “nurse/nursing”, “urinary tract infections”, “catheters” and/or "Foley catheter." Articles were reviewed based on the strength and quality of the evidence. The strength and quality of the evidence within the literature is defined as strong, moderate or low (Table 2) based on the level of evidence and appraisal of the studies (Jones, 2010; Straus, Glasziou, Richardson, & Haynes, 2011).

Table 2.

Evidence Quality and Strength
<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Strength of the Level Of Evidence</th>
<th>Quality Factors in the Types of Studies (Structural Appraisal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Systematic Reviews</td>
<td>Strong</td>
<td>Treatment Studies</td>
</tr>
<tr>
<td>• Meta-Analysis</td>
<td></td>
<td>• Randomization</td>
</tr>
<tr>
<td>• One RCT</td>
<td></td>
<td>• Concealment/Blinded</td>
</tr>
<tr>
<td>• Control trials without randomization (observational studies)</td>
<td>Moderate</td>
<td>• Common starting point among groups</td>
</tr>
<tr>
<td>• Case-control and cohort studies</td>
<td></td>
<td>• Follow up</td>
</tr>
<tr>
<td>• Systematic reviews of descriptive and qualitative studies</td>
<td></td>
<td>• Intention to treat</td>
</tr>
<tr>
<td>• Case reports</td>
<td>Low</td>
<td>Diagnostic Studies</td>
</tr>
<tr>
<td>• Clinical guidelines, opinions from experts and committees</td>
<td></td>
<td>• Representative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ascertainment</td>
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<tr>
<td></td>
<td></td>
<td>• Measurement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prognostic Studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Comparable groups at a common point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Follow up sufficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Blinded outcomes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Variability controls</td>
</tr>
</tbody>
</table>

CAUTI Defined. The gold standard for treating and identifying CAUTI requires (1) a positive urine culture of no more than two types of bacteria with at least one bacterium having greater than or equal to 100,000 colony forming units (CDUs)/millimeters (mL) and (2) a positive blood culture with at least one matching bacteria to the urine culture (Gould et al., 2010). The Centers for Disease Control's National Healthcare Safety Network (NHSN) has set forth detailed criteria for identifying and reporting two categories of urinary tract infections—symptomatic UTI (SUTI) and asymptomatic bacteremic (ABUTI); the two categories are used for identifying and reporting. Both categories, if catheter associated, must be reported as part of CMS CAUTI reporting requirements. The two categories, SUTI and ABUTI, can be further broken down by age of eligibility in patients and their association with IUCs (Table 3).

Table 3.

CAUTI Criteria
<table>
<thead>
<tr>
<th><strong>SUTI 1</strong></th>
<th><strong>SUTI 2</strong></th>
<th><strong>ABUTI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Any age</em></td>
<td><em>Infants ≤ 1 year</em></td>
<td><em>Any Age</em></td>
</tr>
<tr>
<td>• Catheter-associated</td>
<td>• Catheter-associated</td>
<td>• Catheter-associated</td>
</tr>
<tr>
<td>• Non-catheter-associated</td>
<td>• Non-catheter-associated</td>
<td>• Non-catheter-associated</td>
</tr>
</tbody>
</table>

Symptoms of a UTI vary with patients depending on whether or not an IUC is in place. Patients with a symptomatic urinary tract infection without an IUC typically present with some or all of the following signs:

- Fever (>38.0 degrees C)
- Suprapubic tenderness
- Costovertebral angle pain or tenderness
- Frequency
- Urgency
- Dysuria

Since patients have differing symptoms for SUTIs based on age and whether an IUC was in place, the CDC has further delineated who meets SUTI criteria in relation to these two elements. In order to increase the specificity of CAUTI surveillance, symptoms associated with having a catheter in place, e.g., frequency, urgency and dysuria, are eliminated from the criteria, and for infants less than one year of age, add symptoms that include apnea, bradycardia, lethargy, vomiting, and hypothermia.

The CDC criteria for a catheter-associated *SUTI 1a (catheter in place)* are:

- An IUC in place for greater than two days with the IUC was either still be present at the time of diagnosis or removed the day prior to the diagnosis.
The presence of at least one of the following signs: fever (>38.0 degrees C), suprapubic tenderness, and costovertebral angle pain or tenderness, stated with no other recognized cause; and

A urine culture with no more than two species of organisms at least one of which is a bacterium with at least $10^5$ CFUs/ml.

The CDC criteria for a catheter-associated **SUTI 1a (catheter recently removed)** are:

- The patient has an IUC in place for greater than two days which was removed on the day of or the day before the date of event
- The presence of at least one of the following signs and symptoms: fever (greater than 38.0 degrees C), suprapubic tenderness, costovertebral angle pain or tenderness, urinary urgency, urinary frequency or dysuria
- A urine culture with no more than two species of organisms at least one of which is a bacterium with at least $10^5$ CFUs/ml; and
- All elements of the UTI criteria must occur during the Infection Window Period.

The CDC criteria for **SUTI 1b (non-catheter-associated)** are:

- The patient has/had an IUC but the catheter has/had not been in place greater than two calendar days or the patient did not have a urinary catheter in place on the date of the event nor the day before the date of the event
- The presence of at least one of the following signs and symptoms: fever (greater than 38.0 degrees C) in a patient that is less than 65 years of age, suprapubic tenderness, costovertebral angle pain or tenderness, urinary frequency, urgency, and dysuria
- A urine culture with no more than two species of organisms, at least one of which is a bacterium of at least $10^5$ colony forming units (CFUs)/ml; and
- All elements of the UTI criteria must occur during the Infection Window Period.

The CDC criteria for **SUTI 2 (≤ 1-year old)** are:

- The patient is less than or equal to one year of age (with or without an IUC),
- The presence of at least one of the following signs and symptoms: fever (>38.0 degrees C), hypothermia (<36 degrees C), apnea, bradycardia, lethargy, vomiting, and suprapubic tenderness,
- A urine culture with no more than two species of organisms, at least one of which is a bacterium of at least $10^5$ CFUs/ml; and
- All elements of the UTI criteria must occur during the Infection Window Period.

The CDC criteria for **ABUTI** are:

1. The patient with or without an IUC has no signs or symptoms of SUTI 1 or 2 according to age (Note: patients > 65 years of age with a non-catheter-associated ABUTI may have a fever and still meet the ABUTI criterion)
2. A urine culture with no more than two species of organisms, at least one of which is a bacterium of at least $10^5$ colony forming units (CFUs)/ml
3. A positive blood culture with at least one matching bacteria to the urine culture; and
4. All elements of the UTI criteria must occur during the Infection Window Period.

It should be noted that just because the presence of a catheter constitutes an “other recognized cause” for frequency, urgency, and dysuria, these are not considered symptoms of a CAUTI when a catheter is in place. Also, a urine culture results that include 1) more than two organisms, 2) “mixed flora”, 3) organisms of same genus but different species, e.g.,
pseudomonas aeruginosa and pseudomonas stutzeri, and 4) the same organism with different antimicrobial susceptibilities are criteria that excludes a CAUTI diagnosis (CDC, 2015b; Gould, et al., 2010).

CAUTI can be diagnosed if the patient no longer has an IUC placed but the IUC was in place for greater than 2 days and it was removed the day of or the day before the date there are any of the signs and symptoms of fever, suprapubic tenderness, costovertebral angle pain, urinary urgency, frequency, or dysuria with no other recognized cause. CAUTI diagnosis is based on a positive urine culture anywhere in a seven-day window, from three days before to three days after the removal of the IUC.

In reviewing the literature, there is an inconsistency among clinicians in using the CDC guidelines for CAUTI identification. Al-Qas Hanna, Sambirska, Iyer, Szpunar, & Fakih (2013) compared the CDC’s National Healthcare Safety Network (NHSN) definition to 1) clinical providers, i.e., admitting provider and 2) those cases that had an infectious disease consult in 387 patients with an IUC and a positive urine culture. The study found clinical providers initiated antibiotics in 55.8% of patients (n=216) compared to 29.9% of the patients identified by the infectious disease consultant and 30.7% of the patients (n=119) met the NHSN CAUTI criteria. Al-Qas Hanna et al. (2013) study has implications for potential long-term patient complications of antimicrobial resistance due physicians’ prescribing unnecessary antibiotic therapy in patients with IUCs. Clinical provider diagnosis of CAUTI was less sensitive compared with the NHSN and infectious disease consultant criteria for CAUTI diagnosis (62.2% vs. 100%). The clinical provider diagnosis of CAUTI was less specific for ruling in CAUTI compared to the NHSN and infectious disease consultant’s criteria (47% vs. 57.4%). The findings suggest that clinical provider practice is not congruent with the CDC’s surveillance definition. The NHSN’s criteria
(compared to the infectious disease consultant’s assessment) ignore patients who were treated with antibiotics inappropriately for asymptomatic bacteriuria (PPV 35.1%). This study suggests 1) patients with IUC devices may be receiving antibiotics unnecessarily, 2) clinical providers may overestimate the incidence of CAUTI (i.e., infection could be from another source), 3) patients do not always present according to the NHSN’s surveillance criteria in particular, fever in older patients (Al-Qas Hanna et al., 2013). Further research is warranted to evaluate why clinical providers are prescribing antibiotics in patients for suspected CAUTIs when they do not meet the NHSN surveillance definition.

**Urinalysis.** A urinalysis (UA) is a sensitive test for ruling out a UTI and, more important, one caused by an IUC. Stovall et al. (2013) conducted a retrospective study of ICU trauma patients who had an IUC placement. They reported out of 232 UAs, 38.7% (n = 90) had a positive UA and 61% (n = 142) had a negative UA. Of the 90 positive UAs, 19 had a positive urine culture and 14 had a UTI (PPV=15.5%, NPV = 100%). The Stovall study highlights the discrepancies between clinical diagnosis and the NHSN’s surveillance diagnosis and consequential treatment of ICU trauma patients who are at risk for development of a CAUTI. Based on this study, there may be patients who (1) are being treated unnecessarily with antibiotics in the ICU and (2) warrant a different CDC definition based on the complexity of the IUC patients who may have multiple infections or sources of a fever other than an IUC placement. A limitation of this study is generalizability; the small sample size and the specific population of ICU trauma patients may limit the ability to translate these findings in other patient populations. However, the results of this study suggest that a negative UA may reliably exclude a CAUTI.

Tissot et al. (2001) in a prospective study of 339 urine samples with catheter use from a medical ICU reported a combination of leukocytes and nitrites within the UA as the most
sensitive and specific indicators of asymptomatic bacteriuria (Sn=87.2%, Sp=61.6%, PPV=30.6%, NPV, 61.6%). This study suggests a UA may be more cost effective and sensitive in ruling out a CAUTI. Further research is needed to better identify, prior to discharge, specific types of patients most likely to have underlying CAUTIs, since these can lead to readmission. Because this study was specific to a medical ICU patient population with a variety of potential co-morbid conditions, future studies using a multi-factorial approach may provide insight on the use of a UA for CAUTI identification in other types of patients in a hospital setting, e.g., surgical, medical non-ICU, etc.

Hooton et al. (2010) recommends if an IUC has been in place for greater than 2 weeks at the onset of CAUTI symptoms and is still indicated, the catheter should be replaced. This recommendation from the Infectious Disease Society of America (IDSA) is because of the increased risk of catheter-associated bacteriuria in obtaining a urine specimen. The urine culture should be obtained from a newly placed catheter prior to antimicrobial therapy in an effort to reduce antimicrobial resistance. It is not evident in the literature if or how hospitals are implementing the IDSA recommendations prior to sending urine specimens in patients with IUCs.

**Risk factors for CAUTI.** The complexity of variables associated with CAUTI in relation to the tipping point of infection has been challenging hospitals for decades (Wong & Hooton, 1981). The challenges for hospitals in combating CAUTI are related to the multi-level factors of potential cause and effect (Table 4). Each level, patient, nursing, and system has multiple factors of potential causality for a CAUTI.

Table 4.
Catheter-Associated Urinary Tract Infections: Cause and Effect
<table>
<thead>
<tr>
<th>Patient Related Factors</th>
<th>Nursing Related Factors</th>
<th>Systems/Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Risks</strong></td>
<td>No hand washing prior to catheter manipulation</td>
<td>- Indications for appropriate catheter use not followed</td>
</tr>
<tr>
<td>Female</td>
<td>Inappropriate use of catheters</td>
<td>- Lack of supplies to manage incontinence</td>
</tr>
<tr>
<td>Age &gt; 50 yrs</td>
<td>Drainage bag tube contamination</td>
<td>- Routine catheter changes</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Catheter not secured to body</td>
<td>- No catheter securing devices</td>
</tr>
<tr>
<td>Urethral colonization</td>
<td>Catheter left in place longer than necessary</td>
<td>- Inappropriate antibiotic use</td>
</tr>
<tr>
<td>Debilitated health</td>
<td>Poor insertion technique</td>
<td>- A lack of policy and procedures</td>
</tr>
<tr>
<td>Incomplete emptying of bladder</td>
<td>Breaks in closed system</td>
<td>- Lack of pre-connected urine meters</td>
</tr>
<tr>
<td>Fecal Incontinence</td>
<td>Other methods to control incontinence not used</td>
<td>- Limited variety of trays/Foley sizes available</td>
</tr>
<tr>
<td><strong>Secondary Risk</strong></td>
<td>Foley bag raised above level of bladder</td>
<td>Systems/Equipment</td>
</tr>
<tr>
<td>Dehydration</td>
<td></td>
<td>- Open drainage systems</td>
</tr>
<tr>
<td>Sickle-cell anemia</td>
<td></td>
<td>- Bacterial adherence to catheter surface</td>
</tr>
<tr>
<td>Immobility</td>
<td></td>
<td>- No antiseptic coatings bonded to catheter</td>
</tr>
<tr>
<td>Other sites of infection</td>
<td></td>
<td>- Standing columns of urine</td>
</tr>
<tr>
<td>Previous UTI</td>
<td></td>
<td>- No closed system</td>
</tr>
<tr>
<td>Colonization with resistant organisms</td>
<td></td>
<td>- No sample port</td>
</tr>
<tr>
<td>Poor personal hygiene</td>
<td></td>
<td>Systems/Environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Unsterile insertions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Clustering of catheterized patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Breaks in closed systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Improper placement of drainage bag during transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Multi-patient use of measuring devices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systems/Equipment</td>
</tr>
</tbody>
</table>


Using the epidemiologic triad, one can identify three domains of CAUTI: the host, the agent, and the environment (Epidemilogic Traid, n.d.; Wilde, 1997). The domain of host includes variables associated with the patient; in particular any variable that predisposes the patient to CAUTI such as gender, comorbidity, age, and length of stay. The domain of agent encompasses variables related to the microorganisms that contribute to UTIs, the biofilms on the surface of the IUC, and the physical attributes of the urinary catheter (Trautner, Hull, & Darouiche, 2005).
CAUTIs are caused by a variety of organisms including Escherichia, Klebsiella, Proteus, Enterococcus, Pseudomonas, Enterobacter, Serratia, and Candida (Wong & Hooton, 1981). The domain of *environment* includes variables associated with the facility, staff, supplies, policies and procedures, nursing and medical interventions surrounding urinary catheter insertion and maintenance, surveillance of patients with IUC placement, and quality improvement programs instituted in overseeing CAUTI control.

Each of the three domains is expressed as risk factors. These levels are patient, nursing, unit and facility. At their intersection lie the multiple factors influencing CAUTI rates. Identifying the content of those intersections and the contribution of their interactions to the overall CAUTI rate is yet to be explored.

**Patient level risk factors.** Patient factors are variables that are unique to the individual such as age, ethnicity, socioeconomic status, gender, comorbidities, admission diagnosis, and discharge disposition. This section explores what is known from the literature for independent patient level risk factors that are associated with CAUTI.

*Age.* As patients get older, the risk for CAUTI is greater. There is strong evidence suggesting that older age is an independent risk factor for CAUTI. Al-Qas Hanna et al. (2013) found older age was an independent variable for a diagnosis of CAUTI (OR=1.025; 95% CI=1.008-1.041; p=0.003), infectious disease consultant diagnosis of CAUTI (OR=1.57; 95% CI=1.026-1.088) and NHSN definition of CAUTI (OR=0.979; 95% CI=0.962-0.996; p=0.019). This study indicates that the NHSN definition for CAUTI may not fit all patients in particular, patients who are older or patients who may not have symptoms outlined by the NHSN as meeting criteria. Graves et al. (2007) reported that an age greater than 60 had a greater significance for developing CAUTI (p<0.001). Future studies with multivariable analysis controlling for age are needed.
Race and Ethnicity. It is unclear if ethnicity is a risk factor for CAUTI. There is little research literature on CAUTI or other healthcare-acquired infections and ethnicity. Bakullari et al. (2014) found that native Hawaiian/Pacific Islander patients (3/42; 7.1%) had the highest CAUTI rates compared to non-Hispanic white (924/28,950; 3.2%), non-Hispanic black (166/4,111; 4.0%), Hispanic (92/2, 024; 4.6%), and Asian (28/561; 5.0%) patients. The study lacked control for confounding variables, and no p value was provided. Future studies examining race and ethnicity as an independent variable in CAUTIs are needed.

Socioeconomic status. There is an absence of studies that consider the role of socioeconomic status as a variable in the rate of CAUTI. More data is needed about socioeconomic status as a potential independent variable for CAUTI prevalence.

Gender. There is strong evidence that CAUTI is more likely to occur in women than men (Al-Qas Hanna et al., 2013; Leone et al., 2003; Platt et al., 1982; Saint, 2000; Shapiro, Simchen, Izreali, & Sacks, 1984; Temiz et al., 2012). The prospective study of Tambyah and Maki (2000) of 1,497 catheterized patients found that women (147/633) were one-and-a-half times more likely to develop CAUTI than men (RR=1.7; 95% CI=1.6-2.0; p< 0.001). Temiz et al. (2012) reported female gender as an independent risk factor for CAUTI (HR=2.67; 95% CI=1.03-6.91; p=0.043). Apisarnthanarak, Rutjanawech, et al. (2007), reported that female gender was an independent risk factor for CAUTI (AOR=1.9; p=0.001). Graves et al. (2007) found that males were less likely to develop CAUTI (OR=0.44; 95% CI=0.26-0.77; p=0.004). Female gender is a known risk factor for development of CAUTI.

Comorbidities. There is moderate evidence to suggest that diabetes, renal failure, stroke, malnutrition, and immunosuppression are predictive risk factors for CAUTI (Maki & Tambyah,
Chronic disease is increasingly prevalent in the general population and may affect CAUTI risk, clinical course, and outcomes.

Maki and Tambyah (2001), using multivariable analysis in multiple prospective studies, identified diabetes (RR=2.2-2.3), malnutrition (RR=2.4), and renal failure with creatinine >2.0 mg/dL (RR=2.1-2.6) as predictive risk factors for CAUTI. Using hierarchical modeling, Wald, Ma, Bratzler, and Kramer (2008) reported the strongest predictors of 30-day operative mortality were noninfectious complications, renal failure, nursing home residence, and stroke. Wald et al. (2008) attempted to control for deaths unrelated to IUC placement by removing from the study analysis deaths that occurred within three days of surgery. The relationship between duration of catheterization and 30-day postoperative mortality remained significant (PE=0.54; 95% CI=0.37-0.72).

Temiz et al. (2012) found ICU patients with immunosuppression (p=0.006) with concurrent nosocomial infection had a greater risk of developing CAUTI. There is moderate evidence suggesting that diabetes, renal failure, and stroke are predictive risk factors for CAUTI. However, many of the studies involved had small sample sizes with selective groups lacking generalizability (Temiz et al., 2012; Wald et al., 2008). Future studies using multivariable analysis to control for comorbid conditions are needed in order to determine whether comorbid conditions place patients at higher risk of developing CAUTI, and if so, which conditions contribute the largest risk increments.

**Diagnosis.** There is a lack of evidence identifying any specific diagnosis at admission as being related to CAUTI. Obviously, some diagnoses and procedures (consistent with the CDC guidelines) imply catheter placement and thus CAUTI risk. As stated above, certain comorbid conditions predispose patients to CAUTI. For example, any diabetes-related complication as a
cause for admission would also increase CAUTI risk. This is an example of the multilevel, multifactorial issues involved in understanding the CAUTI chain of causality.

The primary diagnosis is used to indicate the reason for hospitalization. The primary diagnosis may provide insight into vulnerable populations at risk for CAUTI. There are studies indicating that the diagnosis on admission is a predictive factor for other nosocomial infections (Bochicchio et al., 2002; Sung et al., 2005). However, identifying admission diagnoses associated with CAUTI onset has not been fully explored. Future studies may help identify a relationship between admission diagnoses and CAUTI.

Source of Admission. There is a lack of evidence identifying independent risk factors associated with source of admission for patients who develop CAUTI. In an observational study, Wald et al. (2008) found that patients admitted to the hospital from nursing home facilities had a greater risk for CAUTI. However, this study did not control for confounding variables. Further research is needed on the relationship between source of admission (home, skilled nursing facility, assisted living or other congregate living facility) and CAUTI risk during hospitalization as well as the incidence of UTI on admission.

Discharge Status. There is a lack of evidence in the literature concerning the relationship between discharge disposition and CAUTI rates. A gap in the current literature exists between the outcome of patients with CAUTI onset and discharge disposition. The relationship between discharge disposition and CAUTI should be explored in future studies.

Unit-Nurse level risk factors. Nurse work environments have been associated with mortality, quality of care, and patient safety outcomes (Aiken et al., 2008; Aiken et al., 2002; Van Bogaert et al., 2014). In a systematic review, Wong and Cummings (2007) found an association between work environments, patient satisfaction, nursing leadership support and reduced adverse events.
Blegen, Goode, and Reed (1998) used a multivariable analysis and found a relationship between increased staff-to-patient ratios and the risk of decubiti, patient complaints, and mortality. There was an 87.5% decrease in poor patient outcomes as RN staffing was increased. The nursing level risk factors are more challenging to isolate, measure and thus, predict specific associations with CAUTI.

Nurse-to-patient ratios. Moderate evidence supports the conclusion that nurse-to-patient ratios affect patient outcomes. Kane, Shamliyan, Mueller, Duval, and Wilt (2007) found in a systematic review and meta-analysis of 109 studies that hospital mortality decreased by 9% with the addition of one RN per day within an ICU (OR=0.91; 95% CI=0.86-0.96, no p value reported), a 16% reduction of mortality within a surgical unit (OR=0.84; 95% CI=0.8-0.89, no p value reported), and an identical reduction in mortality within a medical unit (OR=0.94; 95% CI = 0.94-0.95, no p value reported). There were many untoward patient outcomes listed among the studies, including hospital-acquired infections that lead to death.

Blendon et al., (2002) found that a majority of practicing physicians (n=831) and the general public (n=1207) believe that understaffing is directly linked to patient safety. Many studies report nursing clinical judgment, nursing surveillance, and RN staffing mix are causal factors in negative patient outcomes (Blegen et al., 1998; Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002; Unruh, 2003). Although the literature is inconclusive in linking overburdened nursing staff to CAUTI, strong evidence suggests patients have poorer outcomes with nurses who have heavier patient loads. Future studies using multivariate analysis are needed to improve our insight into the causal links between nurse-to-patient ratios and CAUTI onset.

Nursing education and certification. No evidence links nursing educational and/or certification level differences among nursing staff and CAUTI onset. Aiken et al. (2002) in a
cross sectional analysis of orthopedic, vascular, and general surgical patients found a 5% decrease in mortality within 30 days of admission and failure to rescue among baccalaureate-prepared nurses compared to those with associate degrees (OR=0.95; 95% CI=0.91-0.99, no p value reported). Future research could help determine if nursing educational level and/or credentials of staff nurses are an independent variable for CAUTI onset.

*Types of units.* There is strong evidence that intensive care units (ICUs) have an increased rate of CAUTI compared to other units. Patients within the ICU are sicker than patients outside ICUs. Indwelling catheters are more prevalent in the ICU because of increased need for precisely monitoring urinary output and for a range of other reasons. Patients admitted to critical care units are already compromised, ICU patients are more vulnerable to CAUTIs. Edwards et al. (2009) found that ICUs had 3.1 to 7.4 CAUTIs per 1,000 urinary-catheter days. Burton, Edwards, Srinivasan, Fridkin, and Gould (2011) found multiple types of ICUs, e.g., medical, surgical, cardiac, teaching, non-teaching, around the country had decreasing in CAUTI rates since 1990. However, the researchers found that cardiothoracic ICUs were an outlier, with no significant reductions between 2000 and 2007 (Relative change=-1.9; 95% CI=-17.5 to +16.6; p=0.83). In the Burton, et al. study (2011), ICU environments were more prone to CAUTI. The study also, revealed that with CAUTI prevention interventions and surveillance, declines in CAUTI onset could occur. Targeting ICUs for prevention strategy implementation positively affects CAUTI rate.

The National Healthcare Safety Network (NHSN) reports data to the CDC measuring the CAUTI rate per 1,000 catheter-days for each unit and hospital location. In 2010, data from 2,473 hospitals in 49 states showed that CAUTI rates varied based on type of unit i.e., medical-surgical non-ICU units averaged 1.5/1,000 catheter-days whereas medical-surgical ICUs averaged
2.2/1,000 catheter-days (Dudeck et al., 2011). Topal et al. (2005) found that four medical-surgical units (n=120) had 36 CAUTIs per 1,000 catheter days prior to implementation of a CAUTI intervention bundle. Shapiro et al. (1984) found that patients admitted to orthopedic and urology units were at greater risk for CAUTI, though without controlling for confounding variables.

There are significant gaps in the literature regarding which intervention strategies influence a decline in CAUTI and which interventions have the greatest impact on sustainability of CAUTI prevention. Some types of non-ICU and ICU units may have unique variables that need to be identified for sustainable CAUTI prevention. Additional data are needed that control for multi-level variables and isolate more precisely which CAUTI interventions have the greatest influence on sustainable prevention of CAUTI onset within non- ICU units and ICU units.

As stated previously, there is strong evidence that emergency departments (EDs) place IUCs unnecessarily. Schuur et al. (2014) found that IUC devices are placed at a rate of 2.2 to 3.3 per 100 adults in EDs throughout the US. Of those IUC placements, 64.9% (95% CI=59.9 % - 72.9%) were deemed to be without medical necessity. In the Schuur et al. study, necessary IUC placement was determined based on the CDC guidelines. Among the IUCs placed in the ED, the patient variables of female gender, increased disease severity, and white race were most often associated with IUC placement. The facility level variables that most predicted IUC placement were region, ownership type, and urban location. The most frequent avoidable predictors included being female, low index of patient severity, being cared for by nurse practitioners or physician assistants, and a nonurban environment.

Since not all emergency department patients are subsequently admitted to the hospital, and since there is no systematic means of tracking outcomes for patients who are not admitted, the
true CAUTI rate associated with IUC placement in the ED is most likely underrepresented. We would benefit from having information to fill this knowledge gap.

**Facility level risk factors.** Facility level risk factors for CAUTI that were reviewed included administration infrastructure, magnet status, and regional differences among hospital practice.

**Administration infrastructure.** There is moderate evidence that ongoing infection control networks within healthcare communities are associated with decreases in CAUTI rates. In a prospective, observational study, Anderson et al. (2011) found that CAUTI rates decreased by half (4.39 to 2.50 cases/1,000 catheter-days; 95% CI=3.51-5.49 to 95% CI=1.88-3.33) over a five year period. Among the 24 hospitals that participated in this infection control network, the average rate of CAUTIs decreased from 4.39 (95% CI=3.51 to 5.49) to 2.50 (95% CI=1.88 to 3.33) cases per 1,000 catheter-days. In total, 14 (61%) of the 24 hospitals experienced a decrease in the rate of CAUTI; rates increased in 8 (35%) of hospitals and remained unchanged in 1 (4%). The infection control network focused its interventions on providing data to support trends in CAUTI rates, continuous surveillance within the facilities, and best-practice bundles for implementation.

There is strong evidence that an intervention-based physician reminder system for early removal of IUCs decreases CAUTI rates. The meta-analysis and systematic review by Meddings, Rogers, Macy and Saint (2010) found that hospital-based reminder systems for both physicians and nurses decreased CAUTI rates by 52% (p< 0.001). Chen et al. (2013) in an RCT found that the intervention group (physician reminder system for IUC removal) had a 48% decrease in CAUTI rates (RR=0.52; 95% CI=0.32-0.86; p=0.009) compared to the control group. Apisarnthanaruk, Thongphubeth, et al. (2007) found that implementation of a physician reminder system resulted in a CAUTI rate decrease (21.5 to 5.2 per 1,000 catheter-days, p=0.04), a
decrease in duration of IUC use (11 to 3 days, p<0.001), and reductions in inappropriate IUC placement (20.4% to 11.0%; p=0.04) and length of hospital stay (16 to 5 days, p<0.001).

Bruminhent et al. (2010) in a prospective pre- and post-interventional study of physician chart reminders found a significant decrease in CAUTI rates (7.02 vs. 2.72/1,000 catheter days; p<0.001). The prospective study done by Crouzet et al. (2007) reported a significant decrease in CAUTI after implementation of physician reminders to remove IUC devices within four days after insertion (12.3 to 1.8 per 1,000 catheter-days, p=0.03). A prospective interventional study found that after six months of use, a physician reminder system to remove IUCs decreased CAUTI rates to zero (Elpern et al., 2009) No p value was reported.

Huang et al. (2004) in a time-sequence nonrandomized interventional study found daily reminders reduced CAUTI rates (11.5 to 8.3 patients/1,000 catheter days; p=0.09) and decreased the duration of IUC placement (7.0 to 4.6 days; p<0.001). In this study there was linear relationship between duration of IUC placement and CAUTI rates. There was financial recovery during the intervention period, with antibiotic costs reduced by 69%. A randomized controlled trial (Leone et al., 2007) found a decrease in length of catheterization time in the intervention group (n=347) using an automated physician order to discontinue an IUC versus the group without the control group (n=345; 1.69 vs. 1.34 days; 95% CI=-1.23 to -2.15 vs. -0.64 to -2.05; p< 0.01 respectively). However, no difference in CAUTI rates between the two groups was reported. This may have been influenced by the fact that the nurses were not blinded to which group had the early removal of IUC device. The control group may have been affected by early removal because the nursing staff was more sensitive to the intervention. Reminder systems have demonstrated effectiveness in decreasing length of IUC use and decreasing CAUTI rates.
Magnet versus non-magnet status. There is no evidence in the literature suggesting magnet facilities have lower rates of CAUTI than non-magnet facilities. However, the environment in which the patient receives healthcare affects patient outcomes. Aiken et al. (2008) found that the units whose nurses perceived their work environment as more affirmative (OR=0.93; 95% CI=0.87-0.99, p< 0.05) had better nurse-to-patient ratios (OR=1.06; 95% CI=1.01-1.11; p< 0.01) and had lower mortality rates. Future research is needed to determine if non-magnet versus magnet status is an independent risk factor for CAUTI rates.

Regional Differences. There is moderate evidence suggesting CAUTI rates and IUC use vary regionally in the US. Greene et al. (2014) compared 726 hospitals across the US based on regions as defined by the US Census Bureau. The study found higher IUC use in the West within non-ICU units compared to other regions (24%), while the South had the highest IUC use within the ICU (63%). The mean IUC use was 31% across all regions. The West had the highest population-based CAUTI rate compared to other regions (8.9 CAUTIs per 10,000 patient-days versus a nationwide mean of 7.8). The West was significantly higher than the Midwest (p=0.02) after adjusting for other non-regional hospital characteristics. Future studies could usefully focus on determining underlying barriers, cultural differences, and facility determinants associated with regional variances in CAUTI rates and IUC utilization.

Patient Outcomes. Several metrics reflect patient outcomes, including hospital length of stay, hospital readmission, cost of care, mortality, hospital disposition, and quality of life.

Length of stay. Increased length of stay (LOS) has been associated with CAUTI in several studies. In a meta-analysis of seven studies (n=10,183) using a random-effects model, Chant et al. (2011) reported an association between CAUTI and increased LOS (mean difference of +12 days; 95% CI=9-15; p< 0.001). Laupland et al. (2005) found a threefold increase in the
association of CAUTI and LOS (12 days compared to 4.1 days; p<0.0001) using a multivariable logistic regression model that controlled for severity of illness, LOS, non-cardiac versus cardiac and CAUTI. Apisarnthanarak, Rutjanawech, et al. (2007) reported patients with an IUC and a prolonged hospital length of stay were more likely to develop CAUTI (12 versus 3 days; p<0.01; 82% vs. 8%; p=0.001). Graves et al. (2007), using multivariable logistic regression reported patients with an IUC were more likely to develop CAUTI (OR=5.28; 95% CI=2.46-11.34; p<0.001). Strong evidence suggests that increased length of stay for patients increases the likelihood for CAUTI onset.

**Hospital readmissions.** Evidence associating CAUTI and readmission rates is scarce and the literature is inconclusive. The observational study of McNair and Luft (2012) examined readmissions arising from hospital-acquired conditions in a large, California database of medical records between 2006 and 2007 and reported zero readmissions from CAUTI. The authors discuss the underreporting of CAUTI due to improper coding and the interpretation of Medicare’s policy on hospital-acquired infections. There is inconclusive evidence supporting an increase in readmission rates due to CAUTI. More research emphasis is needed to accurately assess the relationship between CAUTI and readmission within 30 days of discharge for patients who had an IUC discontinued within three days prior to discharge.

**Mortality.** While research-linking CAUTIs to mortality is not definitive, the finding that CAUTI may be responsible for as many as 13,000 deaths annually deserves careful consideration (Kleven et al., 2007). It is a statistic that is echoed in CDC publications (CDC, 2015a) and nursing association expert panels (American Nurses Association, 2015). The hallmark study of Platt et al. (1982) using multivariable logistic regression found patients (N=131/1458) with CAUTI had a nearly threefold increase in mortality (AOR=2.8; 95% CI=1.5-5.1; no p value
reported). However, later studies using a more standardized adjustment for severity of illness did not support the existence of a causal relationship (Clec'h et al., 2007; Laupland et al., 2005).

The contrary view is represented by Kizilbash, Petersen, Chen, Naik, and Trautner (2013), who reported that of 444 incidents of catheter-associated bacteriuria in 308 patients over a nine month period at a large, tertiary care hospital, 41.6% were CAUTIs and of those only three (0.7%) resulted in bacteremia, which is the primary cause of mortality risk. Their conclusion was that, “bacteremia from urinary source is infrequent in patients with catheter-acquired bacteriuria, and there was no evidence of all-cause mortality with symptomatic versus asymptomatic bacteriuria in this population. Furthermore, antibiotic treatment of bacteriuria, symptomatic or asymptomatic, was not associated with decreased mortality” (p. 1158).

Chant et al. (2011) in a meta-analysis of 11 observational studies found that patients with CAUTI had a twofold increase in mortality (OR=1.99; 95% CI=1.72-2.31; p< 0.0001). However, when adjusting for other variables in the analysis, CAUTI was no longer associated with mortality. A potential bias in the meta-analysis was the high degree of heterogeneity among the 11 studies.

Future studies using multivariable models are needed to control for confounding factors associated with CAUTI not only in the ICU but also in other hospital units. There are gaps in the evidence about which patients with CAUTI will develop systemic infections that lead to death. There is currently no evidence to support a relationship between increased mortality and CAUTI in units other than the ICU, but it is clear that our view of the mortality/CAUTI connection is incomplete.

**Bloodstream infections.** The majority of mortality from CAUTIs is a result of bloodstream infections (BSIs). Patients who develop CAUTIs are susceptible to bloodstream infection (BSI).
Each day a urinary catheter is in situ, a patient has a 3-8% increased likelihood of developing a CAUTI (Hartstein, Garber, Ward, Jones, & Morthland, 1981; Nicolle, 2005; Warren, 1997). Urinary tract infections are responsible for 17% of BSIs (Weinstein et al., 1999) and an estimated 1-4% of the patients who develop CAUTIs will develop BSI (Bryan & Reynolds, 1984; Horan, Andrus, Dudeck, 2008; Krieger, Kaiser, & Wenzel, 1983; Tambyah & Maki, 2000). BSIs not only contribute to an increase in healthcare costs of somewhere between $10,000 and $40,000 per patient (Blot et al., 2005; Pittet, Tarara, & Wenzel, 1994) but BSIs also contribute to a mortality increase of 13% (Hooton et al., 2010).

Bursle et al. (2015) found that the independent risk factors associated with BSI and IUC devices include insertion of an IUC in an operating room (HR=6.08; 95% CI=2.86-12.93; p < 0.001), chronic kidney disease (HR=2.71; 95% CI=1.33-5.53; p=0.006), age-adjusted Charlson comorbidity index (HR=1.14; 95% CI=1.01-1.28), accurate urinary measurements as reason for IUC (HR 2.54, 95% CI 1.28-5.04; p=0.031), and dementia (HR=3.95; 95% CI=1.63-9.53, p=0.002). The study also found that after 48 hours of IUC placement the rate for inappropriateness of IUC placement climbed from 2% (n=9) to 56% (n=313). This study was the first to use multivariable analysis in BSI and CAUTI. The limitations of this study included it being a single retrospective study, missing data related to time of catheter change, reason for continuation of IUC, time of IUC insertion and the lack of generalizability to a broader spectrum of healthcare institutions.

Other studies found that patients with IUC placement outside of the operating room had a higher increase of CAUTI than those IUC placed within the operating room (Shapiro et al., 1984). Moderate evidence from a low volume of literature suggests that the issue of BSIs
resulting from IUCs needs further elucidation using multivariable analysis to determine and confirm variables that increase the risk of BSI in IUC use.

**Prevention Strategies.** The focus on CAUTI prevention nationally dates back to the 1980s, with publication of the initial CDC guidelines. However, evidence to support interventions and subsequent declines in CAUTI rates throughout U.S. hospitals is lacking (Greene et al., 2014; Krein, Kowalski, Harrod, Forman, & Saint, 2013). This paucity of progress is reflected in the CDC’s statistics showing an *increase* in the rate of CAUTIs between 2009 and 2013 (CDC, 2015a).

In 2009 the CDC updated the guidelines for prevention of CAUTIs and recommended several prevention strategies that included more specific medical necessity for urinary catheter use, proper techniques for urinary catheter insertion, proper techniques for urinary catheter maintenance, quality improvement programs, and surveillance (Gould et al., 2010). To assist hospitals in operationalizing CAUTI prevention, the Agency for Healthcare Research and Quality (AHRQ) funded a national initiative to provide resources for hospitals and promote state-to-state collaboration on CAUTI prevention (2016). The national initiative—Comprehensive Unit-based Safety Program (CUSP)—promoted CAUTI prevention strategies by creating a forum for state hospitals to collaborate, report, and structure ways of meeting the CAUTI challenge (AHRQ, 2015). The CUSP modeled the culture of safety initiative of transparency, empowerment, and accountability at the unit level within hospitals (Hanchett, 2012). The CUSP initiative was 1) simple, 2) evidence based, 3) nurse driven, and 4) provided an on-going process for decreasing CAUTI. Out of the CUSP program came the CAUTI insertion and maintenance bundle. These bundles were checklists that prompted nurses to look at IUCs as potential portals for infection in patients.
At the state level, the Washington State Hospital Association (WSHA) in 2012 began a statewide patient safety program—Leading Edge Advanced Practice Topics (LEAPT)—involving 47 acute care hospitals. The goal was to improve the quality of healthcare for hospitalized patients in Washington State. One of the key strategies of the LEAPT program was to reduce the rate of CAUTIs by more than 40 percent by the end of 2014. This was to be achieved through implementation of the CDC standards for reduction in UTI events associated with urinary catheter use (Washington State Hospital Association, 2012). The results of this effort have not been published.

Several other national initiatives prompted U.S. hospitals to actively tackle CAUTIs. The Institute of Medicine (IOM; now the National Academy of Medicine) echoed the need for healthcare change through better collaboration between physicians and nurse practices and empowering nurses to practice to their full scope (Benner, 2012). The IOM report (2011) spurred federal legislation that in October of 2008 resulted in the Centers for Medicare and Medicaid Services (CMS) declining to pay for certain avoidable adverse events, including CAUTI.

By denying reimbursement for CAUTI, CMS hoped to create a fiscal incentive to reduce these “never events.” In the case of CAUTI, there are challenges in determining the degree to which there has been improvement in infection rates. CAUTI remains the predominant nosocomial infection in U.S. hospitals, and as noted above, the CDC reports that from 2009-2013 the rate of CAUTI infections actually remained the same. Certainly on a national level the problem is far from solved.

**Prophylactic antibiotic use.** Prophylactic use of antibiotics such as levofloxacin, ciprofloxacin, cefazolin, sulfamethoxazole-trimethoprim, ampicillin, and aztreonam prior to IUC placement may reduce bacteriuria. A systematic review of six randomized controlled trials
(RCTs) by Lusardi, Lipp, and Shaw (2013) found that among surgical patients administered antibiotics prophylactically when an IUC was placed, bacteriuria, pyuria, isolated quantity of gram negative organisms at six weeks post-discharge, and fever presentation were all reduced. The limitation of this systematic review was the heterogeneity within the studies.

In a meta-analysis, Marschall, Carpenter, Fowler, Trautner, and Program (2013) found a reduction in SUTI when prophylactic antibiotic use was initiated with a risk ratio of 0.45 (95% CI = 0.28-0.72) compared with controls. The absolute reduction of SUTI was 5.8% (31/665) in the antibiotic prophylaxis group compared to the control group, which was 10.5% (90/855). Even though, the meta-analysis did highlight an overall reduction in CAUTI rates, the authors acknowledge the risk of developing antimicrobial resistance may warrant a more judicious selection of which patients may benefit from prophylactic antibiotic use with IUC devices. Pfefferkorn et al. (2009), in a prospective randomized study, found patients with IUC placement who received antibiotic prophylaxis had fewer UTIs than those patients without antibiotic use (4.9% versus 21.6%; p<0.001).

The efficacy of prophylactic antibiotic use is countered by concern about overuse and the increasing prevalence of antibiotic-resistant strains of bacteria, with negative outcomes for patients (Holmes, Metlay, Holmes, & Mikanatha, 2003; Weinstein et al., 1999). This places a premium on being able to more precisely identify patients who are at the highest risk of developing a CAUTI, and limiting prophylactic antibiotic use to that subset of patients.

**Antibiotic catheters.** Short-term use of antimicrobial IUC devices as compared with standard catheters without antimicrobials may reduce or delay bacteriuria (Johnson, Kuskowski, and Wilt, 2006). Many of the studies reviewed by Johnson et al. (2006) were of low quality, lacked a large sample size, and heterogeneously biased.
Pickard et al. (2012) found no difference in risk reduction when comparing patients (n=6,394) randomly assigned to a group using a standard polytetrafluoroethylene catheter, a silver alloy catheter, or a nitrofural catheter. The researchers found no difference in infection rates between the standard polytetrafluoroethylene catheter group (271/2144) and the nitrofural-impregnated catheter group (228/2153) (difference=-2.1%; 95% CI=-4.2 - 0.1; p=0.19) as well as the silver alloy catheter group (263/2097) (difference=-2.1; 95% CI= 2.4 - 2.2; p=0.83) at six weeks post-discharge. The nitrofural group had a lower rate of bacteriuria (p=0.001) and a decreased incidence of what would be considered a positive UA for symptomatic CAUTI (p = 0.02). However, the nitrofural group had a higher incidence of reported discomfort with this type of catheter compared to the standard catheter group and silver alloy catheter group.

The meta-analysis of Schumm and Lam (2008) supports use of antiseptic IUC devices to reduce the incidence of asymptomatic bacteriuria in situ with less than one week of hospitalization (R=0.54; 95% CI=0.43-0.67; no p value reported). The limitations of the meta-analysis are the small samples sizes from the included studies, no standardized outcomes were identified in the studies, and the types of catheters were different among the studies.

Evidence suggests that in some patient populations antimicrobial IUC devices may be beneficial in preventing asymptomatic bacteriuria. Among the types of IUC antimicrobial devices, nitrofural, minocycline-rifampin and silver-hydrogel have been shown to reduce asymptomatic bacteriuria (Maki & Tambyah, 2001). In a systematic review of 12 studies, Johnson et al. (2006) found nitrofural-coated and silver alloy-coated IUC devices may decrease asymptomatic bacteriuria in comparison to latex or silicone IUCs. However, the studies lacked intention to treat analysis and heterogeneity was found among the studies.
Riley, Classen, Stevens, and Burke (1995) in an RCT found patients (n=745) with silver-impregnated IUCs had no difference in CAUTIs (p=0.45) and men had a higher incidence of CAUTI with silver-coated IUCs than standard IUCs (29.4% vs 8.3%, p=0.02). Johnson, Roberts, Olsen, Moyer, and Stamm (1990), using multivariable analysis in a prospective study of 482 patients, found that silver oxide coated catheters versus silicone catheters had a greater difference in CAUTI for females who did not receive antimicrobials (19% vs. 0%; 95% CI=0.4% to 38%; p=0.04).

Based on the literature, there is evidence to support use of antimicrobial IUC devices in some populations to reduce asymptomatic bacteriuria, but research is needed in four major areas in order to refine and better define the best uses. These research areas are:

- Determining which populations might most benefit from various types of antimicrobial and antiseptic IUCs
- Learning if the duration of the antimicrobial IUC placement affects the rates of CAUTI
- Understanding potential changes in patient quality of life when using various antimicrobials IUC devices, and
- Identifying the cost-benefit equations involved in reducing symptomatic and asymptomatic bacteriuria through the use of antimicrobial and antiseptic IUC devices.

Future research is also needed to determine the long-term effects of short-term antimicrobial and antiseptic IUC use and patient outcomes associated with this clinical decision.

**Catheter insertion.** Prior to inserting an IUC, health care professionals should first, question whether the IUC is medically appropriate; without a catheter, a CAUTI is impossible to contract. The CDC strongly recommends IUC placement only be done when clinically necessary and for the minimum time necessary (Gould et al., 2010). Evidence supports placing IUCs for operative
patients when necessary (e.g., prolonged duration of surgery), patients with bladder retention or obstruction, patients in need of strict urinary output measurement (i.e., critically ill, patient receiving large-volume infusions during surgery, patient receiving diuretic therapy during surgery), incontinent patients with open sacral or perineal wounds, patients with prolonged immobilization and patients at the end of life for comfort measures (Gould et al., 2010). In a prospective study of 285 charts randomly chosen from a total of 2,845 patient admissions, 56% of the patients were inappropriately catheterized, 87% of the patients had no documented reason for IUC placement, and 33% of the patients had no physician order for placement (Gokula et al., 2004). This study was from one community hospital and the chart review was conducted by a single reviewer. Unfortunately, many patients may be receiving IUCs without medical necessity (Dudeck et al., 2011; J. Meddings et al., 2014). Studies report rates of IUC placement without clear medical necessity as being from 25% to 50% (Apisarnthanarak, Rutjanawech, et al., 2007; Gokula et al., 2004; Greene et al., 2014; Munasinghe, Yazdani, Siddique, & Hafeez, 2001; Tiwari et al., 2012). Prime targets for unnecessary IUCs are patients in emergency departments (EDs). Schuur, et al. (2014) found that 64.9% (n = 6,724) of the patients in U.S. EDs between 1995 and 2010 (95% CI = 56.9-72.9%, no p value reported) had IUC placement without a medical indication. Such misuse has been shown to affect overall hospital CAUTI bundle implementation (Krein et al., 2013).

There is a gap in the literature about the risk of CAUTI in patients who have received unnecessary IUC placement and the readmission rates or follow-up treatment with a primary care provider post-discharge from the hospital. This re-emphasizes the need to identify patients who had an IUC and who develop post-discharge CAUTIs. There is currently no systematic capture of this data, which creates a gap in our knowledge of CAUTI infection rates and treatment
efficacy. Avoiding unnecessary IUC placement is considered a best practice for minimizing the risk of CAUTIs. Avoiding IUC placement is the most significant intervention for CAUTI prevention (Hooton et al., 2010). Many IUCs are being placed for reasons of convenience rather than for reasons of medical necessity as defined by CDC criteria (Saint et al., 2000; Weinstein et al., 1999).

If an IUC is medically warranted, the standard of practice in a hospital setting is to use aseptic technique for IUC insertion. There is low quality evidence to support this practice (Carapeti, Andrews, & Bentley, 1996). However, a strong recommendation (Gould et al., 2010) from the Healthcare Infection Control Practices Advisory Committee (HICPAC) suggests in lieu of the low quality evidence, the clinical benefits of using sterile technique outweighs the potential infection risks associated with using clean technique in a hospital environment. The CDC strongly recommends using aseptic technique for IUC insertion in acute care settings (Gould et al., 2010), and many guidelines state that aseptic technique is the standard of practice (Maki & Tambyah, 2001; Shuman & Chenoweth, 2010). We do not know, at this juncture, if any particular aseptic protocol offers an advantage.

Insertion of an IUC takes skill and proper education to ensure safe, competency in performing this procedure. Patients are not always cooperative (e.g., patients with dementia or confusion) during the procedure and/or may have medical conditions (e.g., obesity, multipara) that make insertion difficult and complex. There are many patient variables that may impact IUC insertion ease or lack thereof. Health care professionals should be competent on proper insertion technique (Gould et al., 2010).

**Catheter maintenance.** Duration of catheter use is one of the most significant risk factors for the development of CAUTIs (Klevens et al., 2007; Warren, 2001). Future research is needed to
better understand the variables associated with unnecessary IUC placement, the resulting CAUTI prevalence in that patient subset (those patients with extended catheter use), and the effects on patient quality of life of IUC placement. It is important to understand what factors may influence why urinary catheters are not being removed earlier in the care process. Future research is needed to increase our knowledge of the factors that may influence the continuation of catheter use in patients.

The longer the IUC is in place, the greater the risk for CAUTI. For each additional day a urinary catheter is in place, the risk of CAUTI increases by 5% (Maki & Tambyah, 2001). The chain of events for a urinary catheter to be removed begins with the physician 1) recognizing the catheter is in place, 2) determining if the catheter is still warranted, 3) ordering removal of the catheter and lastly, 4) the nurse removing it. In a multivariable retrospective study, Wald et al. (2008) reported that for postoperative patients (N=30,947) with an IUC in place for more than two days, the likelihood of developing CAUTI (HR=1.21; 95% CI=1.04-1.41, p=0.02) increased as did the 30-day mortality rate (HR=0.54; 95% CI=0.37-0.72, p < 0.02 value); the likelihood of discharge to home decreased (HR=0.57; 95% CI=-0.64 to -1.51; p < 0.001). Apisarnthanarak, Thongphubeth, et al. (2007) found a linear relationship between duration of IUC placement and CAUTI rates (r=0.89, p< 0.001). Patients with IUCs need more diligent, daily surveillance to review the need for continued use.

**Nurse role in prevention.** Nurse-driven CAUTI prevention interventions or “bundles” have decreased CAUTI rates (Miller et al., 2013; Topal et al., 2005). Once an order for an IUC has been written, nurses are responsible for maintenance of IUCs. Nurses facilitate maintenance “bundles” by 1) determining each shift if there is a need for continuing an IUC 2) maintaining a sterile, closed drainage system with unobstructed urine flow by keeping catheter and collecting
tube free from kinking to prevent urine pooling in catheter tubing, 3) identifying a securement device is placed on the upper thigh with 1 to 2 inches of slack to prevent catheter movement 4) performing hand hygiene and changing gloves before handling catheter, 5) performing daily perineal care, i.e., “peri care” and as needed (e.g., incontinence of stool) 6) performing catheter care, i.e., “cath care” every 12 hours and as needed (e.g., incontinence of stool) 7) ensuring collection system is below the level of the bladder and avoiding any dependent loops in the tubing, and 8) emptying the collection bag using aseptic technique routinely and before the bag is two-thirds full (Gould et al., 2010). Perineal-care or peri-care is defined as using soap and water or cleansing wipes to clean external genital area from top down, then inner thighs. Instructions for female patients include, spreading the labia and clean urethral area gently around the catheter from top down using fresh wipes or clean sides of cloth for each swipe. For male patients instructions are to clean the penis, pull back the foreskin on uncircumcised males and wash from the tip of the penis downward using gentle circular motions, dry area and replace foreskin if needed. Lastly, turn the patient on his/her side, wash, and rinse the rectal area from front to back. Cath care is defined as using a foam cleanser or soap and water. Instructions for each cleansing stroke grasp, the catheter close to the urethra to prevent traction or pulling, and wipe down the catheter using short strokes starting from the urethra out about four inches using a gentle cleaning technique avoiding vigorous scrubbing. Perineal care and catheter care are prevention skills carried out by nurses or delegated to trained assistant staff and overseen by nurses.

Moderate evidence supports a strategy of hospitals utilizing nurses as collaborators with physicians in finding ways to improve processes and facilitate positive patient outcomes by facilitating preventive maintenance aimed at decreasing CAUTI (Fuchs, Sexton, Thornlow, & Champagne, 2011; Reilly & Evans, 2006; Topal et al., 2005). In an interventional study, Parry,
Grant, and Sestovic (2013) found a 50% reduction in IUC use and 70% reduction in CAUTIs hospital-wide after a nurse-directed CAUTI prevention protocol was implemented. The aggregated data of this study was a limitation, since it did not permit identification of any differences among units, though the authors reported there were no statistically significant inter-unit differences.

Willson et al. (2009) identified several nursing interventions that were implemented throughout U.S. hospitals to decrease CAUTI but the evidence was limited. These included interventions such as staff education, sterile technique in IUC insertion, daily antiseptic meatal care with IUC maintenance, instillation of antiseptic solutions in IUC drainage bags, irrigation of IUCs, routine replacement of IUC drainage bags.

**Quality improvement programs.** The CDC recommends a CAUTI QI program within hospitals to change practices of placing IUCs unnecessarily, to identify and remove unnecessary IUCs, and to monitor staff adherence to hand hygiene and maintenance practices for patients with IUCs (Gould et al., 2010). The CDCs definition of CAUTI QI within hospitals includes having a reminder system to identify patients with IUC placement and daily assessment of ongoing IUC necessity, having processes in place for nurse-directed removal of unnecessary IUCs, staff education and performance feedback for IUC use and care, and pre/post-operative guidelines for IUC management (Gould et al., 2010).

There is moderate evidence suggesting that CAUTI rates are decreased with implementation of infection prevention quality improvement (QI) programs. Early removal programs for IUCs have been linked to significant reduction in duration of catheter usage (2.5 days) and infection rates (up to 50%) (Meddings, Rogers, Macy, & Saint, 2010). Miller et al. (2013) reported a 39% (p=0.04) decrease in CAUTI after implementation of a CAUTI prevention program. Anderson et
al., (2011) reported a decrease in CAUTI rates from 4.39 (95% CI=3.51-5.49) to 2.50 (95% CI=0.33-0.75) cases per 1,000 catheter-days after hospitals participated in a seven-year infection control program for targeting CAUTI. Future research should be directed to determining if the decreases in CAUTI rates are due to participation in a region-wide network of infection control or to specific interventions implemented within those hospitals. Saint et al. (2013) found by using a CAUTI reduction program on a large scale across 32 states and 603 hospitals, CAUTI rates decreased from 2.82 to 2.19 infections per 1000 catheter days and catheter use. This program made intentional efforts across systems related to CAUTI prevention to include, centralized coordination, dissemination of standard educational materials, guidelines, nationally recognized bundles, definition of CAUTI, and staff competencies. Collaborative infection prevention programs may have a significant impact on CAUTI reduction.

**Surveillance.** Hospitals using ongoing surveillance methods for identifying at-risk patient groups or units with IUCs and use standard metrics in monitoring CAUTIs may have lower CAUTI rates. Saint et al. (2013) reported a 25% relative decrease (95% CI=13% to 37%) relative decrease in CAUTIs and a 30% relative increase in appropriate IUC use over a three-year period by having ongoing CAUTI surveillance within 163 units at 71 hospitals. In a comparison study, Wright et al. (2009) found an automated electronic system was more sensitive and specific (Sn=99%, Sp=99%) at detecting indwelling urinary catheter-days compared to a manual chart review with positive and negative predictive values of 0.99 (95% CI=0.99-100) and 0.98 (95% CI=0.96-0.99).

Further research could help identify specific surveillance strategies that are most effective in decreasing CAUTI rates. Another factor for further evidence development is determining if the
composition of the surveillance team affects CAUTI rates (i.e., staff nurses, physicians, epidemiologists, and administrators) over time.

**Costs of CAUTI.** CAUTI increases costs by extending length of stay, and because it creates additional care expenses, i.e., antibiotic administration, diagnostics, etc. Various attempts at determining the marginal costs of a catheter associated UTI have yielded figures from $900-$4700 per incident (Bologna et al., 1999; Saint, 2000; Tambyah, Knasinski, & Maki, 2002; Umscheid et al., 2011). The costs associated with patients who develop urinary tract infections from catheters while hospitalized vary within the literature based on the cost methodology and healthcare costs over time. The cost per CAUTI ranges from $758 (Anderson et al., 2007), $589 (Tambyah et al., 2002) and $832 (Scott, 2009). Annually, CAUTI contributes an estimated $390 to $450 million using the Consumer Price Index (CPI) for inpatient hospital services.

There is no question that CAUTI contributes to increased cost. How much of an increase is difficult to determine precisely because of inconsistencies in what costs are attributed to the CAUTI and the trajectory of cost related to patient outcomes (i.e., cost of readmission, prolonged length of hospital stay, antibiotic therapy, quality of life, etc.). Also, the cost of care after discharge for follow-up care related to CAUTI onset (such as the cost of additional primary care) has not been researched. There is a need for additional research to quantify the current cost of care for a CAUTI based on location of the unit, severity of illness, primary diagnosis and underlying co-morbidities.

It is important to note that cost is a significant factor because it is an economic burden now borne by the hospital, not Medicare or most other third-party payers. Reduction in CAUTIs would directly benefit the bottom line of hospitals. Any investment made to achieve this objective will likely be repaid many times over.
There may be errors in how hospitals document and code CAUTIs (Meddings, Saint, et al., 2010). The correct coding for CAUTI has a financial impact on hospital reimbursement and accurate depiction of hospital acquired infections. Because CMS and many insurers no longer pay for “never events,” hospital coders are aware that coding CAUTI results in a financial penalty for the institution, raising the prospect of overt or covert coding bias.

The literature reviewed here reflects ICD-9-CM coding, where there is a three-step process for accurately coding CAUTI. First, one of 10 ICD-9-CM codes for UTI must be chosen. Second, the ICD-9 CM code for CAUTI (996.64) must be chosen. And finally, the coder has the option of choosing present on admission (POA) to identify UTIs that were not hospital acquired (Meddings, Saint, et al., 2010; Meddings et al., 2012).

In a retrospective review of 80 randomized medical records, J. Meddings, Saint, et al. (2010) found that hospital coders misidentified 45% of UTIs caused by IUCs. The study revealed that documentation of catheter use was often supported by nursing rather than physician notes. However, nursing notes cannot be used by coders for assigning discharge codes.

Zhan et al. (2009) found that the ICD-9-CM code for Medicare claims had limited validity in identifying which patients had CAUTI upon discharge (30% PPV). In a retrospective study of 438 positive bacteriology samples, only 42% (n=229) were classified as hospital acquired (Bouam, Girou, Brun-Buisson, Karadimas, & Lepage, 2003). In the context of the study reported in this dissertation, it is important to understand that much finer granularity in data about CAUTI causal factors is required in order to improve nursing actions and reduce CAUTI risk. The October, 2015 implementation of ICD-10 holds the promise of providing this enhanced level of data capture and the greater insights into CAUTI causality that such data would provide. As the study undertaken here shows, CAUTI is a complex, multimodal, multilevel issue. Data from all
levels is needed in order to build a comprehensive understanding of where changes in process would yield the best results.

Gaps in the current research evidence reflect inconsistency in the definition, recognition, documentation, and reporting of CAUTIs by hospitals. Given these deficiencies, it is very likely that the rate of catheter-associated urinary tract infections is understated in the literature.

**Summary.** Patient risk factors for which there is substantial evidence to establish independent risk factors are older age, female gender, diabetes, length of stay, duration of catheter, immune suppression, and elevated serum creatinine levels.

The evidence for additional patient factors such as severity of illness (APACHE II scores), readmission rates, discharge disposition, comorbid conditions, socioeconomic status, ethnicity, source of admission, or admission diagnosis is inconclusive.

Key limitations of the conclusions that can be drawn from the studies reported in this literature search include small sample sizes, low event rates, and the number of factors entered in multivariable analyses. Most of the research literature reported findings from univariate or bivariate analysis.

Unit risk factors that are independent risk factors in acute care settings and are associated with CAUTI include length of stay, duration of catheter placement, and intensive care units. There is suggestive evidence that cardiac, renal, and orthopedic units may have a higher incidence of CAUTI, but the sample sizes of the research studies were small. Emergency departments have a higher incidence of inappropriate IUC use. More evidence is needed to identify units as independent variables associated with CAUTI.

Facility risk factors have not been explored within the literature as independent variables associated with CAUTI. Safe, quality patient care is at the center of hospitals in particular with
increasing national attention on preventable adverse patient outcomes, financial disincentives for preventable health acquired infections, and transparency in reporting quality measures. Some of the inconsistencies in facility reporting of CAUTI may be seen in the discrepancies in documentation and definition. Future studies would benefit from large sample sizes from a variety of hospital settings to include exploration in hospitals that have acquired magnet status, have varying nurse retention rates, teaching and non-teaching facilities, profit status, daily census, and surveillance methods for CAUTI.

Nursing risk factors for CAUTI have not been reported within the research literature specifically associated with infections post-IUC placement. However, nurses place the vast majority of IUCs and are responsible for their maintenance and removal. Research that explores independent nursing variables surrounding CAUTI onset is required if we are to have a more complete understanding of healthcare acquired infections within hospitals.

The Context of Catheter Associated Urinary Tract Infections

In the U.S., IUCs are commonplace for hospitalized patients. In the last decade, IUC placement has been associated with infection and subsequent economic and clinical consequences (Saint, 2000). Healthcare agencies such as the National Quality Forum (NQF) and CMS sought to eliminate HAIs by demanding measures of hospital accountability, report ability, and most importantly, prevention standards for these “never events” that occurred during patient hospitalization (Lembitz & Clark, 2009). CAUTIs were no longer consequences that occurred while patients were hospitalized but avoidable events that were subject to financial penalties. CDC along with CMS brought about a change to how hospitals managed, reported, and prevented CAUTIs. In 2009, the CDC released updated recommendations focused on CAUTI prevention throughout healthcare. In addition to the CDC response, in 2012 CMS refused to
reimburse hospitals for CAUTIs that were acquired during hospital admission. In 2012, the Washington State Hospital Association (WSHA) prompted a statewide initiative to adopt the CDC guidelines and find ways to reduce CAUTI events in Washington State. To date, CAUTI still remains a pervasive HAI in Washington State.

CAUTIs are one of many healthcare-associated infections. One in 20 hospitalized patients will develop an HAI (Klevens et al., 2007). Horan, Andrus, and Dudeck (2008, p. 311) define HAIs as, “an infection that occurs during a hospital admission for which there is no evidence that it was present or incubating at admission and that meets body site-specific criteria.” Such nosocomial infections are a common adverse event among hospitalized patients (Leape et al., 1991). The CDC estimates there were 722,000 healthcare-associated infections in 2011, resulting in 95,000 deaths in the U.S. About 93,000 of the infections are urinary tract infections (CDC, 2015).

The issue of HAIs came to the forefront with the emergence of widespread penicillin-resistant Staphylococcus aureus infections several decades ago (Dixon, 2011). Prodded by this outbreak, epidemiologists and clinicians began examining HAIs more closely and seeking to develop and implement control strategies. HAIs are attributed to lack of adherence to infection control measures by healthcare professionals and have been linked to increased mortality, morbidity, hospital costs, and length of stay (Chant, et al., 2011; Flodgren et al., 2013; Klevens et al., 2007).

CAUTIs account for 30% of all HAIs (Apisarnthanaruk, Thongphubeth, et al., 2007; Flodgren et al., 2013; CDC, 2015b; Klevens et al., 2007). CAUTI contributes to 75% of urinary tract infections among hospitalized patients; among hospitalized patients 15-25% require a urinary catheter (CDC, 2015b). While the majority of CAUTIs may be preventable with use of
evidence-based best practices (CDC, 2015b; Umscheid et al., 2011), adherence to clinical
guidelines varies throughout U.S. hospitals (Stone et al., 2014). Hospitalized patients receiving
IUCs remain a vulnerable population in spite of best practices, clinical guidelines, and financial
disincentives.

**Washington State CAUTI.** The National Healthcare Safety Network (NHSN) surveillance
system has instituted, operationalized, and mandated HAI reporting since 2009 (Gould et al.,
2010). The national average for ICU CAUTI rate per 1,000 catheter days is 2.4 as compared to
Washington State average of 1.8 (Washington Hospital Quality [WHQ], 2014). The Washington
State non-ICU CAUTI rate per 1,000 catheter days is 1.2; no national comparative data is
available for non-ICU CAUTI. CAUTI rates vary within Washington State hospitals (Table 5).
The highlighted cells in the table indicate which hospitals have higher rates of CAUTI/1,000
catheter days than the state average. From this table, more research is warranted on CAUTI risk.
The variability within each hospital needs further exploration. Obtaining knowledge about multi-
level factors associated with CAUTIs in Washington State is paramount to improving the quality
and health of patients receiving care in hospitals.

Table 5.

Washington State Hospital CAUTI Average for ICU Versus Non-ICU Units

<table>
<thead>
<tr>
<th>Washington State Hospital System</th>
<th>Bed-size</th>
<th>Hospital Average ICU 4/1/14-3/31/15 CAUTI/1,000 catheter days</th>
<th>Hospital Average non-ICU 4/1/14-3/31/15 CAUTI/1,000 catheter days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn Medical Center, MultiCare</td>
<td>162</td>
<td>2.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Central Washington Hospital</td>
<td>206</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Deaconess Medical Center</td>
<td>307</td>
<td>1.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Evergreen Healthcare</td>
<td>275</td>
<td>1.5</td>
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<tr>
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</tr>
<tr>
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<td>1.8</td>
</tr>
<tr>
<td>Harrison Medical Center</td>
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<td>0.5</td>
</tr>
<tr>
<td>Hospital Organization</td>
<td>Value1</td>
<td>Value2</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>Highline Medical Center</td>
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<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Kadlec Regional Medical Center</td>
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<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Northwest Hospital, Seattle</td>
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<td>0.4</td>
<td></td>
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<tr>
<td>Olympic Memorial Hospital</td>
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<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Overlake Hospital Medical Center</td>
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<td>1.5</td>
<td></td>
</tr>
<tr>
<td>PeaceHealth Southwest Medical Center</td>
<td>2.6</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Providence Centralia Hospital</td>
<td>1.3</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Providence Holy Family Hospital</td>
<td>4.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Providence Regional Medical Center</td>
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<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Providence St. Peter Hospital</td>
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<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Sacred Heart Medical Center</td>
<td>2.9</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Skagit Valley Hospital</td>
<td>0.0</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Swedish Medical Center/Edmonds</td>
<td>0.7</td>
<td>1.1</td>
<td></td>
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<tr>
<td>Swedish Medical Center/First Hill</td>
<td>2.1</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Swedish Medical Center/Cherry Hill</td>
<td>4.4</td>
<td>4.0</td>
<td></td>
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<td>St. Francis Medical Center</td>
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<td>0.4</td>
<td></td>
</tr>
<tr>
<td>St. John Medical Center (PeaceHealth)</td>
<td>2.7</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>St. Joseph Medical Center, Tacoma</td>
<td>1.0</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>St. Joseph Medical Center, Bellingham</td>
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<td></td>
</tr>
<tr>
<td>Tacoma General Hospital</td>
<td>2.2</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>University of Washington Medical Center</td>
<td>0.6</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Valley Medical Center</td>
<td>1.3</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Virginia Mason</td>
<td>1.1</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Yakima Regional Medical &amp; Heart Center</td>
<td>1.2</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Yakima Valley Memorial Hospital</td>
<td>1.3</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>


Hospital organizations are faced with fiscal challenges due to CAUTIs. Since 2008, The Centers for Medicare and Medicaid Services (CMS) have instituted a “no pay rule” for CAUTIs (Meddings, Saint, et al., 2010). A demand for hospitals to implement, survey, and maintain infection prevention strategies for CAUTI has prompted the institution of prevention “bundles” (Table 6), stop orders, antimicrobial urinary catheters, and a multitude of educational initiatives.
in many hospitals (Anderson et al., 2011; Gould et al., 2010; Johnson et al., 2006). One CAUTI costs a hospital at least $600-$900 to treat, and an additional $2800 if the patient develops bacteremia (Saint et al., 2009). Saint et al. (2008) found 56% of hospitals did not know which patients had IUCs and 74% of the hospitals lacked surveillance on duration of IUCs. CAUTI reduction strategies and loss of revenue have hospitals reexamining their IUC protocols and practices.

Table 6.

CAUTI Insertion Bundle

<table>
<thead>
<tr>
<th>Verification of need prior to insertion</th>
<th>Insert urinary catheter using aseptic technique</th>
<th>Maintain urinary catheter based on recommended guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Urinary retention/obstruction</td>
<td>• Hand hygiene</td>
<td>• Secure catheter to prevent irritation of the urethra</td>
</tr>
<tr>
<td>• Severely ill/immobility</td>
<td>• Catheter insertion kit with sterile gloves</td>
<td>• Maintain an unobstructed flow</td>
</tr>
<tr>
<td>• Lack of bladder control</td>
<td>• Drape</td>
<td>• Maintain the drainage bag below the level of the bladder and off the floor</td>
</tr>
<tr>
<td>• Patient request/End of Life</td>
<td>• Cleaning supplies sterile Lubricant</td>
<td>• Perform hand hygiene before and after each patient contact</td>
</tr>
<tr>
<td>• Perioperative-selected surgical procedure</td>
<td>• Sterile urinary catheter attached to a drainage bag</td>
<td>• Provide individual labeled collection container at the bedside</td>
</tr>
<tr>
<td>• Assisting with pressure ulcer healing for incontinent patients</td>
<td></td>
<td>• Review urinary catheter necessity daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remove catheter promptly when not needed</td>
</tr>
</tbody>
</table>

Indwelling catheters are placed for a number of valid medical reasons, but they are also unnecessarily placed in patients. Twenty-eight percent of the hospitalized patients have an IUC inappropriately placed and/or maintained (Apisarnthanarak, Rutjanaweetch, et al., 2007). Among the reasons for inappropriate IUC use is physician and nursing convenience (Saint et al., 2000). The threat to patient safety is at the crux of CAUTIs (CDC, 2015a). Health professionals and hospitals systems must develop strategies to identify and treat patients to avoid CAUTIs in order to contain costs and avoid harm to patients.

**The Conceptual Framework**

There are many factors that are involved in CAUTI, and in order to guide research about any of them, an appropriate model is needed. The conceptual framework used for this research is Donabedian’s (1980) quality assessment model. This model (Figure 1) posits three targets for quality improvement (QI) processes within health systems to include structure, process, and outcomes.

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>PROCESS</th>
<th>OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Size of facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Staffing model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patient acuity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How care is delivered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results in the quality care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Donabedian’s Quality Assessment Model (Donabedian, 1980)

*Structure* is defined as the organization, the operations, and environment in which care is provided. Variables such as size of the facility, staffing model or ratios, patient acuity and volume, equipment, resources are included as potential structural factors influencing safe, quality
care. Process is defined the way in which care is delivered. Patient safety and quality health care go hand in hand in defining culture of safety within U.S. hospitals. When these expectations are not met, patients at minimum are dissatisfied. More importantly, when patient safety and quality care falter adverse patient outcomes such as CAUTI may occur. Outcomes refer to the results of the healthcare that is provided. These outcomes, both positive and adverse, influence or validate the structure and process by which quality patient care is delivered. All three components, Structure, Process, and Outcome (SPO), within Donabedian’s model are linked rather than independent of each other.

Donabedian’s model has been applied to a variety of healthcare research (Qu, Shewchuck, Chen, & Richards, 2010; Gardner, Gardner, & O’Connell, 2012). Stone et al., (2007) applied Donabedian’s model to examine the effects of hospital size, teaching status, intensive care unit (ICU) type, nursing mix (structure of care) combined with severity of illness, comorbid conditions, demographics, socioeconomics (patient characteristics) and organizational climate, staffing, overtime, and wages (processes of care) with regards to outcomes of elderly patients in ICUs (health-associated infections, 30-day readmission rates, and decubitus ulcer). Boyle, Cramer, Potter, Gatua, Stobinski (2014) applied Donabedian’s model to examine the effects of specialty certification (structure) on patient outcomes (i.e., CAUTIs) in surgical ICUs and non-ICUs. The application of this model is suitable to health care and has proven to assist healthcare researchers in conceptualization of their endeavors. Healthcare leaders more and more are being asked to be more transparent in their outcomes not only to regulatory agencies but also to the consumer. Recently, Makary and Daniel (2016) estimate medical errors to be the third leading cause of death in U.S. falling below deaths that occur from heart disease and cancer. With that said, safe, quality care within healthcare must be examined more closely. More than 30 years
have passed since the CDC first published guidelines for reducing the incidence of CAUTIs. The guidelines were updated in 2009 (Gould et al., 2010). Yet the CDC (2015) reports that between 2009 and 2013, the rate of CAUTIs increased by six percent. Using, the Donabedian’s model in guiding this research provides a framework for uncovering nurses’ experiences in managing patients with IUCs. The goal of this research is to have a better understanding of the experiential aspects of nurses who manage the patients with IUCs.

Historically, nurses have used various sources of evidence to influence their practice decisions. The sources include tradition and authority, clinical experience, logical reasoning, and over the last several decades evidence-based practice (EBP) (Polit & Beck, 2008). Better educated nurses, including more with advanced degrees, better access to current scientific literature because of the Internet, more professional workshops and more requirements for continuing nursing education have all contributed and converged to shift the balance of decision making within the nursing profession.

The old operating belief of “because that’s the way we’ve always done it” has given way to nurses who know and put to use best practices based on current scientific literature and evidence. The increased emphasis on using science to determine best practices is leading scientists, clinicians, hospital organizations, and regulatory agencies to seek and find ways to more rapidly translate current scientific evidence into practice. Institute of Medicine [IOM] (2011) strongly advocated on behalf of several strategies for nursing and nurses to deliver the highest quality care possible, including:

- Translating and applying EBP
- Embedding quality improvement in organizational structures
- Using technology to enhance practice
Empowering nurses to practice to the full limits of their education and training

Working in partnership with physicians to better serve patients

Using technology and computer driven inquiry to disseminate current evidence is more readily available to nurses (Courtney, Demiris, & Alexander, 2005).

Everyone from regulatory leaders in healthcare to third-party payers is demanding greater accountability and that healthcare organizations incorporate better reporting of patient outcomes, quality improvements, and surveillance for all HAIs, including CAUTI (Newhouse, 2008). With the emergence of computing capability and theoretical methods and means of processing and understanding so-called “Big Data,” we may be missing factors associated with why patients with IUCs continue to develop CAUTIs that have not been measured. Using phenomenology to uncover the lived experience of nurses who manage the care of patients with urinary catheters may provide answers to the structure and process issues surrounding CAUTIs. This study provides an opportunity to better understand nursing factors contributing to HAIs at a local level that may be applicable to broader levels of understanding. As nursing researchers seek a better understanding of the causal variables of CAUTIs in a complex hospital environment, there is a need to formulate a conceptual model of CAUTI development within the hospital setting.

**Gaps in the Research Literature.** This CAUTI literature review has highlighted the necessity of identifying nursing factors that may be associated with the onset of CAUTI. While research on CAUTI prevention, prevalence and surveillance has produced a core body of knowledge about IUC use in healthcare and the impact of IUC use on patient outcomes, there remains major knowledge gaps when it comes to identifying nursing variables associated with
CAUTI. Although, defining at-risk patients is a key element in any strategy aimed at CAUTI incidence reduction, studies to date lack an understanding of the lived experiences of the nurses who care for these patients.

CAUTI remains a pervasive problem associated with adverse outcomes and may differ based on patient factors, e.g., comorbid conditions, ethnicity/race, socioeconomic status, facility factors, e.g., magnet versus non-magnet hospital status, small versus large, unit factors, e.g., cardiac, orthopedic, medical, neurological, and critical care, and nursing factors, e.g., educational level, and nurse-to-patient ratios. This is especially significant given that nurses are the personnel who most often implement the physician’s order to insert an IUC and who are responsible for daily maintenance of the IUC. There are no studies that report nursing contexts to the outcomes in the hospitalized patient who develops CAUTI. What is known about CAUTIs is the increase in healthcare costs, susceptibility to blood stream infections, increased antibiotic use, and increased length of stay.

Nicolle (2005) states that 70-80% of all healthcare-acquired UTIs are attributable to use of an indwelling catheter. Obviously, there can be no CAUTI without a catheter, so the largest preventive impact would come from avoiding the need to place IUCs. While research shows that many catheter placements are medically unnecessary, there are multiple reasons why catheterization is required for some hospitalized patients.

**Conclusion.** The major aim of this literature review was to identify what is known about CAUTI prevention, CAUTI prevalence, and the associated facility, unit, patient, and nursing risk factors influencing CAUTI. The Donabedian model provides a framework for the literature review and as a guide for research. The Donabedian model builds on the understanding that
patient outcomes are linked to structure and processes within U.S. hospitals. This model allows for a study that informs nursing science while providing applicable evidence for nursing practice.

This phenomenological study attempts to uncover and illuminate nursing factors that contribute to patients with IUCs who develop infections through examining the lived experience of nurses who work with and care for these patients. The objective of the research undertaken for and reported in this body of science is to describe the lived experience of the nurse caring for patients with IUCs.
CHAPTER THREE

RESEARCH DESIGN AND METHOD

Methodology

This was a qualitative, interpretive (hermeneutic) phenomenological study guided by the philosophical underpinnings of Martin Heidegger. Phenomenology has been useful for researchers to understand and describe phenomenon experienced by “being” in the world (Creswell, 2007; Krell, 1993). Nurse scientists have used phenomenology to explore, understand, and describe or interpret the lived experiences of individuals, their interactions with others and how they derived meaning within the world around them (Lopez & Willis, 2004). For this reason, phenomenology was chosen to better understand the lived experience of nurses caring for patients with IUCs. More importantly, this methodology was chosen due to the gaps in the literature related to the nurse factors that have been associated with CAUTI. As mentioned in chapter 2, there have been no studies that reported nursing contexts to the outcomes in the hospitalized patient who develops CAUTI. Scientific exploration of the lived experiences of nurses caring for patients with IUCs has expanded understanding of why patients develop CAUTI. Therefore, the research question for this study was: What is the meaning of the lived experience of nurses who care for patients with IUCs? The three research aims were:

1. Describe and interpret the experience of nurses who care for patients with IUCs.
2. Describe the meaning of those experiences by identifying significant patterns and themes from the nurses’ narratives.
3. Uncover and illuminate nursing factors relevant to the care of patients who may develop CAUTIs.
There are two main phenomenological methods in nursing research, descriptive and interpretive. Descriptive (eidetic) phenomenology was founded on the philosophy of Edmund Husserl. Husserl (1859-1938) was disillusioned by natural science’s inability to discover the truth within how one finds meaning in the phenomenon of consciousness. His epistemological view of the world rooted in Cartesian dualism led to a systematic, rigorous scientific approach to understanding the human experience (Vandermause & Fleming, 2011). Husserl believed human consciousness or how one sees the world could be reduced to phenomenon that could be described and understood through a rigorous scientific method called “bracketing” (Dowling, 2007; Lopez & Willis, 2004; Roberts, 2013). The core to understanding descriptive phenomenology is in the systematic, positivist approach to setting aside or “bracketing” the researcher’s own thoughts biases and beliefs regarding the phenomenon being explored prior to or in the process of data collection. This technique, according to Husserl, provides objectivity in the research process by allowing a phenomenon to “show itself” without influence or bias from the researcher. The researcher sought to set aside personal experience, bias, or influence by describing what themes emerged from the lived experience as it related to the phenomenon being explored.

Martin Heidegger (1889-1976), student of Husserl, had a different philosophical perspective in the phenomenological movement. Heidegger’s philosophical difference is in how one interprets the ways of “being” or “Dasein” in the world as it relates to a specific phenomenon (Wrathall, 2005). Contrary to descriptive phenomenology, which explores specific phenomena of consciousness through an objective, epistemological lens, Heideggerian interpretive phenomenology suggests the way to understand phenomena is by interpreting the meaning of the lived experience of a specific phenomenon. In interpretive phenomenology, the researcher is not
static but part of the lived experience within the phenomenon being explored. Heidegger believed that one’s own presuppositions are not to be “bracketed” but are part of the process of interpreting phenomena (Dowling, 2004). Heidegger called these presuppositions “fore-structure” and asserted that “bracketing” them as Husserl suggested is impossible. These tenets guided the formulations of interpretive phenomenology. The philosophical contrasts in phenomenology are important to delineate in order to frame the methodology chosen for this research.

**Historical and philosophical foundations of interpretive phenomenology**

Hermeneutics was originally introduced in the 17th century as a method to interpret biblical and classical texts (Dowling, 2004; Vandermause & Fleming, 2011; Padgett, 2017). The term hermeneutics has origins in Greek mythology whereby, “Hermes,” son of Zeus, translated the messages from the gods to the mortals. The Greek verb, *hermeneuein* (to interpret), and the Greek noun, *hermeneia* (interpretations) purports that interpreting and translating the meaning of phenomenon that may otherwise be lost has historical contexts. The philosophical foundations of interpretive phenomenology consist of a distinct conceptual premise based on the meaning of ‘being’ as ‘being’ is shaped by the history of its origins of interpretations and how these origins guide the application to research methodology. The common understanding in interpretive phenomenology is human beings innately interpret the world based on context, culture, past (i.e., what was), present (i.e., what is), and future (i.e., what will be) experiences, class, socioeconomics, gender, race, religion and other influences that shape this meaning. Interpretative understandings are dynamic representations of the time, space, and context to explored phenomenon of being in the world (Heidegger, 1966).
Heideggerian Terminology. The foundation for hermeneutics within interpretive phenomenology is rooted in terminology that provides conceptual understandings in the philosophical presuppositions. Phenomenological underpinnings of Hermeneutics point to understanding ‘being’ as relational and dynamic to the past, present and future. To fully understand Heidegger’s view as it relates to the experience of ‘being’ in the context to phenomena, e.g., nurses’ experience in caring for hospitalized patients with IUCs, the following terms are described below: Dasein, ‘being-in-the-world’, Forestructure, Authenticity (Meditative Thinking), Inauthenticity (Calculative Thinking), and Hermeneutic Circle (interpretive team).

Dasein and ‘being-in-the-world’. The term Dasein refers to what it means to ‘Being-in-the-world’ in the context to relational aspects to phenomena (Wrathall, 2005). Translating the German origin of Dasein, Da meaning “there” and Sein meaning “being” or “being there” implying “being” is in context to a place in time that is temporal (Horrigan-Kelly, Millar, & Dowling, 2016; Heidegger, 1953/1993, Wrathall, 2005). In this research, understanding what it means to “being there” as a nurse refers to the relational context to the unit, the equipment, the people by which nurses care with IUCs. The meaning of “being there” for nurses is interpreted by how they dynamically interact and experience the world around them in relation to this phenomenon.

Forestructure. The term Forestructure is linked to the interpretive process. This “Forestructure of understanding” is based on the premise that human beings gather meaning of existence through preexisting knowledge of the world around them that modifies based on time and space (Horrigan-Kelly et al., 2016). “Being” as in how one interprets the world is not static but based on the experiences one has had (fore-having), is having (fore-sight) and will have (fore-conception) (Horrigan-Kelly et al., 2016). For example, as a nurse caring for patients with
IUCs, there is prior knowledge based on exposure through experiences surrounding phenomena (for-having) that provide the nurse with information to be able to interpret “being”. For example, a nurse who has not inserted an IUC has an understanding of the utility of the tool and the concept of aseptic technique based on nursing school or even personal experience. Past experiences influence a nurse’s particular view (fore-sight) and how the nurse enters a situation with a patient with an IUC. *Forestructure of understanding* is an important philosophical concept within the interpretive team’s analysis of the lived experience. Each member brings *Forestructure of understanding* to the interpretative process (Tuohy, Cooney, Dowling, Murphy, & Sixmith, 2013). This is where the mind exercise of reflexivity within the phenomenon prior to and during the interpretive work provides a deeper understanding (Horrigan-Kelly et al., 2016).

It is important to understand this philosophical premise of prior knowledge and experience inevitably influences the interpretation of data. The interpretive team’s dialectical exercise with oneself and each other centered on the texts of the participants to allow the participants’ stories to “show itself” which brings forth the meaning to “being” within the phenomenon being studied.

*Authenticity (meditative thinking) and inauthenticity (calculative thinking).* The concept of authenticity and inauthenticity is based on two assumptions about ‘being’ with others, 1) common societal beliefs, values, and norms and 2) personal “selfhood” (Heidegger, 1966). In the passive state of ‘being’ inauthentic, existence is ‘being’ without “personal responsibility, decision-making, and choice” (Horrigan-Kelly et al., 2016, p. 3). Heidegger uses this term of existence as being “fallen” or inauthentic based on the norms and values established within society. This state of inauthenticity is more calculative or rote (Heidegger, 1966). In the experience of nurses caring for patients with IUCs, calculative thinking is the tasks at hand to
delivery care, e.g., carrying out catheter care. In contrast, Authenticity is not passive in ‘being’ as it requires reflective thinking that posits how “self understanding” intersects with the experience and consequential decision-making, personal responsibility and choice. The state of authenticity in the experience of nurses caring for patients with indwelling catheters is based on the nurse reflecting on the care activities and how the activities may impact patients, e.g., when, how or if the catheter care is completed with respect to the patient’s well-being. In the context of Heideggerian phenomenology Authenticity and Inauthenticity take on a different meaning than a categorical nature of “good” versus “bad”, i.e., if someone is termed inauthentic in Heideggerian phenomenology this does not necessarily imply negative context. Heidegger distinguishes authenticity and inauthenticity but acknowledges the premise and necessity of both in context to the human experience of ‘being-in-the-world’. Heidegger acknowledges the influencing elements of existence, e.g., historical, political, social, cultural, environmental factors that may modify how one may rely more on calculative thinking. In other words, human beings have been (and will be) influenced in ‘being’ within phenomenon based on contexts outside of their control (Heidegger, 1966). For example, nurses may be influenced in how they delivery care (calculative) without regard to how nurses impact patient outcomes (inauthenticity) based on environmental factors, e.g., faulty equipment, inflexible heavy patient load that challenges the nurse to complete care practices.

Hermeneutic Circle (Interpretive team). The hermeneutic circle is defined as an on-going circular process of reading (and re-reading) participants’ stories, looking for emerging ideas, themes, or patterns, and interpreting the lived experiences contextual to the phenomenon of interest (Crist & Tanner, 2003). In this study, the interpretive read the transcripts (individually), came together to read individual interpretations, discussed the interpretations as a whole, and
identified emerging themes, subthemes, and patterns through an iterative process. The interpretive process began with reflexivity of presuppositions and was discussed as part of the interpretive team analysis. The researcher continually was brought back to the texts for clarifying points of discussion in order to stay true to the lived experience of caring for patients with IUCs. Ultimately, the team identified the themes and subthemes based on what “shows itself” through the interpretations.

Heidegger’s philosophical assumptions have been applied to nursing research as a methodological approach that explores the meaning of phenomena through the reflection of those experiencing it (Armitage, Severtsen, Vandermause & Smart, 2014; Holliday & Vandermause, 2015; Vandermause, 2011). These assumptions are based on several Heideggerian premises to include the following: 1) human beings are interactive, dialogical beings; 2) understanding is always before us in the shared experiences based on a common community, language, and culture; 3) the meaning of phenomena experienced by individuals is based on a circle of interpretive dialogue; 4) the interpretative process is threefold beginning with presuppositions prior to, during, and after one experiences the phenomenon (referred to by Heidegger as “fore-structure,”); and 5) interpretation involves the interpreter and the interpreted in a dialogical relationship (Benner, 1994, p. 71). Application of this approach is particularly useful in nursing science due to the complexity of the phenomena of caring for human beings and how meaning is interpreted from those experiences (Benner, 1994; Vandermause & Fleming, 2011).

Benner (1994), Deikelmann & Ironside (1989), Diekelmann, Allen, and Tanner (1989) and Ironside (2002) were the first scholars to apply hermeneutic phenomenology in nursing (Mackey, 2005). Benner (1985) used Heideggerian phenomenology as a means to explain and understand the study of health, illness and disease as experienced by those caring for patients. Benner and
Wrubel (1989) used interpretive phenomenology as a methodology for a nursing understanding of stress and coping. Benner’s scholarly activities found meaning to questions on how do nurses know what they know? Because nursing involves relational and experiential activities that lack a positivist explanation, Benner’s work, “From Novice to Expert,” has made a significant impact on what is known about “being” a nurse in clinical practice (Benner, 2001). Benner explicates a hermeneutic method by using what she terms “paradigm cases,” “exemplars,” and “thematic analysis” to uncover meaning to nurses’ experiences of everyday clinical practice. These findings have been instrumental in how nurses learn and acquiesce knowledge in clinical practice. Benner’s interpretive phenomenology study has been used in nurse residency programs as well as nursing education to explain the phenomena of how and when nurses apply clinical reasoning, skill acquisition, and knowledge transfer. Diekelmann (2001a & b) and Ironside (2002) used interpretive phenomenology in understanding the lived experience of nursing students, nursing faculty, and clinicians in nursing education. Their work has been used to reform curriculum and instruction in nursing education. In particular, Diekelmann, Allen, and Tanner (1989) have identified the lived experiences of nurse educators, nursing students, and clinicians within nursing education. From this 12-year study, interviewing students, faculty, and clinicians on their experiences in conventional nursing education, a new pedagogy, Narrative Pedagogy, was discovered from emerging themes, Concernful Practices of Schooling, Learning and Teaching. Diekelmann, Ironside, and Tanner’s use of interpretive phenomenology in research has led to transforming nursing education with new pedagogical methods for teaching and learning.

Armitage, Severtsen, Vandermause, and Smart (2014) studied the experiences of U.S. Air Force (USAF) women who were six months postpartum as they trained for the standard fitness
test required for active duty “readiness”. Data was collected from 17 participants through interviews lasting 12 to 36 minutes. The researcher analyzed the text using a hermeneutic analysis informed by Heidegger. The analysis found patterns emerging that included “Striving to Perform under Pressure through Profound Life Transitions of Childbirth” and “Seeking Understanding from Others.” These patterns were especially meaningful, uncovering the findings that (a) physical fitness training for postpartum active women did not take into account their physical limitations 6 to 8 weeks after delivery whether a woman had delivered vaginally or cesarean, and (b) the emotional, social, and/or physical challenges surrounding “being” a new mother on active duty. This study led to governmental policy evaluation and change by the USAF in the physical fitness assessment requirements postpartum, exploring appropriate supportive measures during this time for these women, and a better understanding of the “lived” experience of active duty women after childbirth.

Holliday and Vandermause (2015) studied the experiences of teenagers following a suicide attempt using Heidegger’s interpretive phenomenology. This study used a hermeneutic methodology in interviews with six participants ranging from age 15 to 19 years old. During the data analysis, a team of experienced researchers in Heideggerian methodology sought and achieved consensual recognition of patterns within the transcribed text. Patterns emerged that brought meaning to the phenomenon of suicidal attempts in these teens included, “Attempting as Communicating” and “Attempting as Transforming.” Their suicidal attempt was seen by the teens as a way to communicate or message others about their own pain. The other pattern of “Attempting as Transforming” was interpreted as the teens shift in connection before and after the suicide attempt. It appeared each teen had experienced disengagement before the suicide attempt and a reconnection after the attempt with family, friends and counselor. The findings
suggested teens have a difficult time communicating their pain and may attempt suicide as a “cry for help.” As the implications indicated, nurses can use this information to better understand suicidal behaviors as a “cry for help” versus attention seeking while reconnecting with their families and counselors.

Diekelmann and Ironside (1998) used hermeneutic phenomenology to reveal the experiences of doctoral students and teachers in nursing that uncovered meaningful and hindering activities promoting scholarship. Themes and patterns of preserving reading, writing, thinking and dialogue, emerged from fifteen interviews. The implications that were revealed from these experiences of doctoral students and teachers suggests that more emphasis in doctoral education on preserving reading, writing, thinking and dialogue in each course on the dissertation content may perpetuate and sustain these skills in scholarly development.

Other studies using a Heideggerian approach include: 1) Peacock, Duggleby, and Koop (2012) who studied the lived experience of family caregivers who provided end-of-life care to persons with advanced dementia, 2) Wilson (2014) studied the lived experience of nurses mentoring students in their workplace, and 3) Miles, Chapman, Francis, & Taylor (2014) studied experiences of midwives working with pregnant women who use illicit drugs. These examples of interpretive phenomenology provide insight into the phenomena of being in the world. Often the lived experiences of participants are minimized in the traditional methodological framework of scholarly inquiry. By contrast, researchers can use interpretive phenomenology to uncover a deep understanding of a phenomenon by examining these lived experiences. Results of these findings may be used to shape and guide nursing practice, policy, and further exploration of the phenomenon.
**Philosophical Interview Underpinnings.** Heideggerian hermeneutics arose from a post-positivist era that identified there are more ways to understand what it means ‘to be’ in the world than through the “purity” of objectivism. This is a philosophical distinction between Heidegger and Husserl. Heidegger believed the *lifeworld* was not reduced to descriptive understandings that can be “bracketed” out whereby the researcher is static, without a connection to the phenomenon being researched, the participant, and/or the experience. Another concept in Heideggerian philosophy is fore-structure. Fore-structure is composed of three constructs, fore-having, fore-sight, and fore-conception.

Heideggerian philosophy frames this research. Philosophy centered on ‘*Dasein*’ or being in the world (*human existence*), emphasizes being open to understanding and interpreting the experience of phenomena as lived by others (Smyth, et al., 2007; Krell, 1993). Finding truth in phenomena experienced by human beings is based on analyzing the unique features of existing in relationship to that phenomenon. What brings about an understanding of a phenomenon to those experiencing it is through what is termed the *hermeneutic circle*. This role is explicated through an interpretive team who work together to interpret the phenomenon. Human beings are influenced by the world around them and thus, part of the whole of understanding a particular phenomenon is through language, phronesis or practical wisdom, social and cultural structures, and historical contexts at the time of being or existing in the phenomenon (Vandermause, 2011; Smythe, et al., 2007). Being in the world is a dynamic process that encompasses the past, present, and future orientation of thought. In addition, interpreting what it means to be in the world as it relates to a phenomenon has influence in the contexts of language, social and cultural structures, and historical aspects at the time (Diekelmann & Ironside, 2006).
A Heideggerian hermeneutic interview is based on the premise that the researcher seeks to uncover what it means “to be” as revealed by the individual experiencing the phenomenon. However, unlike a positivist approach of reducing outputs of understanding to empirics, the researcher embraces and shares his or her own preconceived notions with other members of the interpretive team during the interpretation process, thus allowing for an openness of mutual intersubjectivity to occur (Vandermause, 2011). In other words, the researcher understands that being human is interrelational. Finding meaning in existence is interpreted through this exchange of dialogue, plus the fore-structure that each participant brings to the conversation.

**Method**

**Study Design**

This was a qualitative, interpretive, phenomenological study. The design used a Heideggerian hermeneutic approach with face-to-face interviews. The participants were nurses with experience in caring for patients with short term IUCs. Hermeneutic phenomenology was chosen as a method due to the lack of research in understanding the human experience of thinking, feeling, interacting, sensing, and performing as a nurse caring for patients with an IUC.

**Sample**

Eligible participants in this study were nurses at a large urban Northwest hospital. Purposive sampling was employed in order to recruit nurse participants that had experience in caring for patients with IUCs. For an interpretive phenomenology study, a target sample of 10-12 participants is appropriate (Creswell, 2007; Willis, 2007). The total sample size of 14 participants was recruited. Initially, a pilot study of 3 participants was completed to examine the feasibility of the study. Inclusion criteria was: 1) a registered nurse with at least one year of nursing experience, 2) an employee, 3) employed at least 24 hours per week within the unit, and
4) experience with working with patients with IUCs. The appropriate sample size in interpretive phenomenology is determined by when and how clear the visible patterns and themes appear in the interpretations and experiences (Crist & Tanner, 2003). The term “saturation” has been applied to the tipping point when no new information emerges from participants and a thematic pattern of interpretive dialogue “shows” itself (Crist & Tanner, 2003). For example, if new dialogue with participants reveal no new findings and the meanings from the previous interpretations become redundant, sample size is considered adequate.

**Data Collection**

Two stages of data collection applied for the proposed study: what occurred prior to the interview, and what happened during the interview. The evolution of this research began with seeking to establish a trusting relationship with the participant. Establishing trust with the participant begun with the explicit understanding that the researcher had commonality of being a nurse as well as allowing the participant to choose the interview site. Active listening, eye contact, non-verbal communication of validation, seeking clarification of understanding of the interpretations were ways in which trust was facilitated in the interview process.

**Pre-interview.** There were several assumptions based on a Heideggerian phenomenological approach, with one of them being that the researcher had a preliminary understanding of the phenomenon being studied. This pre-understanding was described by Heidegger as “fore-structure” of understanding. This common understanding of “being” a nurse who had cared for patients with IUCs situates the researcher contextually prior to the interview, e.g., I am a nurse and I have cared for patients with IUCs. The intent of the researcher was to begin to understand the meaning of the phenomenon from the common fore-structure of the participant and researcher. This also, required reflexivity on the part of the researcher in order to explicate
understanding of preconceptions, assumptions, and preunderstandings of this phenomenon. Reflexivity was an active dynamic process of situating oneself contextually prior to and during the interview as well as after the interview by dialoguing with the interpretive team about being situated with the participant during the interview, and field notes that provided additional insight into the researcher’s presuppositions. These common understandings helped the researcher make sense of the experience of the participants as it unfolded in and after the interviews.

The researcher met with each participant prior to the interview to 1) introduced herself, 2) explained the purpose of the research, 3) explained the structure of the interview, 4) addressed any questions from the participant about the interview process, and lastly, 5) obtain informed consent. The researcher sought to establish a trusting relationship with the potential participant at the onset of the recruitment process. Discussing the purpose of the research in the recruitment process helped to solicit deeper reflection by the participant prior to the interview. The researcher and participant agreed on a mutually acceptable location for the interview outside of the work environment. In hermeneutic interviewing, it is important the researcher be free from hidden presumptions, know how to build rapport, and gain trust of the participant. Participants were asked to choose the location for the interview that was convenient for them such as a café, their home, or another site away from the hospital. Neither the researcher nor the participants were identified in any way as employees. Informed consent was obtained from the participants prior to the interviews (Appendix A). Pseudonyms were requested from participants at the beginning of the interview to maintain confidentiality. Demographic information was collected to facilitate a deeper consideration of meaning in the expressions of the nurse participants (Appendix B).
During the interview. Data was collected using open-ended questions and clarifications during the interviews (Appendix C) and recorded on digital media. Interviews were expected to take between 60 to 90 minutes. The interviews actualized as anticipated. Several aspects considered when using hermeneutical interviewing for data collection included the following, 1) setting the tone for the interview, 2) using incomplete sentences, 3) looking for assent or validating understanding with the participant and 4) returning the participant to the story (Vandermause & Fleming, 2011). Setting the tone for the interview was an important part of the hermeneutic process. The researcher began with a question that allowed the participant to recall or reflect on events and relate their experiences of the phenomenon. The example below is an open-ended question that invited the participant to reflect on their experiences of the phenomenon without superimposing a conscious explanation.

Interviewer: ……as you know, I’m interested in what the experience is like for nurses who care for patients with indwelling urinary catheters as part of their daily workload. And what it means to be a nurse managing care of patients with indwelling urinary catheters. And, so I just wanted you to think generally, to begin with, about what comes up for you when you think about what it’s like to be a nurse coming on your shift and having a patient or patients who have an indwelling urinary catheter. Is there a situation or memory that stands out for you that you might want to talk about?

Using incomplete sentences as a technique for hermeneutic interviewing allowed the researcher to guide the evolving conversation versus leading the discussion. This intentional technique allowed the uncovering of “being” as a nurse in this situation to unfold in a more organic fashion. As an example of using incomplete sentences consider the following transcript from an interview with a mother recalling the experience of being a mother in drug recovery while going through drug court (Vandermause, Severtsen, & Roll, 2012; Vandermause & Fleming, 2011, p. 373):

Interviewer: Tell me about it being their fault.
Interviewee: Um, well I wasn’t accepting any responsibility for my actions and my ability or unwillingness to follow through the program.

Interviewer: So…. not…

Interviewee: I wasn’t going to group. I was still testing positive. I was very manipulative because I have tons of people skills. So the judge liked me and the counselors liked me. And, I you know, pushed and pushed and pushed and manipulated until they were finally done. And there was no if’s, and’s, or but’s. They were done. They kicked me out. I was sentenced.

Using incomplete sentences pulled the participant into the conversation without suggesting a prescriptive response or explanation. As an example, the researcher began with Nell, one participant, by stating, “I am interested in the experience of nurses who have cared for patients with indwelling urinary catheters. Could you tell me about an experience of caring for this particular population?” (I. 8-11). This open-ended technique set the stage for avoiding the idea that the researcher had a prescribed agenda but allowed for a more reflective dialogue of the experience in caring for patients with IUCs. Looking for assent was an important interviewing technique to allow the researcher to clarify interpretation of the participant’s experience of the phenomenon. This “give and take” conversation verified the researcher’s understanding of “being” in the phenomenon and built upon a trusting relationship between the participant and researcher. Returning the participant to the story was a technique that kept the focus on the phenomenon being explored. In other words, if the participant diverted the conversation, the researcher could gently bring back the participant to the phenomenon. As an example, in Nell’s interview, she described an experience caring for a patient with an allergy to latex in her care. Nell continued to describe the error that occurred in which another nurse inserted a “latex” type of IUC and subsequently caused skin irritation and discomfort to the patient. In order to return the participant to the story of her experience, the researcher inquired, “think back to starting your day and you are receiving report, is a Foley catheter mentioned in report and what does it mean
in that experience when you receive report and have a patient with an indwelling catheter?” (I. 114-120).

After the initial question, the participant guided the unfolding interview with the researcher clarifying messages that are unclear. The goal of the interview was for each participant to share his or her authentic experience of the phenomenon and what it means in relationship to their dasein or existence as nurses working with these patients. The co-creation of Dasein occurred as the interpretive team interprets the transcribed interview.

**Data analysis**

The interviews from the participants were analyzed through a hermeneutic interpretive approach. The task of the interpretive team was to validate the patterns, themes, and together with the researcher co-create the meaning that emerged from the narratives of the participants. Findings from the transcripts of the audio recordings and field notes were analyzed by each of the researchers on the team. The research team was comprised of the primary researcher, two dissertation committee members experienced in interpretive phenomenology as well as qualitative methodologies, and a doctoral student, Tulla Diede, currently studying interpretive phenomenology methodology. There were two experts, Dr. Roxanne Vandermause and Dr. Susan Fleming, in interpretive phenomenology that participated in two interpretations as well as the two other faculty dissertation committee members, Dr. Janessa Graves and Dr. George Novan, who observed the interpretive process as schedules permitted. The process began with individual analysis of each text to discover patterns and themes first individually, and then as a team for discussion as the interpretative analysis unfolded. A comprehensive list of notes and observations were generated and reviewed, discerning frequency of related ideas, position in text, response to interview questions, and style of response. The text was re-read to identify
repeating key ideas. The team developed an initial list of ideas and reviewed the transcripts with these categories in mind. Ideas for naming themes were discussed followed by an iterative process of revision and discussion. Following three interviews of the pilot study, transcribed copies were made, and analyzed from the transcripts and field notes by the research team were completed.

This analysis used a methodical approach to hermeneutic interpretation (Vandermause, 2011). Guidelines as developed by Diekelmann and Ironside (1989) and reiterated by Vandermause (2011) were instituted during the interpretive process:

- Reading the transcript carefully, start to finish;
- Re-reading the text line by line;
- Making notes about concepts or situations that stand out;
- Reviewing notes and observe general categories, noting frequency of related ideas, position in text, response to interview questions, style of response (halting, stuttering, slay, affect conveyed);
- Devising rudimentary list of emerging patterns of ideas;
- Reviewing transcripts with these general patterns in mind;
- Naming patterns of ideas (using questions, phrases, dynamic activities);
- Writing a summary of the transcripts with as much detail or support as needed to convey a plausible and coherent expression of findings. Including a retelling of the account and/or a description of emerging patterns, and/or personal thoughts or reactions, and/or interpretive commentary, any or all with as much textual support (line references, exemplars) as needed to ground comments;
• Summaries of transcripts continue to build with each analysis. This iterative process eventually begins to fuse into themes and patterns. Transcripts are re-read and patterns revised in a continuing iterative process.

It is in this process that the fusion of horizons (of thoughts, ideas, and meanings) occurred. This iterative, interpretive process of poiesis in the experiences of these 14 nurses led to several themes and subthemes with two overarching patterns from the interpretive team analysis.

**Evaluation of Rigor and Trustworthiness**

The concept of *validity* was important to distinguish in qualitative research. Because, validity in quantitative circles speaks to the ability of the instrument to measure what it is intended to measure (Portney & Watkins, 2009). Language and its meaning were important here because the terms used to describe validity of measurements in quantitative research are not interchangeable and it would be illogical to suggest meaning in the same context to qualitative research. The instrument of measurement in interpretive phenomenology was the researcher/researcher team. Quantitative research validity uses terms like accuracy, relevance and reliability. However, in qualitative research, validity is not used as a way to “measure” but rather used to understand, represent, or explain social phenomenon that is not easily measured by quantitative methods (Pyett, 2003). In this research, validity was determined by answering the following questions: 1) are the findings believable to the research team and representative of the participant interviews, 2) are the findings believable to other healthcare professionals and 3) do the findings resonate with other nurses who care for patients with IUCs?

De Witt and Ploeg (2006) attested to the importance in using a framework to “express” rigor in interpretive phenomenology. This framework has five expressions for evaluating rigor: balanced integration, openness, concreteness, resonance, and actualization. *Balanced integration*
is accomplished through 1) the researcher’s ability to integrate the philosophical underpinnings in the methods and findings, 2) articulation of the philosophical match between the researcher and the question, and 3) balancing the voice of the participants and the philosophical premise. Heideggerian philosophical concepts related to “Dasein” are integrated throughout the research process in this study as a measure of balanced integration. *Openness* refers to the process of being systematic in how the researcher interprets and makes decisions in the interpretations. Being “open” to accountability in the process of data collection and analysis is an aspect of rigor. Balanced integration and openness reflect the rigor in the process of decision making during the interpretive process. The last three expressions, concreteness, resonance and actualization are reflective of the rigor in the outcome of the findings. *Concreteness* as the expression of rigor is interpreted as the researcher’s ability to translate the phenomenon as lived experience by the participant in a way that is understood by others who share the phenomenon or that situates the reader within the context of the phenomenon. *Resonance* as an expression of rigor is described as the researcher’s ability to transcribe the findings in a way that reverberates the experience from the participant to the reader. Lastly, *Actualization* as an expression of rigor is how the interpretations from the research continue to be affirmed over time by others who read the findings.

**Institutional Review Board**

Institutional Review Board (IRB) approval was obtained from both Washington State University (IRB No: 16002) and a large urban Northwest hospital prior to conducting any research. IRB approval was obtained for both the pilot and complete study. All participants were provided informed consent prior to being interviewed. Since this was not an interventional study, it was anticipated that there would be minimal risk to participants. There was the possibility
participants could have experienced being uncomfortable with discussing their experiences caring for patient with IUCs. The anticipated discomfort was not expected to be greater than experienced in ordinary daily life. Therefore, establishing trust with the participant from the onset was important in alleviating stress. Participants were also reassured that pseudonyms maintained their anonymity. Participants were informed that stopping the interview at any time without any penalty was appropriate. As with any encounter, the researcher, as a mandated reporter, was obligated to report any behavior from the participant that necessitates intervention such as the potential harm to the participant or to others.

The researcher maintained confidentiality of participants through pseudonyms and securing the data in locked cabinets and on a password protected website that was accessible only to the researchers involved with the study. Participants were asked to choose a pseudonym and only the pseudonym was used to identify audio files, transcripts, and interpretations. A professional transcriptionist versed in IRB policy and procedures transcribed the digital media verbatim and removed any identifying names or words. Only the consent forms contained the actual name of the participants. Furthermore, all data (electronic, hard copy, and audio recordings) were kept in a locked file cabinet until three years after dissemination of the study results, at which time they will be destroyed.

**Pilot Study**

A pilot study was conducted in collaboration with faculty with expertise in hermeneutic research included Dr. Billie Severtsen and Dr. Roxanne Vandermause as well as the committee chair, Dr. Gail Oneal. The purpose of the pilot study determined whether the methodological design and procedures, including recruitment plans and interviewing processes, supported the
research question of this study. For the pilot study, IRB approval was obtained from Washington State University and from a large urban Northwest hospital.

Participants for the pilot study as well as the participants for the larger study were recruited through emails and flyers (Appendix D) after unit manager approval as well as distributed by the researcher in staff meetings on various acute care units (non-ICU) within the healthcare facility. Each participant received a $25 VISA gift card for his or her participation. Four staff nurses were recruited and interviewed about their experiences in caring for patients with IUCs. Interviews were conducted in the same manner and consisted of the same open-ended questions that were later used for the full study. The same demographic questions were asked in the pilot study as were asked in the research study. The interviews were audio recorded and transcribed into text. The texts were analyzed using interpretive phenomenology by an interpretive team that included the researcher, three associate investigators listed above. These findings from the pilot study were incorporated into the larger study.

**Summary**

The study utilized an interpretive phenomenological design that was informed by Martin Heidegger uncovering the experience of nurses in caring for patients with IUC during hospitalization. Inclusion criteria required each participant to 1) be an active registered nurse, 2) employed at least 24 hours per week in an acute care unit (non-ICU) at this large urban Northwest hospital, and 3) have been a registered nurse for a minimum of one year. Recruitment was obtained through emails and flyers after manager approval. The participants received a $25 VISA gift card for their time. The participants chose the interview location. Informed consent as well as demographic information was obtained prior to the start of the interview. An interpretive team analyzed all interview data independently as well as collectively during the iterative
process. Themes and patterns emerged beginning with the pilot study. After the interpretive team agreed that data saturation had been achieved recruitment ended. Saturation was determined when no new themes emerged from the transcripts. Data analysis and interpretation uncovered two patterns. Pattern one had two themes and Pattern two had four themes that explained the meaning of “being” a nurse at this large urban Northwest hospital caring for patients with IUCs.
CHAPTER FOUR

FINDINGS AND INTERPRETATIONS

Background and Demographics

Why do hospitalized patients with short-term IUCs continue to contract Catheter-Associated Urinary Tract Infections (CAUTIs) despite the national regulatory efforts to incentivize and guide best practice? The stories of 10 nurses who participated in this hermeneutic phenomenological study and the four nurses from the pilot study provided insight into caring for patients with IUCs. They highlighted potential barriers that plague many healthcare institutions that struggle with reducing, sustaining reduction, or eliminating CAUTIs within their facilities. To answer the research question for this study, these 14 nurses described their experiences caring for patients with IUCs and how these experiences shaped their practice while exposing potential reasons for the persistence of CAUTIs at a large urban Northwest hospital. None of these experiences occurred in a vacuum, but rather occurred within a rich context. Each nurse told a story that described factors that influence decisions about the care of patients with IUCs.

This study was unique as it is the only hermeneutic phenomenological study that has explored the lived experience of nurses caring for patients with IUCs. This study offers some understanding as to why CAUTI prevention bundles are missed and perhaps avoided in an acute care setting. As the research team interpreted the experiences of the participants, a deeper understanding of caring for patients with IUCs in acute care hospitals emerged. The process began with the researcher’s analysis of each participant’s transcribed text. The interpretive team through the participants’ stories discovered patterns and themes first individually, and then as a group for discussion as the interpretative analysis unfolded. A comprehensive list of notes and observations were generated and reviewed, discerning the frequency of related ideas that were
positioned in the text as well as the response of participants to the questions. The text was re-read to identify repeating key ideas. The team developed an initial list of ideas and reviewed the transcripts with these categories in mind. Ideas for naming themes were discussed followed by an iterative process of revision and discussion. It is in this hermeneutic process that the fusion of horizons (of thoughts, ideas, and meanings) occurred which led the analysis team with two overarching patterns. The two overarching patterns found, which were not mutually exclusive, were “Shortcutting the Care Based on Competing Priorities to Get Through the Shift” and “Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture”. The two patterns had several themes that pervaded into each pattern that emerged (Appendix E). The two patterns at times influenced each other and ultimately affected the care and partnership that the patient with the IUC receives from the nurse.

All of the study participants were employed at a large, urban Northwest hospital at the time of the interview. They described a variety of experiences caring for patients within an acute care (non-ICU) setting that utilized IUCs. The context and backgrounds of the 14 participants were established from both the interviews and specific demographic questions that were asked prior to the interviews (Appendix B). Each participant chose a pseudonym so his or her identity was concealed. Participants’ years in nursing practice ranged from 1 to 43 years and the participants’ employment ranged from 1 to 16 years. Participants were between 23 to 65 years of age (Table 7). The interviews took place from May to July 2017 at locations in the Northwest area based on the participants’ requests. Participants were offered a choice for an interview site to establish 1) trust and 2) a more relaxed environment for the participant to discuss his or her experience with openness.
Table 7. Demographic Characteristics of Participants (Age, Number of Years in Practice, Number of Years at the facility)

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in Years</td>
<td>23-65</td>
<td>40</td>
<td>12.74</td>
</tr>
<tr>
<td>Number of Years in Practice</td>
<td>1-43</td>
<td>13</td>
<td>12.65</td>
</tr>
<tr>
<td>Number of Years at the facility</td>
<td>1-16</td>
<td>7.25</td>
<td>6.47</td>
</tr>
</tbody>
</table>

There were two males, eleven females, and one transgender who identified as male. Ethnic origin was predominantly Caucasian with the exception of three participants who were of Asian, “mixed” or Hispanic ethnicity. The majority of participants had a Bachelor’s Degree in Nursing (BSN). The participants worked within a variety of specialty areas to include oncology, renal, general medical, surgical, and float pool. However, the majority of nurses did not obtain certification in their respective specialty areas, e.g., Certified Medical-Surgical Registered Nurse (CMSRN) (Table 8).

Table 8. Demographic Characteristics of Participants (Gender, Ethnicity, Degree, Certification, Unit Represented)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ethnicity</th>
<th>Degree in Nursing</th>
<th>Certified in Specialty</th>
<th>Type of Units Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male: 14% (n = 2)</td>
<td>Caucasian: 79%</td>
<td>Associates Degree (ADN): 28.5%</td>
<td>Not Certified: 64%</td>
<td>Acute Care (Non-ICU): Medical-Surgical (oncology, renal, general medical, orthopedic, float pool)</td>
</tr>
<tr>
<td>Female: 79% (n = 11)</td>
<td>Asian: 7%</td>
<td>Bachelor’s Degree (BSN): 71.5%</td>
<td>Certified: 29%</td>
<td></td>
</tr>
<tr>
<td>Transgender: 7% (n = 1)</td>
<td>Mixed: 7%</td>
<td></td>
<td>Unknown: 7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hispanic: 7%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Three of the 14 participants were members of a shared governance committee or subcouncil. The shared governance committees or subcouncils were comprised of staff nurses and clinical educators that monitor, champion, and disseminate best practices. These groups discussed, supported, and disseminated information to their perspective units related to specific quality initiatives, e.g., falls, pain management, skin, operations, professional practice, evidence-based practice, and infection prevention. The groups were designed to engage and empower front line staff in best practices that drive patient outcomes.

**Common Understandings, Patterns and Themes**

The experiences of caring for patients with IUCs that were described may not be limited to only experiences that occurred while working at a large urban Northwest hospital. The influence of prior experiences outside of being employed at this facility in other healthcare entities will most likely have contributed to the overall experience of “being” a nurse caring for patients with IUCs. Anna opened up the interview by reminiscing about how she “used to work at a nursing home, so there were a lot of indwelling catheters” (I. 10-11). This example illustrated how nurses’ exposure to patients with IUCs from other facilities may have influenced the overall meaning in caring for patients with catheters. “Being” a nurse was not a static experience but was and is dynamic based on the influences of past and current scientific knowledge as well as technological advances, social, cultural, historical, political, and environmental factors. At the time of the interview, the factors that influenced the lived experience of the nurse guided the meaning of the phenomenon.

Shared meaning in the context of “being” a nurse caring for patients with IUCs was an important concept. Although, each participant has had unique experiences caring for patients with IUCs that shaped his or her story, there were themes that coalesced from the stories that will
be discussed later. These themes represented common understandings, which occurred across interviews and represented shared meaning. The text findings below focused on common understandings from shared knowledge caring for patients with indwelling catheters. The following were the seven overarching common understandings derived by the interpretive team:

- The patient is a person and the catheter is a piece of technology that a nurse uses to monitor/manage urinary functioning.
- The appropriate professional attitude of the nurse relevant to the catheter should be that it is a tool used as an intervention in the care of a person rather than focusing on the catheter itself to the exclusion of consideration of the patient’s welfare.
- A nurse is responsible for the care of the patient with an IUC.
- The nurse can delegate tasks surrounding catheter care to the nursing assistant certified (NAC) but is ultimately responsible to ensure the care of the patient is correctly completed and documented.
- A Nurse is accountable to provide Evidence Based Practice (EBP) to the care of the patient with an IUC.
- A Nurse communicates patient care activities throughout his or her shift to other personnel in order to provide safe, quality, and continuity of care.
- The dynamic communication process regarding the care of the patient is between nurse to nurse, nurse to patient/family member, nurse to Licensed Independent Provider (LIP), nurse to NAC, and nurse to ancillary departments (e.g., pharmacy, radiology, dietary).

As patients are living longer, the complexity of patient care has increased. According to the findings, acute care nurses managed care for patients with varying acuity levels and fluctuating
support (if any) from NACs, impacting which tasks were prioritized, facilitated, and completed throughout a shift. Although the above common understandings were edicts for caring for patients with IUCs, the interpretive team identified themes that emerged from the participants’ stories. The themes were translated into two patterns. The patterns were vetted through an iterative process from 1) reading and rereading the transcripts, 2) team member interpretations, 3) team discussions on threads that were identified between the stories, and 4) shared understandings of the meaning of the lived experience as nurses caring for patients with IUCs. The pilot study of four participants provided an initial platform for thematic discovery that continued to build throughout the interpretive process with the remaining 10 participants. The interpretive team concluded saturation when no new information “showed itself” within the stories and the research analysis team determined these patterns described what it meant to care for patients with IUCs at a large urban Northwest hospital.

According to Heidegger, in the lived experience lies the truth or essence of “being” in the world (Heidegger, 1953/1993). To bring forth this lived experience of nurses who care for patients with indwelling catheters concealed through what Heidegger terms “technology” was at the crux of this study. Technology may be seen as the catheter device itself and/or the electronic medical record (EMR) used to capture elements of caring for patients with IUCs and how these pieces of technology may have intersected, shaped or challenged “being” authentic in the lived experience of a nurse. The aim of this study did as Heidegger suggested by investigating the nurses’ experiences through their lenses that uncovered the nature of this phenomenon. Heidegger viewed technology with deep concern and feared technology would limit [wo]man’s ability to listen, reflect, and live authentically versus “being” in the world through simple obedience; do as you’re told or what is prescriptive versus reflecting on the essence of the
phenomenon (Heidegger, 1953/1993; Heidegger, 1966). Do nurses live authentically as defined by the values set by the discipline? This question was answered in the stories of these nurses.

IUCs have had positive benefits when used appropriately for patients, i.e., management of urinary function. The negative consequences of utilizing IUCs in patients have had detrimental impacts to hospital length of stay, quality of life, morbidity and burden of healthcare costs. However, what was missing is the lived experience of nurses who have cared for these patients with IUCs in an acute care setting. Therefore, this study provided another perspective that had not yet been explored.

**Pattern One: Shortcutting the Care Based on Competing Priorities to Get Through the Shift.** The first pattern identified through the interpretive analysis of the participants’ self-described experiences is *Shortcutting the Care Based on Competing Priorities to Get Through the Shift*. Figure 2 (below) illustrated the various themes and subthemes that encompassed the first pattern. The themes included 1) struggle to meet the demands of practice and 2) nurses’ perception of catheters. Each theme formed the essence of pattern one in the nurses’ experiences. This pattern encompassed the threads that were common in the participants’ stories. Using shortcuts in nursing care based on competing priorities seemed to be an essential part of “get[ting] through the shift” in the lived experience of these nurses. These shortcuts although perceived as insignificant by the nurse, may have had negative consequences to the patients with IUCs.
Figure 2. Pattern One: Shortcutting the Care Based on Competing Priorities to Get Through the Shift

Nurses’ struggle to meet the demands of practice
- Partnering/not partnering with the patient
- Inconsistent staff communication in catheter maintenance

Nurses’ perception of catheters
- Convenience, incontinence, immobility, urinary retention, and skin issues are reasons catheters are used as a tool in patients
- Catheters are an invisible threat to patients: “Just a catheter”/“one of the lines”
- Concerns about providing nursing care to the “private parts”

Nurses’ struggle to meet the demands of practice. All participants in the study touched on aspects of the infection prevention interventions outlined in the CAUTI bundle, aseptic technique on catheter insertion, daily review of medical necessity and early removal, backflow prevention, daily catheter/perineal care, emptying the catheter bag, within their stories. In general, the participants understood the value of 1) maintaining the catheter bag below the level of the bladder, 2) maintaining tubing free of kinks or dependent loops, 3) using sterile technique for catheter insertion, 4) using daily hygiene of the catheter and perineum, and 5) assessing daily need of the catheter. However, there were gaps in nursing practice that filtered out in their stories regarding how, when, and if the tasks outlined above were carried out, who was responsible for the care, and the importance of performing these bundle elements consistently within the care plan of the patient. Even though the participants understood potential infection risk when using the device, it was apparent in the majority of the transcripts that CAUTI incidences do not point to accountability for the nurses. The infection risk to the patient or more precisely, the consequence of incomplete infection prevention interventions by the nurse or NAC was invisible
and/or ignored by the nurse because 1) the CAUTI cannot be traced back to one particular person and 2) the hospital may have chosen to not hold nurses accountable. If an element of the CAUTI prevention bundle was omitted during the nurse’s shift, the nurse did not have a sense of accountability for infection risk for that patient. During many of the participants’ interviews, the catheter itself was perceived as separate from the patient’s health or untoward health risk, and useful more for the nurse’s need to get through the shift rather than understanding how the device and potential infection risk may or may not have impacted the patient’s urinary functioning and wellbeing. Anna described how aspects of catheter care on her unit are completed.

Anna: …there is a place in Epic (electronic medical record) to mark down if the urinary catheter [care] was done. And on our unit, we try to have it done at least twice a day. So, um yeah, I just check. It’s not like – I don’t write like a memo to myself or anything. I know some nurses do, but I don’t know. I just remember.

Interviewer: In your experience, you don’t recall any time that you, um potentially did, you know, not – it wasn’t done, I guess.

Anna: Oh, I gotcha. Yeah, definitely. There were definitely times in the past that I missed cath care or missed, um, the documentation of emptying the Foley (I. 137-143).

Nell discussed how completing perineal care was an important aspect of caring for patients with IUCs but admitted ensuring NAC documentation was completed was not consistently reviewed by the nurse. Nurses were responsible to ensure the overall care activities are completed.

Nell: Um – I guess it sort of depends, you know, daily on the, um – just the flow and how busy you are. And also if you have four patients and you have – let’s say you have four patients and you have aides with all of them. Some of the aides you’re working with are really awesome at doing peri care first thing in the morning with the bed bath and, you know, getting it done. And sometimes I just see them taking the wipes in there or proper materials, and I might check back to see that they charted it. Um, so it’s like, yeah, just different ways that we communicate that it’s getting done. And so I might not always look back in the chart. Maybe, that’s laziness (laughter) – or it’s just not always a priority (I. 219-229).
Nell, throughout her interview, did not specifically mention the patient’s risk for infection while having an indwelling catheter. She also did not mention evidence-based reasons for having a catheter inserted and reasons for having the catheter removed based on clinical guidelines. Nell along with other participants relied on the NAC to complete many foundational aspects of catheter care and maintenance but did not view catheter maintenance as overseen by the expertise of the registered nurse. Nell specifically recalled an incident of needing to obtain a urine sample from a patient who had an indwelling catheter and then relied on the knowledge of the NACs who until recently at this facility obtained the urine samples from patients with indwelling catheters.

Nell: And, um, yeah, the PA (physician assistant) told me he wanted a sample, and I was like, “Oh, I don’t - where do I – I just realized like, oh, I have never gotten a sample. And that wouldn’t be clean if it came out the bottom. And – and so, um, I just asked one of the senior CNAs, and they talked me through it and showed me how to do it (I. 441-445).

Bill, a participant who worked on an oncology unit, discussed his experience “caring for patients with indwelling catheters can be nice” because “having a catheter versus a patient who’s incontinent upwards of ten times a day, is back sparing [for the nurse], skin sparing for the patient, and can be convenient in some ways” (I. 21-25). He described ambiguity in catheter care by the following statements.

Bill: I’m noticing that I have often delegated, maybe not vocally, to my NAC that it’s their job to do the daily cath care. Um, and I’ve found that I don’t always go back and make sure that it’s been done. And I have been, ah, at least more recently taking it upon myself to make sure that it happens. So if it happens once or twice in a shift, the more the merrier (I.30-33).

Bill continued on this discussion of ambiguity with praising the NACs as being “fantastic” on his floor but recognized that there are assumptions about how the responsibility was carried out.

Interviewer: Can you describe that experience working with the NACs?
Bill: Um, sure. Yeah. I mean, our NACs on the floor are fantastic. Um, and often times if they see me doing the Foley care, they’re more amazed that I’m doing it and that I haven’t just left it to them. Um, but I think that we do fall into this trap of one person assuming that it’s the other person’s job, and potentially – you know, the nurse always assuming that the NAC will do it with their daily bed bath or showering the patient. Um, or that maybe the NAC is assuming that the RN will do it because it’s, you know – it – it’s our responsibility as a team to make it happen. And I don’t – it’s not something that I have ever – that I can ever recall actively talking about in my, you know, three-minute pass-down to my NAC of what – what they want to know (I. 97-108)

In caring for patients, nurses have faced multiple competing priorities, some of which were not evident when the shift began. Decision points in prioritizing activities may be based on timing, patient condition, colleagues, and aspects of the environment within healthcare. One participant, Karen, discussed her experience of priority in care for patients who had catheters. Threads of Karen’s story were found in the other stories, in particular, when discussing the daily dilemma nurses faced when patient “care” was overshadowed by the employer’s needs.

Interviewer: Is it [the catheter] a priority for you?
Karen: No. I mean, it’s just a thing, um, unless there’s a chance that we’re going to have to take it out or something. It’s just a thing. It’s almost a nice thing because we’re not going to have to get ‘em up to go pee every ten seconds. You know? Or they’re not going to be incontinent and destroying their skin all day long...Sometimes it’s a nice thing. Like nicer for us. Nicer for the patient (I. 719-726).

Similar to Karen, Maggie explained how catheter maintenance was not always a priority based on “being pulled in a hundred directions” (I. 123).

Maggie: And so like when my patient has a – a Foley catheter, I know the importance of Foley care and close monitoring of the catheter. How full the bag is. The position of the tubing. You know, um, doing cath care. Um, but I think that sometimes – like when I say derailed, I mean like the events of my overall assignment.
Interviewer: Um-hum (affirmative).
Maggie: So like patients – patient assignments, med passes, you know, being pulled in a hundred directions. I often see sometimes that Foley care can be kind of pushed to the wayside. Or I’ll have a nursing assistant – and that’s where some of the ambiguity of like who’s ultimately responsible to get that done. And, you know, it’s something that can be – a task that can be delegated, but then it’s not
Claire expressed how catheter care and reviewing the chart in relation to documentation of care for the patient with the catheter was not as important as other care activities, e.g., medication administration, depending upon the shift unfolded. The patient with the catheter appeared invisible to other competing priorities. As an example, a patient with a potential fall and/or a patient with potential skin breakdown may have taken precedence over the catheterized patient with an infection risk. Claire prioritized “the most urgent to the least urgent” to get through her shift. The “little confused lady” with a potential fall took precedence over “check[ing] to see if catheter care was done on dayshift” (I. 437). From the analysis, catheter care was not viewed as important as an intervention associated with an obvious poor outcome, e.g., a fall. Therefore, the nurse, individually, may not have felt or viewed CAUTI development in patients as his or her causation in light of acknowledging catheter care was missed.

**Interviewer:** …You also, talked a little bit about, um, catheter care being charted. You mentioned that you look at that.

**Claire:** Um-hum (affirmative).

**Interviewer:** Um, have you ever found in your experience that that wasn’t charted?

**Claire:** Um, I don’t think so. But I don’t think I remember when to double check a hundred percent of the time –

**Interviewer:** Okay.

**Claire:** --if I’m being honest.

**Interviewer:** Okay. Um, and in your experience when that happens, what usually, ah – what usually happens in your day that maybe – I mean, why would that happen, I guess, in your day where you might not have been able to look back and see?

**Claire:** It can be crazy.

**Interviewer:** I see.

**Claire:** If I – you always prioritize the most urgent to the least urgent. If I’m having Code Grays [violent behavior] or my other staff members are overwhelmed – even if I’m not, it’s more important to me that their, you know, little confused lady doesn’t roll out of bed or like their other patient doesn’t get violent than it is to check to see if catheter care was done on dayshift...--and sometimes, ah, because of the day and the priorities – the catheter care or the documentation...—
going back and looking at that might not be the priority of that day...If I’m dealing with like a bout of hypotension or somebody’s just being very emotional labile, those – obviously, I’m going to deal with the hypotension first. I’m going to deal with the emotional issues next. I might have a discharge or an admit or something like that. There’s – there’s so much to get done. And it’s only eight hours (I. 426–467).

**Partnering/not partnering with the patient.** There was a subtheme of partnering/not partnering with the patient in the struggle to meet the demands of practice described by the participants with variability as to what partnership meant in caring for patients with IUCs. Partnership with the patient was relational and patient-centered. Quality of care is framed around safety, efficiency, timeliness, effectiveness, and equitability but also how the provision of care was patient-centered (Agency for Healthcare Research and Quality, 2016; Butenko, Lockwood, & McArthur, 2017). What is patient-centered care? The Institute of Medicine (IOM) now is the National Academies of Sciences, Engineering and Medicine (the National Academies), defines patient-centered care as “a partnership among practitioners, patients, and their families to ensure that decisions respect patient’s wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care” (IOM, 2001b, p. 7). Involving the patient in his or her health and well-being was particularly poignant when the environment of healthcare may lead to secondary complications caused by what the healthcare provider does or does not accomplish while providing care. Butenko et al. (2017) systematic review of partnering with patients for hand hygiene compliance found patients that received patient-centered care surrounding hand hygiene had better outcomes. Partnership with patients in their healthcare is essential in the provision of patient-centered care. Belle, a nurse for fifteen years, discussed catheter care and how she incorporated the patients in this process.

**Interviewer:** And when you go in to that patient that does have the indwelling urinary catheter, do you, um, mention anything to the patient about what’s going to happen with the catheter in that day? Is that a routine?
Belle: No... Sometimes if – if I don’t have an aide and I’m the one to do the Foley care, I will say, “Hey, some time today we’re going to, you know, use our special little cleaning wipes and clean it off.”

Interviewer: Okay. And do you usually – when you are cleaning that, do you – what do you say to the patient prior to – to cleaning that?

Belle: Usually I say, “Hey, it’s going to be a little bit cold”... `Cause I’ve heard we can’t warm ‘em up.

Interviewer: Alright. And are there – in your experience, has there been any patient who’s been resistant to that?

Belle: Some. Usually the younger gentlemen. I’ll be like, “Hey, here. You can do it yourself”... I tell them, “Read the instructions. Use it. There you go” (I. 434-457).

Belle and other participants seem to have viewed the catheter care as a task that just needs completed versus partnering with the patient on why the catheter care was important and having had a conversation with the patient about the importance of infection prevention aspects in the overall planned care. Another example from Belle’s experience caring for patients with IUCs and discharge instructions was as follows:

Belle: It’s kind of a pain just – just printing up all the paperwork and trying to go over it with the patient. As I say, half the time they either don’t understand. Half the time we’re sending them out to the nursing homes, so we don’t even bother. I’d say again maybe about twenty-five percent of the time you can actually sit and teach patients and family how to care for it (I. 257-262).

Belle was an example of not partnering with a patient. Belle’s attitude of ‘why bother’ in relation to taking the time to educate and inform the patient was far from patient-centered but indicated a deeper issue hidden in the discourse and an example of non-partnering with a patient.

In contrast, Bunny, another participant working on a post-surgical unit, described her patient-centered experience with engaging patients with IUCs in the plan of care.

Bunny: Um, I think the big thing is just wanting to get it out. There’s so much reluctance from the patient to – about the catheter. I – I feel like people have a love/hate relationship with that catheter. They’re either really glad that it’s in because they have to go frequently –

Interviewer: Um-hum (affirmative).

Bunny: -- or they can’t stand it being in and they just want to get it out. I think some people are really not comfortable, um, thinking about having a tube in their
bladder. And when they find out they have – you know, maybe wake up and find they have a catheter, it’s – it’s anxiety-producing at times. Um, so I feel like there’s – they either don’t like it at all or they – they don’t want you to take it out. Um, I think in the elderly population, they really don’t like to have that catheter out ‘cause it’s – they make several trips to the bathroom at night. They don’t get enough rest. And so whenever you have to have a conversation with them about taking it out, there is sort of – you know, you have to sit down and take your time, explain why it needs to come out, and um, you know, what you’re going to do to help them feel more comfortable with getting the catheter out. Because otherwise, ah, there’s – there’s – you know, to them, they don’t see the benefit. You know, something that might possibly happen like getting a urinary tract infection as opposed to what they know is going to happen, which is they’re going to have to go to the bathroom frequently and they’re going to have to get up and move, which is painful (I. 48-71).

Bunny stood out in the study as a nurse who exemplified patient-centered care by combining both the art and science of nursing. Bunny described how her role in caring for patients with IUCs was to “just sit down with them”, “acknowledge” their feelings and “find a solution” with the patient that encouraged partnership and best practices. The majority of the participants described the technical aspects of caring for the urinary catheters, e.g., completing catheter care. There was minimal discussion in most experiences of the nurses involving patient partnership in infection prevention. The nurse’s understanding as to whether or not the device was appropriate or what that means to the patient in terms of medical or functional status was minimally discussed in the majority of the transcripts. As an example of patient-centered care, Bunny describes her role in caring for patients who may initially have refused to have their catheter removed.

**Interviewer:** Tell me about that conversation with them [patients] as you – you said you sit down and talk to them.

**Bunny:** Um, well, I – I acknowledge that they have – they’re anxious about it coming out. ‘Cause if they verbalize to me that they’re – that’s not something they want to do, um, I’ll acknowledge that they’re anxious. Um, I’ll try to ask them specifically what that thing is that they’re anxious about. Is it that they don’t think that they can get to the bathroom in time? Um, then we’ll talk about what we’re going to do to make it so that they don’t have to, um – you know, they’re less worried. Like, “Well, maybe you can wear a Peri-Pad so you don’t have to worry
about dribbling. We’ll put the commode next to your bed so, especially at night, it’s close-by and you don’t have to walk very far.” So you go over all those things that, um – and acknowledge their anxiety and then ask them specifically what is it that you’re uncomfortable with and help them problem-solve through what we can do to make it easier for them. ‘Cause if you just acknowledge, one, that they’re anxious and then come up with, um, ways to solve their problems or to make it less scary for them – then they’re much more willing to um, you know, get the catheter out and, you now, acknowledge that, yeah, you don’t want them to have a bladder infection. But in the moment when they have to think about getting up and walking all that way to the bathroom and their knee hurts or their hip hurts and, um, you just – they don’t want to do it. And so you just have to sit with them. If you spend the time with them in that moment before you take the catheter out and you follow through with the things that you said you were going to do, most people will comply. And – and we’ll be willing to get the catheter out, which is the best thing for them (I. 80-110).

Bunny differed from others in this study in that she explicitly described how she involved the patient in the plan of care. The majority of participants focused more on the device itself in their stories versus the patients who had the IUCs. What has set Bunny apart from the other participants was her ability to provide best practices by being patient-centered. The question to pose was why? Why was Bunny an exception? One of the reasons may have pointed to her engagement outside of the unit, which will be discussed in Chapter Five. After the interview, Bunny, discussed her membership within the Evidence-Based Nurse Quality Leadership Committee and how that had informed her practice.

**Inconsistent staff communication in catheter maintenance.** Participants reported differences in information communicated at change of shift regarding patients with IUCs. The common experience across participants was a simple exchange between nurses at the shift change: “They have Foley” (Karen, I. 197). The vast majority of participants omitted questioning the necessity of the indwelling catheter during change of shift and described feelings of relief by having had a catheterized patient for their own benefit of not having to toilet the patient in order get through the shift. Belle summed up the unspoken understanding between nurses about having
a patient with an indwelling catheter by having stated, “I kind of like it because, you know, you don’t have to get ‘em up to the commode all the time” (I. 41-43). Here were a few excerpts describing communication at change of shift.

**Belle:** *We don’t talk about cath care in report at all* (I. 376).

**Molly:** *Yeah, usually they’ll just say the patient has a Foley catheter. And they’ll go into more detail if there’s been issues with it. If they’ve had to, you know flush it because it was not draining or if there was something else going on with it, they’ll mention more. But if nothing exciting is going on, it’s just patient has a Foley catheter – and that’s kind of the end of it* (I. 73-78).

**Interviewer:** --what’s your experience with hand off report?

**Eibbor:** *Honestly?*

**Interviewer:** Yeah.

**Eibbor:** *Ah, basically, it’s very simple. It’s, “He has a catheter”* (I. 46-49).

**Karen:** *Um, it doesn’t play a huge part unless it’s, um – you know, it’s always more like, “They have a Foley. It’s draining. Good output.” Um, maybe we’ll talk about what the output looks like, but that’s about the extent of, um, discussing it in report unless, you know, it’s new or there’s a traumatic insertion or there’s, you know, bloody output or something like that. If it’s a pretty straightforward, in our mind, indwelling catheter which is – is there, it’s not leaking, you know, there’s no infection that we know of then it’s, “They have a Foley”* (I. 188-197).

**Nell:** *Yeah. Yeah, so it’s – um, it should always be mentioned, I think, in report. And that’s one of the lines that we would just briefly check when we are doing shift report. Just the Foley – it’s draining. But I also want to know why and when it was placed. And sometimes you don’t get that in report...*(I. 121-126).

**Sally:** *Oh, it’s part of the – we use SBAR format (Situation, Background, Assessment, and Recommendation is a format used in healthcare to provide prompt and efficient communication between staff) and we go through every system when we’re giving report to each other. So they will tell us if we have a Foley. And then when we go into the room to do our safety checks and check with the patient, it’s always pointed out, “Here’s our catheter. This is what the urine output looks like.” It’s not always blatant, like, “Here’s my catheter and here’s my urine output,” but usually they’ll point out the catheter and we can – we usually both look at the bag* (I. 64-71).

Ted’s experience during shift report - until recently - had been similar to the other participants.

Ted’s membership within the Infection Prevention Committee had generated reflective thought
in what pertinent information should be communicated during shift report. Ted discussed not only the importance of communicating information related to the catheter but how he had modified his view in the EMR to monitor the catheter hours.

**Ted:** The – during handoff, the only discussion is whether or not the Foley catheter is actually there. Um, unless there is something, um, that needs to be addressed, ah, with respect to urine output, whether it’s, ah, insufficient or whether we’re monitoring that for any particular issue, then, ah, we don’t talk about, you know, how long it’s been in and – or, you know, what it’s going to take in order to get that out. So it’s really up to the nurse, ah, on the shift to be able to – to initiate the – to take the initiative to work towards, ah, getting that Foley catheter out. And it’s only, um, I think over the past couple of months that – ah, personally as the, um, Infection Prevention Nurse Quality Leader committee member for my floor, I’m working towards getting all the nurses to start looking at how long the Foley has been in place in the patient and why is that. So really putting that in the nurse’s face every single day. Making it a column on their, ah, patient profile so that it’s, you know, things that pop up. You know, is the person on fall precautions? Is the person on contact precautions? Does the person have a Foley, and if so, how long has it been in? That’s something that I want, ah, to be a conversation that nurses have with one another and with themselves when they’re doing, ah, their assessments.

**Interviewer:** So, ah, in your experience right now, ah, the nurses that you do handoff with, that isn’t – other than the patient having a Foley and maybe some output – that – that’s the only discussion right now.

**Ted:** Correct. Um, why the Foley is in place is a question that I would pose to the nurse. Ah, or it would be something that I would definitely pose to the nurse. Ah, or it would be something that I would definitely look into, ah, during the course of my day. Why is that Foley catheter there? Does it need to be in place? Um, how soon can we get it out? Um, that’s my own personal, ah, journey when I have a patient that has a Foley catheter in place. But it’s not – I – I don’t know – and I think that’s only because I’m exposed to the infection prevention, ah, team. If that wasn’t also part of my journey, then I don’t know that I would be looking at it as closely as I do (I. 57-81).

Ted seemed to display more mindful or as Heidegger described, meditative thinking, during shift report regarding patients with IUCs in particular with regard to infection prevention interventions (Heidegger, 1966). Ted’s engagement in infection prevention practices may in part be due to his membership within the Infection Prevention Committee.
Nurses’ perception of catheters. The interpretation of transcripts revealed that part of prioritizing care activities was centered on how each nurse perceived catheter care in relation to the patient or their workload. All of the participants mentioned that there are two types of patients with IUCs, those who wanted to keep it in longer than necessary and patients who wanted the catheter removed as soon as possible. The patients who did not want the catheter removed left the nurses with the ethical challenges of 1) aligning with the principle of patient autonomy, i.e., when the patients have the right to refuse, 2) not following a physician order, 3) potential doing harm to the patient by keeping the catheter in longer than medically necessary and 4) keeping the catheter in makes the nurses’ job easier, i.e., “I don’t have to get the patient up”. Also, patients who requested catheter removal present another dilemma of workload and time management secondary to “toileting” the patient and assessing their ability to independently manage their own urinary function. From the transcripts, it was evident that there are times when nurses delayed removing the catheter as a means of getting through the shift. This struggle was dependent on the shift, the complexity of the patient load, and whether or not the nurse had support from NACs. From the participants’ stories, NACs had a pivotal role in care of patients with IUCs. Foundational care aspects in patients were often time-consuming but necessary to overall safe, quality care. If the nurse was not assigned a NAC in the care of the patient with an indwelling catheter, the removal of the indwelling catheter may be delayed. The nurses’ perception of time constraints in care management with a patient with a recently removed indwelling catheter may modify safe practice in order to complete other competing priorities in the overall workload.

There was no national standard or scientific evidence delineating “adequate” staffing in caring for hospitalized patients (Butler, et al., 2011, American Nurses Association, 2015a).
Staffing models can be based on hours per patient day, workload ratios, i.e., how many patients assigned to one nurse, skill mix, i.e., how many NACs to nurses to patients, educational preparation of nurses, i.e., BSN vs. ADN, shift patterns and the use of overtime and agency staff (Butler, et al., 2011; Kalisch, Choi, & Rochman, 2011). There does not seem to be employer flexibility in the dynamic nature of caring for patients and the complexity of care based on the participants’ transcripts as well as the researcher’s experience having been employed as a nurse in a variety of hospitals over the past twenty years. In theory, each unit at this facility had a staffing matrix that guided consistency in number of hours provided by skill level based on the ratio of nurses to patients and NACs support. For example, if a unit had twenty patients and the ratio of patients to nurse for day shift was no more than five, the charge nurse would have decided, hopefully with feedback from the previous shift, how to 1) assign patients to the nurses factoring in if there was NAC support and 2) anticipated discharges and admissions for the shift. This was not easy. Patient variables like toileting, turning, bathing, teaching, etc., are not as quantifiable in terms of time management as administration would like to believe. The staffing matrix was based on grids, number of patients to staff not on the dynamic nature and complexity of patients. Thus, even if according to the staffing matrix there was “sufficient” staff to care for the patients, there was no flexibility to decrease the number of patients for the nurse who may have had a heavier than anticipated patient load. Patient care management was difficult in particular when the nurse found an inability to effectively manage care based on patient complexity, individualized care needs and tasks that needed to be completed. Charge nurses on night shift may have had a patient assignment in addition to supporting, guiding and leading the other nurses on the unit. Prioritization of care became key in these situations when nurses are
Nurses’ perception of catheters was that catheters were of lower priority in the overall management of a patient load.

Sally explained her perception of caring for patients with IUCs was based on information about the patient exchanged during the nurse to nurse hand off report.

Sally: *Um, it’s not always mentioned [referring to the gauge or kind of catheter the patient has]. Some patients – especially men – tend to be a harder, um, Foley placement. Sometimes they have a coudé catheter, and that’s not always in report that they had a coudé. So if I was looking for missing information – um, another one that isn’t – this is something that we need to be a little more diligent about. Um, it doesn’t say like how long has the catheter been in and what do we need to do to get it out. It is part of our protocol where I work that it actually is written in all the orders to evaluate daily for whether the catheter can be removed or not. Um, am I sure that that’s happening daily and being proactive? No. ’Cause, of course, caring for someone with a catheter is easier than helping someone who is unsteady on their feet or incontinent to the commode or something. So I think probably that’s an area that we could work on some. You know, making sure that that happens in order to decrease, you know, risk of infection.*

Interviewer: That’s great.
Sally: Yeah.
Interviewer: *What about – um, you mentioned before about how important catheter care was… Do you mention that in report?*
Sally: *No. It’s standard of care that it’s supposed to be done at least twice a day – (I. 154-176).*

Later in the interview, Sally recalled an incident that occurred with the NAC that spoke to priorities of care and documentation. Sally indicated in her interview that uncompleted care activities surrounding catheters were not a big deal. Also, there seemed to be minimal reflection in the stories of how these incomplete activities may or may not have impacted other personnel in their performance but ultimately, had consequences to the care of the patient.

Sally: *So, um, yeah, I think – so like that one that happened the other day. I had to remember to put the – the Foley into the chart. And the NAC was like, “Hey, it’s been two hours. Have you put it in yet? You’ve got to put it into the system so I can chart the output.”*

Interviewer: *Is there a reason why you didn’t chart it right away?*
Sally: *I just got busy (I. 434-448).*
Bill’s interview had common threads with other participants in relation to this unspoken perception about catheters and lack of connection to how their practice impacted patient outcomes.

Bill: Ah, so I think – I don’t know. I have lots of feelings about indwelling catheters. They can be great. They can be left in too long because they’re convenient. Um, I mean, there’s always pros and cons, ah, especially with increased risk of infection. Although I feel like in our elderly population, they’re always getting UTIs. And how much more of a risk is it really? (Laughter) How often did they have UTIs before they had an indwelling urinary catheter? Is it the same? Maybe. Who knows? (Laughter) (I. 56-64).

Another perception by the nurse regarding the NAC role was based on assumptions of care, i.e., the nurse assumed the NAC was completing the catheter care. This left ambiguity as to which role was responsible for completing foundational aspects of patient care. The nurse to NAC communication was inconsistent and based on assumptions by the nurse that the NAC - if assigned to a patient with an IUC - was accurately performing and documenting urinary output, perineal care, catheter care, as well as other key aspects of infection prevention. However, the majority of participants’ stories revealed a parallel role versus a collaborative role between the NAC and nurse. The on-coming NAC received report from the off-going NAC and the on-coming nurse received report from the off-going nurse without the two roles bridging discussion regarding management of care of the patients with IUCs. Also, participants discussed environmental factors contributing to the NAC/RN parallel role based on time management constraints, the fact that a NAC was assigned to multiple patients shared between multiple nurses, and assumptions of care based on the scope of practice. Karen, one participant who works evening shift, described the NAC and nurse assignments and how she collaborated with the NAC during her shift.

Interviewer: Do you, um, find that, um – how many patients to an NAC? Like how does that – like what’s the ratio?
Karen: So ours is um – well, you can have up to four patients as a nurse. Um, and depending on – so – and the NACs – we usually have two NACs on the floor, and they will have eight patients.

Interviewer: Okay.

Karen: So they will work with three different nurses – three, three, and two. So, um, up to three patients would be with an NAC.

Interviewer: I see.

Karen: Sometimes it’s two. Sometimes it’s three... if I have an NAC. Sometimes I don’t have an NAC, and then I usually have three patients.

Interviewer: Oh, there’s times when you might not even have one. How do you know that the NAC – ’cause you mention – correct me if I’m wrong – that you know if you have certain NACs that they’ll get things done. And particularly with like the cath care and documentation.

Karen: Um-hum (affirmative).

Interviewer: And you have some NACs where you might have a little trouble with whether they even did it or if they document – they forgot to document it and you have to follow up.

Karen: Um-hum (affirmative).

Interviewer: So in your mind, if you have that variety, um, how do you know that the cath care is being done?

Karen: It should – it should be documented as well.

Interviewer: And it’s being done appropriately.

Karen: Um, I mean, being done should be documented. Right?

Interviewer: Um-hum (affirmative).

Karen: Um, being done appropriately, I mean, I can’t babysit every NAC. I can’t be there for every – for every action that they do. So you’ve just gotta kind of hope that they’re doing their jobs correctly, um, and that their training is, you know, enough – I don’t know what the word is – but that they’ve received enough training to be able to do their job correctly (I. 326-364).

Karen continued to describe how the NAC role was “not terribly complicated” (I. 377) and “that there are probably times with certain NACs that they’re charting things that they’re not doing in a rush to either get through the night or cover their butts or whatever” (I. 381-383) because they had eight patients. Karen did not seem to correlate the rules of delegation of non-licensed personnel with RN oversight of that provision of care. The Washington State Nurse Practice Act states that the RN is to “analyze the complexity of the nursing task and determine the required training or additional training needed by the nursing assistant to competently accomplish the task. The RN delegator ensures the task to be delegated can be properly and safely performed by
the nursing assistant” (WAC 246-840-930). How many nurses practiced with this understanding of delegation?

Finally, Bunny shed light on potential cultural barriers that may have impacted catheter care; “Culturally sometimes it’s an issue” (Bunny, I. 761).

Interviewer: Self-explanatory?
Bunny: Yeah. I mean--it’s better – if they refuse to have me to do it, it’s better that they do something. Um, and – and maybe that’s – you know, it at least gets done.

Interviewer: You’ve had a patient like that where you’ve explained to them?
Bunny: Yeah. And they don’t - some people don’t want you to. And it’s like you have to tell them why it’s important. And then, you know, if you can get them to do it and they won’t let you do it, at least they got their catheter care done. Right?

Interviewer: Is that – in your experience, have you had that happen a lot? Or is it just –

Bunny: Not a lot. But occasionally. We – we have a fair amount of people that are, you know – um, don’t – aren’t comfortable with you doing catheter care. It’s not comfortable for them. Um, you know, they’re very modest (I. 727-755).

Bunny brought forth cultural context to patients with indwelling catheters that was often not identified in the patient’s chart or through communication during shift report. The perception of patient’s refusing care based on cultural beliefs was an aspect that brought forth from Bunny’s experience working with patients with indwelling catheters.

Convenience, incontinence, immobility, urinary retention, and skin issues are the reasons why Foley catheters are used as a tool in patients. The majority of participants indicated IUCs were used based on convenience for the nurse. Participants used Foley catheters based on patients’ incontinence, immobility, urinary retention, or actual or potential skin breakdown. There was an underlying theme that time management was at times difficult and thus, having the catheter was necessary in getting through the shift. One participant, Eibbor, recognized the IUC was something he should “take note of”. However, the catheter was also, a
necessary tool in getting through the shift from a “nursing standpoint” acknowledging “it’s not in the patient’s best interest”.

**Interviewer:** Do you normally, whenever you, um, get a patient assignment – if you are assigned a patient that has an indwelling urinary catheter, think back to the time you’re getting report and somebody is giving you a list of your patients and you’re getting report from, um, a nurse and you notice that – well, tell me actually what you – do you have – is there any discussion with that nurse about the patient if they have a catheter? And then what is – what’s your experience with that handoff report?

**Eibbor:** Honestly? Ah, basically, it’s very simple. Its, “He has a catheter.”

**Interviewer:** And when you see your list of patients during that time, again think back to an experience where one of your patients in your assignment had a catheter. Tell me – describe how you feel about – or do you even have a thought about that as you’re beginning your day with this assigned group of patients and one of them – or more of them – happen to have a catheter? Describe that thought process.

**Eibbor:** Geez, that’s a good question. Well, I - first of all, it’s not something that’s a priority in my mind. Secondly, um, depending on their mobility – I mean, if they’re not able to ambulate or they’re really slow in moving, I mean, it’s – my one thought is, well, at least I don’t have to worry about (laughter) toileting them. But generally, it is just – it’s not a priority in my mind that that’s something that I really need to – you know, other than just doing my assessment on them.

**Interviewer:** You mentioned just a second ago – um, you mentioned a couple of times that it’s not a priority. Can you talk to me a little bit about – in your mind, when you think about priorities as a nurse, and if – if the catheter isn’t a priority, talk about that that for me. What does that mean?

**Eibbor:** Well, ah, when I say it’s not a priority, it certainly is something that I take note of and something that I want to include in my assessment. But usually my priority is vital signs, ah, you know, the condition of the patient, whatever the – whatever I’m treating the patient for. Things like that. Making sure, you know, medications are on time. Blood sugars. All the usual stuff. And I – to be honest with you, I think the catheter kind of just falls under my assessment, but it’s not something that’s in the front of my mind thinking what I need to do with this patient.

**Interviewer:** And you did mention, um, that when you do have a patient that has an indwelling catheter that your thought is that at least I don’t have to get them up, um, or something to that effect.

**Eibbor:** Toilet them.

**Interviewer:** I don’t have to toilet them. Describe to me as a nurse that experience of that and how that plays a part in your day.

**Eibbor:** Ah, well, I think it’s an issue of time. You know, if you have somebody that’s very, ah, slow in their movements and minimal mobility, um, it does take a lot of time to get a patient up and get them either on the bedside commode or get ’em into the bathroom. Um, generally, you know it’s these patients that are
immobile are the ones that have to (laughter) be toileted every – you know, every half hour or so. So, you know, it – if you want to look at time management, I mean, it saves a lot of time. It’s not necessarily the best for the patient – it’s not in the patient’s best interest – but from a nursing standpoint, um, it does save some time (I. 58-102).

The interviewer continued with the discussion surrounding time management, the interviewer asked about having help with a patient who may have required time management after the Foley was removed.

**Eibbor:** Well, I think that, um – I think having a nurse’s aide available to help with the patient toileting, um, in the back of your mind it kind of gives you a thought that you’re more likely to DC that catheter a little sooner than you would if you were the one who had to toilet the patient. And so in that regard, um, I think I speak for – at least for myself – but I think I also speak for a lot of nurses in that, um, if you have a nurse’s aide to help you with toileting, you’re more likely to say, “Okay, lets get this catheter out a little bit faster (I. 116-123).

Several other participants discussed reasons for catheter placement in patients and time management in caring for those patients. The potential risk of urinary retention after catheter removal and consequential workload of multiple straight catheterizations may have influenced care practices. There were multiple participants who described experiences that used emotion versus best practice in decision-making.

**Bill:** Um, I can say that caring for patients with indwelling catheters, ah, can be nice. Ah, having a catheter versus a patient who’s incontinent, you know, upwards of ten times a day, ah is back sparing, um, skin sparing for the patient, um, and can be convenient in some ways. Um, there’s definitely a convenience factor where you’re like, oh, yeah, a patient with an indwelling Foley. Good. Um, but I have found recently now that we’re – you know, as we talk about HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Patient Satisfaction Survey) and, ah, all sorts of things, I’m noticing that I have often delegated, maybe not even vocally, to my NAC that it’s their job to do the daily cath care. Um, and I’ve found that I don’t always go back and make sure that it’s been done. And so I have been, ah, at least more recently taking it upon myself to make sure that it happens. So if it happens once or twice in a shift, the more the merrier, um, yeah (I. 21-34).

**Karen:** So we had to get a coude. And my charge couldn’t get it with the coude, so we had to call a float. And, you know, it was a whole process. And in the
meantime they’re either terribly uncomfortable or they have to pee or something. So, um, the process itself, you know, setting up the sterile field is fine. Going through the steps. Cleaning and everything. Just making sure that you don’t break sterile filed and just making sure that they’re clean. And it’s a – it’s a bit time consuming. You know (I. 463-469)?

Sally: And then, you know, conversations to doctors have to happen for those kind of things. You can also try to pull it. And then we have a window of time – I think it’s six hours. That’s usually my worry. If they haven’t voided in six hours – we will encourage them to try to void. And if they still can’t go, then we bladder scan them at that point. They can be I and O (in and out) cathed or they can have the catheter replaced, depending on your conversation with the doctor…It (the process) can be (labor intensive). That is part of the reason why people (nurses) don’t always remove them (I. 916-927).

After the IUC was removed, Claire conveyed difficulty having multiple patients with toileting needs. She described the process in terms of the challenge the nurse faced when there were multiple patients who were unsteady ambulating in need of toileting.

Interviewer: You said, “When I have a patient that has a Foley, it’s a somewhat of a relief.” You used the word relief. Can you describe in your experience what that means to you?

Claire: Um, on – at least on the third and fourth floor, the standard is that people will usually no longer have a Foley catheter on postop day one. And so there’s certain days when I have three to five postop day one patients – they all happen to be postop day one and postop day two – and it’s just brutal. There’s not enough time. Everybody – it’s a whack-a-mole with toileting people. It takes them sometimes thirty minutes to get to the bathroom and back with all the other things that you have to do. And It’s just – it’s only an eight-hour shift, and that’s all I’m doing all shift. And the aides are swamped ‘cause that’s all they’re doing all shift, too. And, um, sometimes getting all of my day-of-surgery patients is a lot easier in that sense.

Interviewer: Because you don’t have to get them up as often. And that is a time element, I’m assuming, for you –

Claire: Yeah (I. 288-305).

Sally discussed how a portion of patients would rather have had the catheter left in place due to pain, fatigue or fear of not being able to ambulate to the bathroom in time.

Interviewer: Have you had an experience with patients having any issues or discussions with you about the catheters at all?

Sally: Oh, gosh. You know, the biggest one is that they don’t want ‘em out.

Interviewer: Oh.
Sally: More often than not, we’re going in to remove them and they don’t want them out. And the surgical patients that have the same issues – you know, if they have a lot of pain with movement, they don’t want to have that catheter out because they’re going to have to get up more often. Right?
Interviewer: Oh.
Sally: So it can be uncomfortable. Or the little old lady who pees every thirty minutes – thirty minutes to an hour who is just so tired because they pee every thirty minutes to an hour. And she’d be like, “Oh, I got the best night sleep because I had the catheter” (I. 1344-1358).

Ted provided insight into the potential reasons why patients may have had medically unnecessary catheters.

Ted: Well, staffing issues when you’ve got a patient that is consistently incontinent in the bed, it – it eats up a lot of, ah, staff’s time. Foley catheters can resolve that in minimizing the, ah, staff’s time. Foley catheters can resolve that in minimizing the, ah, amount of time that a person spends in the room. Unless there’s – I mean, I think if nurses are taught different strategies around incontinence care, then – you know, toileting the patient as often as possible – then you don’t have to go in there to clean up the bed as often. You know, you can never really – you can never really stay ahead of that sometimes with patients. They’re gonna – they’re gonna be incontinent in the bed. It’s part of the job. It’s part of what happens to patients especially sick patients. And, ah, a Foley catheter can be something that a nurse would say, “Hey, I’m putting this in there for the patient to keep them clean.” So you can always try to justify the insertion of a Foley catheter when they’re having incontinence, um, but unless certain criteria are met, then putting it in there for convenience of, ah, not having the staff go in there and change the bedsheets so often, um, is not – not sustainable (I. 108-124).

The majority of participants discussed the organizational push in “getting the Foley catheter out as quickly as possible” as the priority (Ted, I. 44-45). However, time management allotment for toileting patients and inserting multiple straight catheters in patients who developed urinary retention altered how the participants perceived the necessity for prioritizing the indwelling catheter removal.

Catheters are an invisible threat: “Just a Catheter/One of the Lines”. Many of the participants described getting through the shift with specific tasks that needed to be accomplished and the indwelling catheter was one of those tasks on their list to complete. The
catheter was not given much thought in relation to the patient’s care plan or the potential impact of catheter care on the patient’s well-being. In getting through the shift, care of the catheter or early removal of the catheter tended to be aspects of infection prevention that if missed or delayed did not warrant accountability as if the nurse did not view these actions as harmful to the patient. Catheters seemed to be an invisible threat to the patient. As examples, Nell, Karen, and Ted, discussed how patients with IUCs should be included during hand-off report but often were overlooked because the catheter was seen more as a “relief” than a liability to quality of care.

**Nell:** Yeah, so its – um, it should always be mentioned. I think, in report. And that’s one of the lines that we would just briefly check when we are doing shift report. Just the Foley – it’s draining. But I also, want to know why it was placed. And sometimes you don’t get that in report, but you know when to look further. But usually I feel like it is included in the report (I. 121-126).

**Karen:** I mean, it’s just a thing, you know, um, unless there’s a chance that we’re going to have to take it out or something. It’s just a thing. It’s almost a nice thing because we’re not going to have to get ‘em up to go pee every ten seconds. You know? Or they’re not going to be incontinent and destroying their skin all day long...Sometimes it’s a nice thing. Like nicer for us. Nicer for the patient (I. 719-726).

**Ted:** The – during handoff, the only discussion is whether or not the Foley catheter is actually there. Um, unless there is something , um, that needs to be addressed, ah, with respect to urine output, whether it’s, ah, insufficient or whether we’re monitoring that for any particular reason, then, ah, we don’t talk about, you know, how long it’s been in and – or, you know, what it’s going to take in order to get it out. So it’s really up to the nurse, ah, on the shift to be able to – to initiate the – to take the initiative to work towards, ah, getting that Foley catheter out (I. 62-70).

The invisibility of the catheter was more about the unseen consequence of catheter use and the inconsistent care provided during catheter maintenance. Due to the lack of nurse accountability to the potential causality of infection with catheter use, the catheter was “one of the lines that we would just briefly check” (Nell, I. 121-126).
Concerns about providing nursing care to the “private parts”. Another subtheme within the transcripts was centered on the nurses’ perception of being uncomfortable with care of the patient’s perineal area. How the nurse perceived the patient’s response to perineal care or catheter insertion was based on either the nurse’s prior patient experience or speculation about the patient response to the procedure, which ultimately had impact on the nurse’s action or inaction. The perception that either the nurse was uncomfortable with or the patient was “embarrassed” by catheter care or catheter insertion may have influenced whether the nurse prioritized the completion of the catheter care or timely removal of the catheter. There were multiple participants who described experiences based on emotion rather than best practice in decision-making.

Samantha retold an experience managing urinary retention in an older patient that was confused.

Samantha: Um, one of the most memorable would’ve been more of a traumatic catheterization.
Interviewer: Okay.
Samantha: Um, she was an older, confused lady that – I think she had dementia.
Interviewer: Um-hum (affirmative).
Samantha: And there was really no telling her what you were trying to do.
Interviewer: Um-hum (affirmative).
Samantha: And unfortunately, she had retained and retained and retained, and I think they’d straight cathed her X amount of times to the point where it was, okay, we have to do a Foley now. Um, and she had quite the blood curdling scream when you were sticking her genitalia. And she did not understand. And so the amount of – it was very much, “What? Why? What are you doing? Why are you doing this?” And it almost felt like you were like raping her –
Interviewer: Oh.
Samantha: --for lack of a better term. Yeah, she was confused and she didn’t get it. And so to her, it was the same thing as – it felt very much the same as if I were to be the – the person who would assault another person.
Interviewer: Oh, wow. That – that sounds awful.
Samantha: And there was probably three to four of us in there saying, “We’re trying to help you.” We’re holding her hand. “Take deep breaths.” Like using like, “Think of a beach.” You know –
Interviewer: Right.
Samantha: —we’re trying so many different things. You know, like gently touching, distracting. You name it I feel like. Good positioning —
Interviewer: Right.
Samantha: —so it wouldn’t hurt as much. Tried some pain meds beforehand.
Interviewer: Right.
Samantha: Trying all of our nursing abilities. However, it still wasn’t taking away from the fact that her genitalia is now being touched and she’s an older woman, and that’s not okay.
Interviewer: I see what you’re saying. So, um when you were placing it, based on your story you were telling me, it was not just you that was inserting. You had other people helping you – because she was confused. Um, can you tell me how – how – when you were inserting as she’s being confused, kind of take your mind back to actually trying to insert it. When you’re inserting um, how was – describe that experience for you if you were the one inserting it.
Samantha: It makes you want to drop the catheter, run away, and say, ‘I would never do that” (I. 193-249).

Samantha continued the discussion by describing what she termed “violating” the patient by multiple straight catheterizations and how she felt having an indwelling catheter would be better for the patient versus being incontinent.

Interviewer: Um, tell me a little bit about then, um, after you put the catheter in, what are some thoughts and things you might do, um, with that after you’re done?
Samantha: My initial thought is, oh, my, God. Thank God that’s done. Hopefully, I never have to do that again. You know, initially, it’s like I hope no one else violates her. I don’t want to violate her. Let’s leave this be.
Interviewer: Okay.
Samantha: And I know that there’s all these things like infection control and infection prevention, and I get it.
Interviewer: Um-hum (affirmative).
Samantha: However, you also have this patient population that is already on the decline. They’re already confused. They already probably have it. Like we’re the floor of infection.
Interviewer: Um-hum (affirmative).
Samantha: That’s kind of how I look at (floor reference) is we are infection. And so to me, I almost shrug and I say, “Quality of life? I don’t know.” As far as turning this woman every few hours, you know to clean her up –
Interviewer: Right.
Samantha: — and make sure she is all changed and you’re touching her genitalia more that way –
Interviewer: I see.
Samantha: — I don’t know. What’s worse? I don’t know.
Interviewer: So correct me if I’m wrong. What you’re saying is that, um, you understand that infection prevention with catheters is an important aspect of care,
but at the same time you have a population of people that you deal with that, um, might be better off having a catheter, um, versus having to go in and clean them up. I’m assuming you mean –

Samantha: Incontinence.

Interviewer: -- they might be incontinent.


Bunny, another participant working on a post-surgical unit, described her experience with patients who have had faulty indwelling catheters and how the equipment failure had created feelings of “anxiety” in removal of the catheters.

Bunny: …I think the hardest part we’ve had to deal with – most, um, memorable thing is when we’ve had – um, when the Foley’s failed. Like we had, um, several catheters where the balloons didn’t deflate. Um, I had a nurse one time who only partially deflated the balloon and then we couldn’t get the Foley out.

Interviewer: Wow.

Bunny: That was bad, Um, those – those – when the – we’ve had trouble with the equipment. That’s the things that, um, stand out to me. You know? Because then it’s – then it can become, you know, this really traumatic event for the patient.

Interviewer: And can you – so talk a little bit about that trouble-shooting. Give me a little bit more detail about that experience. Like with that patient.

Bunny: Okay. So, um, we had some Foley catheters that were, um, getting airlocks. And so we would have trouble deflating the balloons. And sometimes, um it would just over – over time, it would deflate on its’ own or, um we would have to try, you know, taking a little air out at a time and eventually getting the catheter out. Um, but when we switched over to the new Foley catheters, we had less problems. Um, that became – you know, you kinda become a little anxious about getting the catheter out when the time came because – you know, because of all the experiences you’d had before that. So I don’t know if this is a manufacturer or that batch of catheters, but, um, that – that was not fun (I. 10-33).

Bill felt like patients “lose a lot of dignity once [patients] start becoming incontinent” (I. 238).

Interviewer: And so with that in mind, um, with what you just said about the patient feeling, um, potentially more, you know, undignified with being incontinent, do you feel like the indwelling urinary catheter has any part in that process?

Bill: Oh, definitely. You know, I would never place a catheter for dignity reasons. Um, but when there’s a catheter, um, they’re not incontinent, um, and there’s not an emotional piece of, you know, urinating in the bed when they don’t have the ability to get up and urinate in a commode or urinal. Although I – I found most of my older gentleman don’t have the capacity to really use urinals anymore (I. 242-252).
Summary of Pattern One

The first pattern that emerged from the interpretive analysis was *Shortcutting the Care Based on Competing Priorities to Get Through the Shift*. The participants in the study shared stories and thoughts on how shortcuts in care were necessary and that prioritization in patient care was not based on the patient with the IUC. More importantly, the patients who had catheters offered a “relief” to nurses due to other competing aspects of care. This pattern predominately consisted of the struggle to meet the demands of practice and included insight into how the nurses’ perception of catheters impacted how the nurses prioritized and made decisions. Although nurses generally understood patients with indwelling catheters carried an inherent risk for infection, they perceived the aspects of the catheter care or insertion of the catheter as invasive, uncomfortable to the patient and time-consuming for the nurse providing these care activities. Work complexity altered best practices in caring for patients with IUCs during hospitalization.

**Pattern Two: Working Around Established Values, Rules and Norms by Modifying Practice within an Oppressive Culture.** As was evident in Pattern One, the experience of nurses caring for patients with IUCs was linked to shortcuts in practice in order to prioritize and complete other competing care activities in the shift. The participants clearly identified what they perceived as more important aspects of caring for patients (i.e., medication administration, vital signs, patient condition, etc.). In these nurses’ experiences, catheters were not that important as compared to the other activities that need to be completed. The second pattern (Figure 3) that emerged from the interpretive analysis was *Working Around Established Values, Rules and Norms by Modifying Practice within an Oppressive Culture.*
Figure 3. Pattern Two: Working Around Established Values, Rules and Norms by Modifying Practice within an Oppressive Culture.

Workarounds have been part of the nursing landscape for generations. If nurses are asked how they get their job done, they inevitably described a workaround in some aspect of their practice. This was a known truth in nursing (Berlinger, 2017). According to Debono, et al. (2013), the definition of workarounds is “observed or described behaviors that may differ from organizationally prescribed or intended procedures. They circumvent or temporarily ‘fix’ an evident or perceived workflow hindrance in order to meet a goal or to achieve it more readily” (p. 2). Workarounds have been necessary based on the external constraints within the healthcare environment. However, workarounds unlock potential compromise to patient safety and quality of care (Debono, et al., 2013). This research confirmed hidden workarounds of nurses when caring for patients with IUCs.

Participants’ experiences in caring for patients with IUCs told a story that pointed to an oppressive environment whereby workarounds were necessary in lieu of the rules, norms, and values of the organization. One could argue that workarounds by their nature modify nurses’
core values but were necessary in an environment that seemingly did not support, empower, or value the actions necessary to provide safe, patient-centered, quality care.

Maggie, a participant who worked on a renal floor, speaks to how Foley catheters were often “pushed to the wayside” (I. 123) and “forgotten about” (I. 27). Maggie provided an understanding as to why catheters were overlooked because catheters were “something that didn’t have a due time the way medication does and so it can be delayed or forgotten about” (I. 23-26). Maggie spoke to a lack of resources that challenged caring for patients with urinary catheters on her unit.

**Maggie:** …the only thing I think is interesting being on the renal floor is that when we do our PVR (post volume residual) scans – we’re using a bladder scanner. There are two on my unit. And we are the renal unit, but I don’t really trust our bladder scanners.

**Interviewer:** Tell me about that.

**Maggie:** I’m not sure which – how frequently they’re monitored or like calibrated to make sure that they’re measuring accurately. So like when I go scan somebody’s bladder and it tells me it’s 300. I kind of will scan a few times and move the scanner around trying to ensure that they’re getting an accurate number. But it’s kind of a moving target. We also were at one point…other units were coming to us to borrow our scanner and have had like breaks in our scanners because it’s been used on other floors and then comes back to us. And so right now we have a loaner bladder scanner that we’re kind of adopting, but it’s a very expensive piece of equipment, as far as I’m told. So it’s kind of an interesting situation to utilize this piece to gauge how much is in someone’s bladder, but then also to not really trust it’s reading.

**Interviewer:** In your experience, when you have done the post-void residual with the bladder scanner and you get a number and then you actually do an in-and-out catheter – do you find that it’s not matching up?

**Maggie:** There have been – we’ll I and O the patient and have gotten greater volume than it said. But there have been times when I used both bladder scanners just to see kind of where we are at. If I don’t trust like how do I trust one versus the other? ... And we’ve had people in the last couple of weeks, like the bladder scanner would say there was like 500 and the other would say there was less than 100 (I. 201-257).

Maggie’s experience pointed to equipment failure that impacted her workflow and care of the patient with an IUC. She discussed lending her unit’s bladder scanner to other units that in turn
had caused damage to the equipment. The workaround to determine the accuracy of the bladder scanner was by validating the urinary volume from two bladder scanners on a patient with urinary retention issues.

**Challenge in keeping up with Evidence Based Practice.** The gap from translating research into clinical practice has been well known in healthcare. Many of the participants could not articulate some of the specific elements or accurate elements of the CAUTI infection prevention bundle but did recognize catheters may cause infection. As an example, Belle’s response to the researcher’s question about the appropriate time frame, i.e., 24 to 48 hours, for patients to have had their short-term urinary catheters targeted for removal spoke to the culture within this facility and perhaps may be true for other healthcare organizations that have been trying to level the evidence-based gap in practice.

**Interviewer:** Why do you, in your opinion, think that they (indwelling catheters) have that timeframe?

**Belle:** Well, they’re saying because of the – the frequency of UTIs… I mean, it would be nice to have a little bit more information.

**Interviewer:** Sure. So how does that make you feel when there is a constant sort of change with how to care for these patients with indwelling urinary catheters?

**Belle:** Ah, very annoyed just because I do a lot of teaching of new nurses, and I’m like – I can’t remember what the current protocol is so I have to keep looking it up…’Cause its changing.

**Interviewer:** Alright. Does – when you have to do that – when you have to constantly go and look things up, tell me – tell me in your experience how that is. Why is that, um – why – why is that a problem for you? Or is it a problem?

**Belle:** It’s just time consuming… Well, you know, first to figure out when it changed and what they might’ve renamed it. Is it Foley again, or is it urinary catheter again? You know, where to find it on the standards.

**Interviewer:** I see.

**Belle:** And then actually trying to read it when you’re still trying to manage your load and teach somebody new.

**Interviewer:** I see.

**Belle:** It’s just – and they’re crackin’ down on overtime.

**Interviewer:** Um, do you think that has to do with how you navigate, um, you know, when you’re working with those patients? Like the time element?
**Belle:** Not as much. As I say, 'cause you don’t need to have to get them up and toilet them. You know, if you’re like getting ‘em up three or four times to the commode versus one time of doing cath care (I. 649-692).

Belle also, had the perception that patients receiving antibiotics were not susceptible to infection risk if the sterility was broken during catheter insertion.

**Belle:** …Sometimes – and I know this is probably bad – you know, you get these like morbidly obese people, and you just miss the first time. And rather than finding four other people again to help you, you do just kinda do what you gotta do...You know, it’s like, well, they’re already on antibiotics for something else. You know, it’s going to probably cover if you do something bad (I. 759-769).

Belle seemed comforted knowing the patient was receiving antibiotic therapy without regard to the potential infection risk she had caused due to unsafe practice and the false assumption that the current antibiotic treatment would have been sensitive to “any” potential microorganism specific to a catheter infection. Belle continued with discussing her perspective on evidence-based information in her work environment characterizing her unsafe practice as “bad” but also asserting, “you do just kinda do what you gotta do”.

When hospitals asked more of staff without adequate resources and infrastructure, i.e., dynamic changes in clinical practice based on current evidence, complexity of the patient load, mentoring new staff, working short-staffed, and documentation requirements, modifications in practice occurred. Molly spoke about issues in completing hourly rounds in particular with patients who needed toileting after removal of an indwelling catheter.

**Molly:** I mean, I think people try their best to do it. You know, it’s not always easy, but, I mean in general people do try to do it.

**Interviewer:** Well, what would make it easier?

**Molly:** I mean, I think if we had – you know, staffing levels were increased. Um, you know, for example, if I have a primary nursing assignment with three patients, it’s very hard to do it, especially when you have three patients, it’s very hard to do it, especially when you have a primary assignment. Because I’m doing vital signs. I’m passing meds. I’m trying to do assessments. And then if you need somebody who does need your assistance to go to the bathroom, you know, making sure everybody gets bathed that they want to get bathed, um, doing any
sort of other nursing care that they need. You know, dressing changes, you know, answering phone calls from families or physicians. Um, you know, any other issues that pop up.

Interviewer: It sounds like it can be a juggle.
Molly: It is. It can be.

Interviewer: And so navigating that when you’re the primary – doing primary nursing –
Molly: Um-hum (affirmative).

Interviewer: -- meaning you don’t have an NAC –
Molly: Correct.

Interviewer: -- um, why wouldn’t you have an NAC, I guess?
Molly: Just staffing constraints. You know, if a unit doesn’t have enough NACs and they have more nurses available.

Interviewer: ...How many NACs to patients are there? Like what’s the ratio with that?
Molly: I mean, I believe – it depends on the unit. NACs can have like six, seven, eight patients, depending. Um, you know, and sometimes they even have the NACs working with two or three nurses, which is really challenging for everybody, both for the NACs and the nurses because it’s really hard to coordinate things – you know, come up with a game plan when there’s that many people involved.

Whereas, if it’s just me and the NAC, I can – you know, if I know a patient is a two-person assist to do a bed bath, I can say to the NAC – if I’m working with one NAC – “Okay, we’re going to do this patient’s bath at ten o’clock.” We’ll get them turned. We’ll get them bathed. And we can kind of game plan. But if they’re working with other nurses, it’s, you know, challenging ‘cause maybe that nurse needs them to do something else at ten o’clock (I. 538-603).

Molly suggested that staffing issues have been a potential reason for why nurses have not been able to consistently implement EBP interventions. She stated, “I think people (nurses) try their best” at early catheter removal but then described how depending on the day, staffing constraints tend to set the nurse up for failure. Bill, another participant, elaborated on the challenge in keeping up with EBP by discussing the recent change of catheter care products at this facility.

Interviewer: In your experience working on the unit that you work, um, is there, ah, discussion outside I guess of handoff, um, on patients with indwelling urinary catheters? And what’s your experience with that, you know, working with your colleagues outside of that? Or do they ever?
Bill: Not really.

Interviewer: No?
Bill: I mean, I don’t think Foleys are a real hot topic. I mean, we are always talking about ways to decrease catheter-associated infections.

Interviewer: Um-hum (affirmative).
Bill: You know, we’ve just recently switched to these particular wipes. Ah, and I think – I don’t – I think our unit is trialing them. I don’t know if it’s – they’re everywhere.

Interviewer: Um-hum (affirmative).

Bill: Trying to find that – if this is a better system, ah, to prevent those infections. So we don’t talk about them in that vague sense, but I don’t know if we really – I don’t know if we – we’re not really having those conversations of is it time to pull this yet. Ah, even though most of the time it’s, you know, discontinue per nursing protocol, I don’t really think that there’s necessarily a really clear protocol in that the patient is ready for it to come out. Ah, and I – I think we generally err on the side of leaving them in longer because the last thing we want is to pull it, have continued retention issues, um, have to straight cat a couple of times before we’re allowed to replace it. ‘Cause, you know, stickin’ those tubes in there is not a pleasant experience (Laughter) (I. 257-284).

Bill did not associate the EBP of early catheter removal as a means of decreasing the catheter-associated urinary tract infections. Bill associated the new wipes as a measure to decrease infections in patients with IUCs, which are not evidence based. In fact, the new wipes were implemented as a means to incentivize the nurse to comply with daily catheter care. Bill stated, “we (nurses) generally err on the side of leaving them (catheters) in longer” because the nurse would rather wait to remove the catheter for convenience as means to avoid the time management of having a patient with a potential urinary retention issue and subsequent unpleasantness of completing multiple straight catheterizations. Also, Bill, and other participants did not seem to perceive the interventions of 1) early catheter removal and 2) use of straight catheters for acute events of urinary retention as key to avoid infection in patients. This may in part be due to an environment that encouraged workarounds and shortcuts and/or the perception of CAUTI as not being that big of a deal and not connected to consistent EBP nursing interventions like early catheter removal (Berlinger, 2016).

Issues of staffing inconsistency and administration “cracking down” on overtime. The subtheme of staffing inconsistency with NAC support was discussed throughout the transcripts in relation to completing catheter care and/or toileting patients. NACs assisted with completing
many of the foundational aspects of care, i.e., toileting and catheter care. These foundational aspects of care if left incomplete may seem less important to the nurses who managed multiple tasks throughout the day. Kalisch, et al., (2011) found inadequate NAC support was correlated with staffing perceptions of workload. In addition to issues with inadequate NAC support, the nurse may have had additional duties such as orienting new nurses. Belle, a participant who taught new nurses on her unit, discussed her struggle with keeping up with practice changes and locating current standards of practice as “time consuming” and in particular with administration “crackin’ down on overtime” (I. 672, 681). Nurses have been expected by administrators to keep up with current evidence-based practices in a dynamic work environment with efficiency. Factors such as patient loads and inconsistency in NAC support created an environment where workarounds and shortcuts in care activities have become commonplace (Berlinger, 2016). Ted discussed the climate within his unit surrounding care with a patient that had urinary functioning issues.

**Ted:** Well, there’s different staffing. There’s dayshift and there’s night shift, and the staffing levels are different. And if the person is going to be incontinent, ah, through a twenty-four-hour course of the day. And, ah, there’s more staff on dayshift than there is on nightshift. So with the dayshift nurse, um, I’ve got a lot more, um, nurse’s aides to assist in, a) toileting the patient, ah, b) incontinence care with cleaning them up, changing bedsheets, ah, making sure they’re safe, ah, whether or not they can get out of bed. I’ve got to change bedsheets with them still lying in bed. Um, and then sometimes boosting the patient back in bed. So that requires anywhere between two or four persons, ah, with our patient lifting protocols. Um, and you know, for physical safety. So it can eat up quite a bit of time and, um – and staff, ah, when you’ve got a – when you’ve got a twenty-seven-bed unit that’s got really sick patients on it. It’s hard. It’s hard to do that when you have incontinent patients (I. 132-147)...And ah, a Foley catheter can be something that a nurse would say, “Hey, I’m putting this in there for the patient to keep them clean.” So you can always try to justify the insertion of a Foley catheter when they’re having incontinence, um, unless certain criteria are met, then putting it in there for convenience of, ah, not having the staff go in there and change the bedsheets so often, um, is not – not sustainable (I. 118-124).
Ted realized the challenges of managing patients with incontinence; time constraints, staffing constraints, and patient complexity have been elements that a nurse may face when deciding to use workarounds that may have juxtaposed the rules, norms and values of the organization and nursing practice. In theory rules, norms, and values should have centered on providing best practices every day on every unit to every patient. However, participants’ experiences in caring for patients with IUCs told a story that pointed to an oppressive environment whereby workarounds are necessary in lieu of the rules, norms and values of the organization.

**Licensed Independent Provider (LIP): Partnership/Collaboration/Interaction Impacts**

*Nursing Care.* The participants’ stories included a theme of how interactions with LIPs had positive and negative impacts on their practice. LIPs were defined as physicians, physician assistants, and nurse practitioners throughout the chapter. Physicians and LIPs were used synonymously. There were several stories that touched on power differentials that challenged nurses in delivering best practices. Claire, a participant working on an orthopedic unit, discussed her experience working with a physician colleague who refused to incorporate evidence-based practice when caring for patients with IUCs.

**Interviewer:** What conversations have you had with physicians in your experience related to Foleys?

**Claire:** Um, if I see they have a catheter and I don’t see anything in the orders explaining that and I ask the off-going nurse and they don’t know why the person still has a catheter, then I would page and clarify.

**Interviewer:** Okay. And then think back to a time when you had to do that. What was that conversation like?

**Claire:** Ah, usually with the physician stating leave it in or take it out. Or – or sometimes it’s me notifying the physician, “Hey, this person has a catheter that was supposed to come out this morning, but they’ve been refusing adamantly.” So – and the response – I’ve never had anybody say anything beside, “Okay, we’ll leave it in.”

**Interviewer:** Okay. And so has there ever been a conversation with the physician where you felt like – that the patient probably should have the catheter out and the physician didn’t want the catheter out?

**Claire:** Um, yeah, with the periarticular osteotomies.
Interviewer: That particular procedure they keep Foleys in, I’m assuming longer? Is that correct?
Claire: Um-hum.
Interviewer: How much longer?
Claire: Until the – until after the epidural is discontinued.
Interviewer: And is that the standard, I mean, where you work?
Claire: Um-hum.
Interviewer: That you keep it in until they discontinue the –
Claire: It’s not in the – I don’t think it’s in the orders. But when I’ve asked the physicians about it before, they’ve been very adamant about it.
Interviewer: What makes you think that maybe it should come out, I guess?
Claire: Actually, sort of recent research that says that an epidural isn’t necessarily an indication to have the catheter.
Interviewer: Okay. Um, but that conversation with the physician has not proved successful –
Claire: Um-hum.
Interviewer: --even with that knowledge?
Claire: Um-hum (I. 390-425).

Claire not only recognized the limitations of her discipline’s value in collaborating with this particular physician about evidence-based knowledge and the medical necessity of the urinary catheter but also, succumbed to the lack of control over practice by giving up on patient advocacy in early removal of urinary catheters. Also, Claire was resigned to the fact that when a patient refused to have the catheter removed in particular if the catheter was not necessary, the physician was resigned to leave the catheter in without having a conversation with the patient. A conversation with the patient regarding reasons for early removal and potential infection risk may have facilitated patient understanding and agreement for catheter removal. This takes time for the LIP to have had a conversation with the patient and may have been one reason patient-centered care was not a priority. After the interview, Claire mentioned that this particular physician reprimanded another nurse for utilizing the Nurse-Driven Foley Catheter Removal protocol and consequently, Claire no longer engaged this physician in discussions of early removal even though the intervention was best practice. This was another example of how power differentials in practice have changed the landscape of the environment and ultimately, modified
values in practice. Maggie, a participant who worked on a different unit than Claire, validated Claire’s experience by describing what she termed, “provider disconnect” (I. 34) with getting the urinary catheters removed when medically unnecessary in particular with patients who have had epidurals. She stated, “the provider [was] hesitant to remove the catheter because there [was] an epidural infusing” (I. 38-39). Later in the interview, Maggie stated a reason for keeping a catheter in longer than medical necessity was “surgeon specific that they want[ed] the catheter in” (I. 712). Even though, Maggie realized daily assessment of medical necessity for patients with IUCs was required every shift, physician preference superseded best practices. Interestingly, physician preference was not one of the drop-down options in the electronic medical record for “medical necessity” in Foley management.

Molly, one participant with multiple years of experience, told a story about a physician colleague who triangulated management and staff over a patient concern.

Molly: Um, I just got in trouble one time on the (unit reference) that made me really upset. Because I had a patient who was there ‘cause he had a brain tumor and he had had, ah, urinary retention issues and had some clotting, so they had put in a large irrigation catheter. And it had cleared up, so the physician had put in an order to remove the catheter. And so I removed the catheter, and the patient had kind of complained that it hurt. And he had had a regular Foley catheter originally and then replaced it with the irrigation catheter once he had developed clots so they could do water irrigation. You know? And I said, you know, “I’m sorry. You know, this is a bigger diameter catheter. It’s going to feel a little different when I remove it.” And, um – and then I – at the end of my shift, I actually got a message from my manager ‘cause apparently he had been upset about how I removed it. And then the doctor, who had not been in the room when I had removed it, said that I had removed it with the balloon inflated. And that made me really upset as a nurse because I would never do that.

Interviewer: Was he in the room with you?
Molly: No.

Interviewer: So – so why would he –
Molly: I have no clue. And I told my manager that, you know, he was not in the room when I had removed the catheter. You know, I don’t know why he said I removed it with the balloon – inflated, but it kind of upset me.

Interviewer: And so how – how did that – how does that experience impact you?
Molly: Well, I mean, if I can get out of it now, I try to avoid removing Foley catheters from male patients. I’ll see if there’s like a male nurse working. “Hey, can I do something for you?” “Would you – you know, would you mind removing this?”

Interviewer: And that’s all because of that experience you had?
Molly: Yeah, Because I just – I mean I felt bad for the patient that he was upset. And it made me really upset that the doctor said that when he wasn’t in the room. You know, and he didn’t even come to me...I mean, just kind of put down. That I wasn’t given the benefit of the doubt that I know what I’m doing (I. 925-994).

As with Claire and Maggie, Molly’s story was not unique. From the stories, the interactions between LIPs and nurses affected how nurses practice.

Maria, a participant who worked on an oncology unit, described a patient experience involving a physician colleague who negated her input regarding the history of a patient, which in her perception contributed to a more painful death.

Maria: I had one patient who was end of life a long time ago who had vulvar cancer. Um, and we took out her catheter, and then nobody could get it back in. And I think – I regret that I gave in. I think I should have been a better advocate ‘cause I know the difficulty it had been to place...and the tumors had only gotten bigger. And I think she died perhaps a more painful death than she needed to. So, you know, you learn from your experiences. I – I think she taught me to be a better patient advocate...because I remember the doctor saying, “Well let’s just take it out.” And I’m like, “It was really hard to put in. I don’t know if we can get it back in again.” And he goes, “Oh, it’ll be okay.” And it wasn’t okay (I. 540-558).

Karen, a participant who worked on a renal unit, recalled an experience caring for a patient with an IUC that positioned her at odds ethically with a hospitalist. Ultimately, the patient resigned to “let’s just do what he [the doctor] wants because he knows best” (I. 164-165).

Karen: Um, so he thought that if we reduce the number of narcotics that she was on and she walked around some more, she wouldn’t retain. And I didn’t feel that to be the case. She, um, was certainly opioid tolerant, but this was a longstanding kidney issue. She – well, it wasn’t longstanding. I would say it was a couple of months old, and it was finally coming to a head while she was hospitalized. Um, and she would – she would eventually void, but she wouldn’t completely empty her bladder. And she – she would get up and walk occasionally, but she was becoming edematous. And we put her on Lasix, but she wasn’t voiding anything. And I – I just didn’t feel like – after we had straight cathed her twice and she was
still retaining, um, you place the Foley and kind of just let it do its job for a little bit. Like I understand wanting to remove it quickly, and I applaud him for keeping that in mind. And maybe he knew something I didn’t, but I just – I felt like, ah – I just felt like it was pulled too quickly.

**Interviewer:** And so tell me a little bit about when you think about the potential that he was pulling it too quickly, in your mind what did you envision would happen after you pulled it when the patient had only had it in for twelve hours?

**Karen:** Um, I felt like she would continue to retain again. She would retain and be unable to void, or unable to void completely. And I feel like we weren’t dealing with whatever the source of the retention issue was. I don’t think we fixed the problem.

**Interviewer:** I see. Well, what was his resolution?

**Karen:** He felt that backing up off the narcotics would cause her to be able to void more freely. Which wasn’t the case.

**Interviewer:** And he didn’t have a plan for if that doesn’t work, then what do we do? Like there wasn’t a conversation like, okay, if we pull the Foley, you know, in less than twelve hours and let’s say we do decrease the narcotics and we still have retention issues, what was the – did he have a plan for that?

**Karen:** Not that I was aware of.

**Interviewer:** Okay, so it wasn’t like a dialogue of –

**Karen:** No, it was – we – they had placed – I had noticed retention ‘cause I work evenings. So I’d noticed retention. She voided some. It wasn’t – you know, she voided. There was still some in her bladder, but it was kind of below the threshold of straight cathing. But, you know, heads up to night shift, “Hey, she’s retaining. We’ve straight cathed her twice. She’s still kind of wavering. Just keep an eye on it. Plus, we’re giving her, um, diuretics, so she’s going to have to pee more. She should be peeing way more than she is.” They placed the Foley overnight. I came on the next day around three in the afternoon, and the day hospitalist had just input an order to remove the Foley. And – and limit, you know narcotics and benzos and things like that. And I just had a brief conversation with her ‘cause I was just coming on shift. And I was like, “Hey I’m just coming on shift. Are you sure you want to pull this. I mean, she’s only had it for a little bit. I don’t know that, you know, limiting narcotics is not going to cause her to – to void any better.” You know?

**Interviewer:** Right.

**Karen:** “other than that, she’s alert and oriented enough, independent.” Like she’s thirty-seven or whatever she was. And he was like, “Yeah, I know. I think that pulling back on this is going to help her pee a little bit better.” And I think he said a couple of other things to me. I don’t remember exactly what it was. But I wasn’t convinced and I was a little frustrated. And so I kinda just – you know, we had just given her Lasix and I kinda just pushed it out until later. I was like, well, let’s at least just let these diuretics take place before I pull this. You know?

**Interviewer:** You ended up – you did end up pulling it?

**Karen:** Yeah, I pulled it because that’s what he wanted – and that’s what the order was. I just didn’t make it a top priority (I. 49-125).
In the end, Karen created a workaround by modifying her practice with delaying removal of indwelling catheter.

**Professional apathy: The consequence of the culture.** An additional theme of *Working Around Established Values, Rules, and Norms by Modifying Behavior Within an Oppressive Culture* was professional apathy. The definition of apathy is “absence or suppression of passion, emotion, or excitement; lack of interest in or concern for things that others find moving or exciting” (Dictionary.com, December 13, 2017). No one can argue that best practices are things that should *move* the caregiver to incorporate in the care giving and, have *concern* when best practices are not applied. However, nurses are not rewarded for applying EBP (Brown, Wickline, Ecoff, Glaser, 2008; Retsas, 2000). Professional apathy contradicted the core values of nurses as well as the values within the organization. A majority of participants described experiences of caring for patients with IUCs that left them feeling powerless. Powerlessness described feelings in a work environment that has a low level of nursing engagement in practice control; change in practice was perceived as happening to nurses versus with nurses. Professional apathy may also be related to lateral violence between and within health care disciplines, lack of control over practice, and workload that ultimately, may lead to burnout, turnover, disengagement, and adverse patient outcomes (Ward-Smith, 2015; Rosenstein & O’Daniel, 2005; Rosenstein, 2002; Needleman et al., 2002; Aiken et al., 2002).

All of the participants possessed knowledge of the infection risk in patients with IUCs. However, the invisibility of the infection risk caused by something the nurses did or did not perform while the patient was in his or her care was evident in the majority of interviews. Anna, one participant, when asked what is discussed in report, says, “we usually try to tell each other that the patient has a catheter, whether it’s chronic or just recently placed, and the reason why.
That’s usually all the information I usually get “(I. 38-42). The idea that Anna and her colleagues “usually” discussed information about the catheter and that the catheter was “just the extra lines to have to take care of” indicated that Foleys were not likely a priority much less a dialogue between nurses in terms of incorporating a plan of care for the patient with the IUC (I. 742).

The lack of engagement with the patient regarding the device and best practices was notable in 11 of the 14 interviews.

**Interviewer:** --is there any time that you can recall in your experience that you even have a conversation about, um, the catheter itself or anything about the catheter with the patient?

**Anna:** Um, we talk about – I’m trying to think. I – you know, if the patient is more alert, then I talk about, um, what the void looks like. Like, “Hey, your urine looks really good today.” Or, “I see some sediment in your urine.” Um, and then I talk about like why did they get a Foley. And it’s usually already known it’s retention or if they’ve just had like a procedure and they needed the Foley. Yeah. Not – not an in-depth sort of talk that we’ve had just ‘cause I’ve – I haven’t had the opportunity. A lot of times the patient has a Foley either because they just have really extensive wounds on the bottom or they’re totally out of it. You know, and we just can’t have a conversation.

**Interviewer:** I see what you’re saying.

**Anna:** Yeah.

**Interviewer:** So you haven’t had much experience with a patient who potentially, ah, could converse with you about the Foley catheter.

**Anna:** Um-hum (affirmative).

**Interviewer:** Okay. Um, any family member interactions?

**Anna:** Yeah, usually family has – are there. But, um, from what I’ve seen, family just doesn’t really talk much about the Foley (I. 511-536).

Anna did not discuss her role in sharing information and educating the patient and family about the plan of care in relation to the indwelling catheter or why infection prevention interventions were necessary or how patient involvement in infection prevention would be important. Belle recalled an experience where she witnessed another colleague use improper technique during catheter insertion.

**Interviewer:** Can you take – go – take yourself back to that time when you were witnessing not good technique with insertion?

**Belle:** Um-hum (affirmative).
Interviewer: Describe that for me.
Belle: Um, there have been a few. When I first started out in nursing where these—oh, what should I say—more senior nurses would be like, oh, you know, they got it in the wrong spot, but—and just kind of moved it and inserted it. And if I said anything, they’d be like, “Oh, it’s not that big a deal. It’s okay. Sometimes—I know this is probably bad—you get these like morbidly obese people, and you just miss the first time. And rather than finding four other people again to help you, you do just kinda do what you gotta do” (I. 750-762).

Belle’s low level of engagement and professional attitude of “you do what you gotta do” indicated an apathetic approach to potential infection risk based on her needs versus what was best for the patient. Karen spoke to how physician colleagues have been less engaged in the infection prevention aspects of care.

Karen: So bladder scanning. Um, and, ah, you know, kind of guiding them [physicians], along the like, “Do you want this? Do you want this?” Um, and then, you know, sometimes having a conversation of, “At what point do you want to have a Foley?” Like, how many times do you want us to straight cath this patient? There’s no—like there’s a very clear get the catheter out protocol, right? But there’s not a very clear get the catheter in protocol....Um, and I almost feel like there should be. Um, and I feel like doctors are way more willing to—and I think it really depends on the doctors. Some of them are willing to have a straight cath once and then do a Foley. You know?...I think the doctors are essentially like, Whatever you want.”...Because it’s not high up on their list of, you know, concerns (I. 689-711).

Physicians’ attitude towards applying EBP may have influenced nurses’ attitude. Moreover, if nurses perceived some physicians as difficult to have collaborated with, why would nurses have advocated for catheter removal when the devices 1) were convenient to get through the shift and 2) seemingly insignificant to patient outcomes? These workarounds that modified practice were more nurse-centric versus patient-centered.

Summary of Pattern Two

The second pattern that emerged from the interpretive analysis was **Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture**. The participants in this study described workarounds and shortcuts that modified established values.
in practice based on their environment. This pattern had four themes: challenge in keeping up with EBP, issues of staffing inconsistency and administration “cracking down” on overtime, LIP interaction, communication and collaboration influencing nursing practice due to the perceived provider power over their practice, and professional apathy verbalized in nurses’ stories when discussing a workaround that was substandard in practice.

The second pattern highlighted how nurses modified their behaviors based on influences outside of the discipline. The question was: why would a nurse modify professional practice if knowingly the modification was against established values, rules and norms? This question was complicated to answer when the work environment altered best practice and seemingly benefited nurses who modified their practice in order to get through their shift.

Exemplars

The interpretive team noted three participants, Sally, Bunny, and Ted who were exemplars and stood apart from the other 11 participants. Sally, Bunny, and Ted described experiences that were 1) patient-centered, 2) aligned with core nursing values, and 3) quality driven. Despite challenges within their environment, the exemplars maintained authenticity to “being” a nurse.

Sally described her role as a leader on the unit and the expectations of other colleagues based on holding them accountable to best practices.

**Interviewer:** Well, have you ever in your experience – um, when you came on shift, have you ever looked back at – at the previous shift to see if it [catheter care] was done? Is that routine?
**Sally:** That’s a great question. I would say no.
**Interviewer:** Okay.
**Sally:** I don’t look back. It is part of what we teach every person who comes and starts on our unit that they – we’re required – it’s actually a big push. We have a lot of committees, um, trying to make sure initiatives are being pushed through that are around things like CAUTIs, or catheter-associated UTIs –
**Interviewer:** Um-hum (affirmative).
**Sally:** --to help keep – you know, prevent that.
**Interviewer:** Um-hum (affirmative)
Sally: And everyone who comes to our unit is educated that catheter care is supposed to be done every shift. Um, so that is not an exception. That’s an expectation.

Interviewer: Okay.

Sally: You know, so my expectation is that I’m going to follow with my – my shift in making sure that my work and the work that needs to be done for the patient is done. Um, the only time I would say that maybe I wouldn’t really check that is when I had done my morning care with my NAC. If I noticed that it appeared that the catheter, for whatever reason, looked – at the insertion site had mucus or, you know – sometimes there’s – like if it had discharge or if there was anything that was crusty, like I would definitely then go backtrack and, you know, want to have a conversation with that staff member.

Interviewer: Sure. Okay.

Sally: And I feel very comfortable – I’m a leader on my unit, so I feel very comfortable going to somebody and saying, “Hey, this is what I saw.”

Interviewer: Sure.

Sally: “I just, you know, want to remind you that, you know, this – you know, that puts them [patients] at risk for infection. And make sure you’re doing your catheter care and charting it ‘cause I noticed it wasn’t charted (I. 544-581).

Sally continued with discussing how EBP was non-negotiable on her unit. She instilled accountability in new nurses she mentored with a sense of owning your practice by not relying on others to steer you in the wrong direction; to her view, change to how nurses’ care for patients was evolving based on current evidence.

Sally: I walk through the whole frickin’ you can’t trust my word. You have to know where it is. That’s your job. Let me show you where it’s [standards of care] at.

Interviewer: That’s awesome. That really is nice.

Sally: Yeah, Um, yeah. So all of my nurses that I have trained all know where they [the standards of practice] live. Ah, they change over the years, you know, with best-evidence practice. Um, what I learned when I first became a nurse and what is the best practice now will definitely have changed over that time.

Interviewer: Um-hum (affirmative).

Sally: And so if you’re not keeping yourself familiar with the protocols, you could ask a nurse who has been a nurse for twenty years and ask a nurse who’s been a nurse for two years how to do something, but you may get two different answers if they’re not up to date on what the – even what the hospital policy is (I. 624-637).
Bunny described how she “sits down” with a patient who was reluctant to have his or her catheter removed. She pointed to the key elements of patient-centered care; the crux to the art of nursing.

**Interviewer:** Tell me about that conversation with them [the patients] as you – you said you sit down and talk to them.

**Bunny:** Um-hum (affirmative).

**Interviewer:** What is – what is that like? And what do you say?

**Bunny:** Um, well, I – I acknowledge that they have – they’re anxious about it coming out. ‘Cause if they verbalize to me that they’re – that’s not something they want to do, um, I’ll acknowledge that they’re anxious. Um, I’ll try to ask them specifically what that thing is that they’re anxious about. Is it that they don’t think that they can get to the bathroom in time? Um, then we’ll talk about what we’re going to do to make it so that they don’t have to, um – you know, they’re less worried. Like, “Well maybe you can wear a Peri-Pad so you don’t have to worry about dribbling. We’ll put the commode next to your bed so, especially at night, it’s close-by and you don’t have to walk very far.” So you go over all those things that, um – and acknowledge their anxiety and then ask them specifically what is it that you’re uncomfortable with and help them problem-solve through what we can do to make it easier for them. ‘Cause if you just acknowledge, one, that they’re anxious and then come up with, um, ways to solve their problems or to make it less scary for them – then they’re much more willing to, um, you know, get the catheter out and, you know, acknowledge that, yeah, you don’t want them to have a bladder infection. But in the moment when you have to think about getting up and walking all that way to the bathroom and their knee hurts or their hip hurts and, um, you just – they – they don’t want to do it. And so you just have to sit with them. If you spend time with them in that moment before you take the catheter out and you follow through with the things that you said you were going to do, most people will comply. And – and we’ll be willing get the catheter out, which is the best thing for them (I. 80 110).

**Interviewer:** And they said okay. So you take the catheter out. What is the experience after you take the catheter out with those patients?

**Bunny:** I think they feel like they’re part of their care. You know, that this isn’t something that’s happening to them. That, you know – like they have a choice. I mean, you can’t make somebody get their catheter out if they don’t want to. And, um, I think being a partner with somebody is way easier than being a dictator. And how each time they practice walking a little bit farther back and forth to the bathroom, um, it gives them a sense of independence, too. Like this thing isn’t so hard after all and I’m really strong and I can do this. And I think, you know, when you leave the – sometimes when – and I’ve said this to a couple of nurses and I thought it was kind of odd – but when you keep the catheter in and you don’t – you don’t acknowledge, um, their anxiety, and you say, “Oh, I know you’re anxious and we’ll leave the catheter in,” it’s kind of like saying to them, “I don’t think you can do this, so we’re going to leave the catheter in and you’re not going
“to have to get up.” Where you can really make it something, um, that’s going to empower them and make them feel like they’re more in control and that they can do it. Um, and even if it’s just walking five feet and they didn’t walk five feet before, that’s – that’s huge (I. 114-135).

Bunny specifically gave context by telling a story about a patient in her care who was anxious about the catheter removal. The patient feared if Bunny removed the catheter before the patient’s family arrived to visit, the patient would spend the whole time trying to make it to the bathroom inconveniencing her family and potentially embarrassed by the vulnerability. She states, “So it might not seem like a big deal to you, but it’s a big deal to them” (I. 208-209). Bunny’s commitment to patient-centered care, regardless of whatever else was on her list of things to be completed in the shift, was not only mindful of the core values of practice but also provided the patient with control over the situation.

Ted provided a view into meditative thinking about caring for patients who may have been incontinent and may have required additional support through advocating with the charge nurse. He demonstrated that the responsibility of communicating with the charge nurse was the responsibility of the primary nurse caring for the patient in particular since the staffing matrix did not account for foundational, often time-consuming, aspects of nursing care.

Ted: When I have a patient that doesn’t have an indwelling catheter, but is persistently and consistently incontinent of urine or stool or both, then I think about staffing.

Interviewer: Okay, that makes sense. Because I’m assuming that – let me validate what you said. I’m assuming that when you say that - that means if I have somebody who’s incontinent, that’s going to require more time, and then having an aide would help with that time – with – with timing so that the patient isn’t, um, sitting in urine or feces, ah, gets turned appropriately, and so forth. Correct? Is that what you meant?

Ted: Mostly. Ah, the patient – it doesn’t mean that a patient with a Foley catheter doesn’t need – doesn’t need, ah, a particular elevated amount of attention. Ah, they may require turning. They may require – ah, they do require more attention to that area as far as cleaning, um, as needed and as required. But a patient that’s incontinent just requires so much more. And staffing – and having an assistant to help with that is – if you don’t have one, ah, it – it’s a safety issue for
the rest of your patients because now your time is really sucked up in that one spot. And that’s something that you’d have to bring to the attention of, ah, the charge nurse if they didn’t know already that that one patient is really requiring a lot of attention and needs to have a patient care attendant assigned to them.

**Interviewer:** In your experience as a nurse, has that been part of your, um – of the matrix of staffing is they look at a patient who is incontinent without a catheter as part of we need more staffing or not – not enough staffing?

**Ted:** It’s not part of the matrix.

**Interviewer:** Oh, it’s not. Okay.

**Ted:** It’s not part of the matrix at all (l. 231-260).

Ted continued to offer another piece of the puzzle to quality patient care despite the increasing complexity of patients, demands on nurses, and evolving changes in practice. Ted spoke about standards of care that may have been assumed as common understandings in practice.

Foundational care practices or what Ted termed, “back to the basics” were underscored in annual education and may have led to unforeseen consequences of the quality and safety in care.

**Ted:** I just know that, um, catheter care, catheter maintenance, ah, insertion practices, infection prevention strategies, ah, need to be something that’s brought up year after year in annual education and not something that’s just looked at as, okay, this is just, um, standard nursing practice. Everyone should know how to do this. And ‘cause I believe getting – I always believe that getting back to the basics and reviewing, um, you know, basic strategies for infection prevention, ah, and going over those things will help, ah, new nurses as well as senior nurses continue to maintain a safe environment for our patients. And I often find that in nursing that, ah – that there’s not enough education, ah, provided to the practicing nurse during the course of their, ah – during the course of their professional development (l. 274-286).

Why were these three participants stories different from the other participants? The one identified factor that sets these participants apart was their engagement. All three participants acknowledged roles in shared governance over practice and mentoring of others on their unit. Each one was a member of a system wide quality leadership committee bringing back this knowledge to their units. All possessed emotional intelligence that identified with the patient experience while hospitalized. Each of them was a leader whether formally as a charge nurse or informally seen as a leader by staff on the unit. However, other participants discussed leadership
roles on the unit through mentoring new nurses or acting as a charge nurse but did not have the same meditative thinking in their stories that translated to control over practice in spite of the barriers from their environment.

**Summary of Findings**

The two overarching patterns (Appendix E) that emerged from the interpretive analysis team were: *Shortcutting the Care Based on Competing Priorities to Get Through the Shift* and *Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture*. The two patterns described what was involved in “being” a nurse at this hospital having cared for patients with IUCs. The patterns emerged as common meaning in caring for patients with urinary catheters despite the differences in unit location in which the care occurred. Within the patterns emerged themes and subthemes that were derived from the interpretations of the transcripts.

Common themes that were part of the pattern *Shortcutting the Care Based on Competing Priorities to Get Through the Shift* included the struggle to meet the demands of practice and the nurses’ perception of catheters. The subthemes within the struggle to meet the demands of practice were 1) partnering/not partnering with the patient and 2) inconsistent staff communication in catheter maintenance. The subthemes within nurses’ perception of catheters were 1) convenience, incontinence, immobility, urinary retention, and skin issues are reasons why catheters are used as a tool in patients, 2) catheter as an invisible threat to patients: “Just a catheter”/”one of the lines” and 3) concerns about providing care to the “private parts”. The participants in this study depicted stories with common understandings of the challenge nurses face in keeping up with the daily demands of practice where patients with catheters, the invisible threat, may be seen as a “relief”. The shortcuts in practice, i.e., catheter care completion and
oversight, early catheter removal, and patient partnership, for patients with IUCs were based on what the nurse considers lower priority. The nurses’ perception of catheter care and catheter insertion (indwelling or straight catheters) as having been uncomfortable for the patient and time-consuming for the nurse may have been a factor in the decision-making.

Common themes that were part of the pattern Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture included the following: challenge in keeping up with EBP; issues of staffing inconsistency and administration cracking down on overtime; provider interaction, communication, and collaboration influences nursing practice [power differentials]; and professional apathy (the consequence of the culture). The participants’ stories illuminated a culture at this hospital that was hierarchal – to the extent that physicians’ behaviors may have influenced safe care practices. Participants discussed workarounds in their care for patients with IUCs that were based more on convenience rather than based on safety, quality, and patient-centered. For the most part, nurses had an understanding of infection risk in the patients with IUCs. However, the lack of control over practice in an oppressive environment may have yielded professional apathy as a coping mechanism; “it is what it is”. A central question also emerged, i.e., what was it that motivated some nurses to remain engaged and committed to maintaining high standards of practice, while other nurses, perhaps unconsciously, allowed their core nursing values to be modified by apathetic responses to their workplace environment.
CHAPTER FIVE

IMPLICATIONS AND CONCLUSION

A Challenge to Reshape Caring Practices

The purpose of this study was to gain an understanding of the meaning in caring for patients with IUCs in an acute care setting. The goal of this study was to better understand this phenomenon, which in turn may provide opportunities for healthcare organizations to institute targeted strategies that may decrease barriers to nurses’ ability to prioritize interventions associated with quality initiatives, i.e., CAUTI. The meaning of the lived experience in caring for patients with short-term IUCs within an acute care setting at a large urban Northwest hospital can be described as *Shortcutting the Care Based on Competing Priorities to Get Through the Shift* and *Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture*.

These findings bring attention to nurse factors that influenced practice modifications and shortcuts in caring for patients with IUCs. Molly modified practice in caring for male patients by “try[ing] to avoid removing Foley catheters” (I. 976) by bartering activities with other staff. Bell shortcuts by not “talk[ing] about cath care i[n report]” (I. 376). Sally admitted “caring for someone with a catheter [was] easier than helping someone who [was] unsteady on their feet or incontinent to the commode” (I. 164-166). Claire recognized the “importance of not having the catheters in” but understood how “it really helps make the workload doable” which was “really [an] unfortunate truth” (I. 618-620). The 14 nurses who participated in the study genuinely wanted to provide quality, patient-centered, safe care to patients with IUCs. Listening to their stories that described experiences in which conflicts in practice changed the caring aspects in patients with urinary catheters suggested shortcuts and workarounds are commonplace in
healthcare. Ted, one of the exemplars, provided insight into conflict in caring practices that point to why best practices were not be prioritized.

**Ted:** Well, there’s different staffing. There’s dayshift and there’s nightshift, and the staffing levels are different. And the person is going to be incontinent through a twenty-four-hour course of the day. There’s more staff on dayshift than there is on nightshift. So with the dayshift, I’ve got a lot more nurse’s aides to assist in, a) toileting the patient, b) incontinence care with cleaning them up, changing the bed sheets, making sure they’re safe, whether or not they can get out bed. I’ve got to change the bed sheets with them still lying in bed. And then sometimes boosting the patient back up in bed. So that requires anywhere between two to four persons with patient lifting protocols. So it can eat up quite a bit of time and staff. When you’ve got a twenty-seven-bed unit that’s got really sick patients on it. It’s hard. It’s hard to do that when you have incontinent patients (I. 132-147).

Organizations that continue to struggle with sustainability in reduction and ultimately, eliminating CAUTIs may benefit from engaging front line staff in solutions to workarounds and shortcuts of practice. Education alone was not the answer to reshaping care practices, nor was the addition of required mandatory evidenced based policies enough. Hospitals are asking nurses to do more with less resources, infrastructure, and supportive personnel leading to lack of accountability and value in doing what is right for patients. In this study, the crux of the participant’s behavior modifications was dynamic, influenced by 1) the nurse’s need to shortcut and prioritize daily demands in getting through the shift and 2) working around the oppressive healthcare environment.

As noted in the literature review, CAUTI is a common HAI among adult patients (Magill et al., 2014). Patients that develop CAUTI may experience increased length of stay, a decrease in quality of life, and potentially the loss of life (Saint, 2000; Platt, et al., 1982; Bernard et al., 2012). With this knowledge, it would seem reasonable to conclude that healthcare organizations would benefit from engaging and partnering with the frontline staff to identify barriers and solutions to implementing infection prevention bundle elements in their practice. The results of
this study indicated many nurses may not have viewed CAUTI prevention strategies as a priority in managing a patient with an IUC and consequently, may have had shortcuts and modified practice without professional or organizational accountability. Quite simply, CAUTI was invisible to the nurse resulting in infection prevention strategies that were often ignored by the nurse.

**Discussion**

The definition of oppression is when one (professional) group, more powerful in social status than another group, dominates the subordinate group by modifying, changing, and/or immobilizing core values of professional autonomy (Muhhall, 2012; Dubrosky, 2013; LeBlanc, 1997). One could argue that workarounds, by their nature, modify nurses’ core values but seem necessary in an environment that does not support or value what it takes to provide safe, patient-centered, quality care. If workarounds have modified nurses’ core values, are workarounds ethical? Nurses were often rewarded for creating workarounds in healthcare (Berlinger, 2016). This reward on the surface may have seemed appropriate in order to get through daily activities in the most efficient way. Nurses were asked to do more with less and at the same time were asked by administration to provide best practices along with patient-centered care with little or no flexibility in workloads. Workarounds and shortcuts provided solutions to get the job done. Reward did not seem to come from being vocal about a problem or “calling attention to a flawed system” (Berlinger, 2016, p. 51). Other colleagues who have adapted their practice with shortcuts and workarounds that compromised safety and quality in care may label a nurse who voices a problem as demanding or lazy. Berlinger (2016) provided an example of shortcutting care through workarounds by describing how a newer nurse adapted skills in time management by avoiding eye contact with patients to decrease time in communication in order to get through
all of the tasks in a shift. Arguably, patient-centered care is dependent on the needs of the patient not on efficiency set by the employer. In this environment, inevitably the oppressed becomes the oppressor. Lateral violence, burnout, and increased turnover rates in nursing were associated with oppressive healthcare environments (Sanner-Stiehr & Smith, 2017; Gallo, 2012; Laschinger, Grau, Finegan, Wilk, 2010).

In understanding what is termed an oppressive environment, a feminist epistemology was used to framework the discussion. Feminism stems from critical theory, which originated from the Frankfort School post-World War II. Scholars, including, Theodor Adorno (1903-1969), Max Horkheimer (1895-1973), Herbert Marcuse (1895-1973) and Herbert Marcuse (1898-1979), Walter Benjamin (1892-1940), Friedrich Pollock (1894-1970), Leo Lowenthal (1900-1993), and Eric Fromm (1900-1980), were the first wave of anti-positivist philosophers influenced by the historical, political, and social climate during a positivist era of group domination and subsequent genocide (Risjord, 2014; Corradetti, nd). Later, Jurgen Habermas (1929-present) was the second wave of Frankfurt School of Critical Theory (Risford, 2014; Corradetti, nd). Critical Theory began as a philosophical approach to culture based on the imbalances in social, political and historical influences. Marxism was an approach utilized by the founder philosophers of the Frankfurt School to focus attention on governmental imbalances of power within the labor movement as well as imbalances related to class and religion affiliation, i.e., anti-Semitism during this historic time. Feminism emerged through critical theorists’ philosophy highlighting gender-based power differentials, i.e., male dominance over females, and how inequity was based on the historical, social, political, and cultural contexts (Risjord, 2014).

Standpoint Theory emerged four decades ago as a feminist critical theory. Feminism arose in the U.S. from the 1950’s and 1960’s civil rights movement in which gender and race generated
controversy about imbalances of power, i.e., white men held the power, through historical, political, social, cultural, and scientific contexts (Risjord, 2014). Men, predominately white males held power in government, voting rights, worker’s compensation, property ownership, socially acceptable norms between the genders, and by way in which populations were researched, i.e., most of the early healthcare research was predominately based on the results of studies of white men as participants or black men without full disclosure as with the Tuskegee Airmen experiment. Women’s roles were reshaped over the last 50 years as a consequence of this movement. Historically, nurses have been predominately female and viewed as handmaidens to physicians, the majority of whom were male. Even though nurses and physicians have different discipline foci, their roles are important and distinct in healthcare. The Standpoint Theory was used as a framework to understand influencing factors on human behavior in a social environment. For this discussion, the Standpoint Theory was applied to the hospital environment and the various influences on social behavior as applied to nurses. Nurses have a unique position and perspective in the management of care for individuals that may differ from other roles, e.g., hospital administrators and physicians (Swigonski, 1994). The historical relevance for the Standpoint Theory was seen in social scientific research that captures two societal features between groups: 1) one group dominates another group based on gender (e.g., male dominance over females), race (e.g., white dominance over African Americans), and/or socioeconomics (e.g., white collar dominance over the working class) and 2) the subordinate group has a unique perspective that is structured by the dominant group and that requires the subordinate group out of necessity, to see and understand not only their own position in that experience, but the dominant group’s position as well (Risjord, 2010). Risjord (2010; 2014) identifies four conditions between the two social roles that, when met, concede the subordinate group this
privileged standpoint existence. According to Risjord (2010), the four conditions include the following:

- One role is oppressed relative to another dominant role,
- The relationship between the roles is structured by the needs and interests of the dominant role,
- The practices of the subordinate role make the activities of the dominant role possible and these activities are largely invisible to the dominant group and lastly,
- In order to fulfill their role, those who occupy the subordinate role need to understand some domain from both the perspective of the dominant role and from their own perspective (p. 68).

Historically, nurses have been perceived culturally as non-professional, hired hands to carry out physician’s orders (B. Severtsen, personal communication, August 9, 2017). Nurses have participated in a relationship that was structured largely by the needs of their physician colleagues and organizational leaders. Nurses share common language and knowledge with physicians that have situated them to understand the physician’s role as well as their own in relation to the management of care. The medical model focuses on treating, diagnosing, and curing illness (Marvasti & Stafford, 2012). In contrast, the nursing model focuses on providing holistic care through activities that 1) prevent injury or illness, 2) promote health and 3) optimize well-being based on human responses to actual or potential health problems (American Nurses Association, 2018). The challenge for nursing as a discipline is overcoming the stereotype of “hired hands” when the healthcare environment sets up nurses to alter practice with workarounds and shortcuts. In addition, to understanding the physician’s role, nurses are aware of the necessity for cost containment, efficiency in workflow and obligation to the overarching
organizational needs. The challenge for nurses is when administrators lack a realistic understanding of nurses’ workflow when safety and quality care in a complex hospital environment requires time and resource allocation. These workarounds and shortcuts in practice have consequences not only to patients but also to the authenticity of the discipline as a whole.

**Shortcutting the Care Based on Competing Priorities to Get Through the Shift.** The first pattern identified from the findings was *Shortcutting the Care Based on Competing Priorities to Get Through the Shift*. The themes include 1) struggle to meet the demands of practice and 2) nurses’ perception of catheters. Each theme forms the essence of Pattern One in the nurses’ experiences. Participants reported “times in the past that [nurses] missed cath care” (Anna, I. 143). The communication and follow up in delegated nursing activities, e.g., catheter care, was shortcut based on participants’ experiences. Nell has “found that [she doesn’t] always go back and make sure that [cath care] has been done” (I. 33). Why were safety shortcuts occurring in care of the patients with IUCs? Nine out of 10 nurses reported time constraints based on competing demands as the reason for variability in quality nursing care (Buerhaus, et al., 2005). Aiken et al., (2001) revealed incomplete activities were frequent among nurses. Ball, Murrells, Rafferty, Morrow, & Griffiths (2013) found that nursing care is often not finished and left for oncoming nurses at the end of shifts. This means the oncoming nurse starts the shift with less time to his or her own work and has the additional demand of trying to catch up before starting, including assessing what has or has not been done for catheter care. When a nurse has to decide what can be done based in what little time and perceived support is available, with work constraints imposed by management, a shortcut is inevitable. Items of nursing activities rated lower in the scale of priorities, and especially with no attached accountability, get cut or
shortchanged. In this study, it was the early removal of the indwelling catheter and maintenance care.

**Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture.** The second pattern that emerged from the interpretive analysis was Working Around Established Values, Rules and Norms by Modifying Practice within an Oppressive Culture. The themes include 1) challenge in keeping up with EBP, 2) issues of staffing inconsistency and administration “cracking down” on overtime, 3) Licensed Independent Provider (LIP) interaction, communication, and collaboration influences nursing practice (power differential) and 4) professional apathy: the consequence of the culture. Work environments that foster shortcuts and workarounds decrease job satisfaction leading to higher turnover rates, compassion fatigue, nurse burnout and increases in adverse patient events, i.e., nosocomial infections, medication errors, falls, 30-day readmission, and mortality (Abdul Rahman, Naing, Abdul-Mumin, 2017; Sochalski, 2004; Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Fasolino & Snyder; 2012; Manojlovich & DeCicco, 2007; Lake, 2002). A work environment was defined as “the organizational characteristics of a work setting that facilitate or constrain professional nursing practice (Lake, 2002, p. 178). In this study, Maggie found equipment failure, e.g., bladder scanners, difficult to “trust it’s reading” in patients with urinary retention (I. 201-257). Belle found changes in practice “annoying” and “time-consuming” when trying “to find [current practice] standards” in particular with administration “crackin’ down on overtime” (I. 649-692). Molly acknowledged that “people try their best to do it [EBP]” (I. 538) and believes if “staffing levels were increased” CAUTI prevention interventions could be completed more consistently (I. 540). Lee and Scott (2018) compiled a literature review of hospital work environment characteristics and patient safety outcomes and found healthier work environments had lower 30-
day mortality rates, lower failure to rescue rates, fewer patient falls, fewer complaints from patients and/or their families, and fewer hypotensive events. Shifaza, Evans and Bradley (2014) investigated why EBP interventions were not being used or implemented by nurses. Reasons included lack of time, not enough staffing, non-supportive work environment, and physician refusal to participate. These same issues were voiced or inferred by the participants in the study. Claire’s experience with discussing early removal of catheters with physicians was simply to “leave it in” (I. 390-425). Claire recognized the importance of EBP, e.g., early removal of catheters, however the “conversation with physician(s) has not proved successful” (I. 390-425) leading her to avoid conversations with physicians for early catheter removal. This was an example of how one group dominates another group in spite of best practice. The dominant role physicians’ play in control over nursing practice enables workarounds. Claire implied that she would not go against a physician despite her knowledge of 1) best practice and/or 2) how it may impact the patient. Claire’s experience validated an oppressive environment that created a culture of professional apathy, i.e., “it is what it is” and physician dominance over nursing despite equal partnership in patient outcomes. The oppressive culture was subtle in that participants accepted this standpoint position without question. Claire accepted a more submissive role and complied with “leave it in” after her efforts to have a collaborative discussion about best practices failed. Nurses used workarounds to time manage their shift by delaying removing the catheter. As Bill stated, “having a catheter versus a patient who’s incontinent upwards to ten times a day is back sparing, skin sparing for the patient, and can be convenient in some ways” (I. 21-34). Bill seemed to try and find justification for behaviors that knowingly were not evidence based and patient-centered. Sally validated the time constraints for avoiding catheter removal because intermittent catheterizations, i.e., in and out catheterization due to urinary retention, can be
“labor intensive” and part of the reasons nurses don’t always remove them” (I. 916-927). These behaviors and the justification the participants provided point to unethical workarounds that are justified due to an oppressive environment.

Healthcare systems have similar visions of providing the highest quality, best value health care to patients/families. Values within healthcare systems share common language including:

- Patient and family centered care.
- Respect, caring, and compassion.
- Teamwork and collaboration.
- Continuous learning and improvement.
- Innovation and excellence in healthcare.
- Safety, quality, and accountability (Catholic Health Initiatives Franciscan Health, 2018; University of Washington Medical Center, 2018; Virginia Mason Hospital, 2018; Legacy Emanuel Medical Center, 2018; MultiCare Health System, 2018; Swedish Medical Center, 2018).

In contrast participants’ experiences in caring for patients with IUCs told a story that points to an oppressive environment where workarounds were necessary in lieu of the rules, norms, and values of the organization.

“The Being” a Nurse in the Context of CAUTI prevention. Heidegger (1966) related authenticity of being in the world (Dasein) as a human requiring the exercise of both meditative and calculative thinking. Meditative and calculative thinking were important to living authentically. The authenticity of a person’s Dasein was diluted when only calculative thinking drives being in the world. Nurses’ experiences from the transcripts in caring for patients with IUCs tended to be far more calculative in getting through the shift rather than reflective or
meditative about practicing within the core values of nursing. In other words, these nurses have modified their core values based on their environment that imposed power of one discipline over another. Coombs (2003) ethnographic study explored collaboration and decision-making between physicians and nurses in an intensive care unit. The study revealed how nurses conform, modify, and negate their practice based on power differentials between nurses and physicians in relation to the decision-making process in the management of patient care. Coombs (2003) also revealed how nurses were aware of the competing priorities within their environment and recognized how “to play the game with managers and the doctors” in order to have influence over decision making “rather than directly challenge the dominant power” (p. 132). How nurses were paid as “hired hands” with an hourly wage instead of “fee for service” as providers have been only augments this situation.

Philosophically, the hermeneutic interpretive paradigm approached the lived experience as contextual (Thomson, Dykes, and Downe, 2011). Context to “Being” was dynamic and influenced by what has been and what will be through experiences shaped by historical, political, cultural, environmental and societal circumstances. This context of being shaped by the environment has implications for why nurses’ in this study may have shortcut and modified practice in patients with IUCs.

The value of nursing in the context of caring for patients with IUCs was not based on performance metrics within healthcare organizations. Hospitals do not reward nurses who practice using evidence based care and, consequently, there is no incentive except the nurse’s own ethical incentive to deliver best practice. Moreover, hospitals are pressured by financial constraints to keep the nursing staff as “lean” as possible. In contrast to physicians who are incentivized to meet nationally set performance metrics by 1) being paid based on their
performance and 2) having their outcomes publicly accessible for consumers to view, the nurses’ value is based on their support of the physician’s role. For the patient, the “cost” of nursing care is buried in the overall hospital charges in the patient’s hospital bill whereas provider-based billing is predominately separated in what is called ‘fee-for-service’ (FFS) related to the diagnosis related groups (DRGs) (American College of Physicians, 2013). Some Physician groups, e.g., hospitalists that are salaried employees of the organization bill for services based on documentation. However, salaried physicians receive incentives based on performance and productivity (Bowers, 2010). This distinction between the two disciplines, nursing and medicine, is contextual in this research because ‘being’ valued as a nurse caring for patients with IUCs may be driven by the financial structure in which nurses’ work has been seen or not seen and consequentially how the nursing role has merit. When the costs of nursing care are hidden in the supplies of the patient’s admission, the value of the profession may have direct and indirect consequences. A direct consequence was nurses’ lack of accountability to performance based on best practice, e.g., catheter care, and subsequent indirect consequence in lack of empowerment in clinical practice and decision making, e.g., early catheter removal upon physician refusal. What motivates nurses to provide consistent quality care and be held accountable? In contrast to nurses, physicians are rewarded by hospital administration with financial incentives for outcome measures. Sochalski (2004) study revealed 40 percent of nurses (n =8670) left three or more tasks undone. In addition, the study reported a strong relationship between number of tasks left undone and quality of care ($r = 0.634$, $p < 0.001$). Hospital quality may benefit from performance incentives not only based on physician contributions to quality outcomes but through nurse performance as well.
Implications

Kramer et al. (2017) research identified eight Essential Professional Nursing Practices (EPNP) elements. The EPNP elements may assist organizations in assessing and fostering a healthy work environment. Work environments that foster nurses’ control over their practice and equal value in decision-making as their physician colleagues may promote quality and safe patient care. These eight essentials include the following: 1) collaborating with RN/MD/other disciplines, 2) making autonomous decisions, 3) controlling nursing practice, 4) engaging in practice, 5) practicing with competent RNs, 6) advocating for the patient, 7) engaging in practice based on evidence (EBP), and 8) incorporating multiple systems in planning/providing care to complex patients (p. 278). Interestingly, most of the EPNP elements of professional engagement were found in three exemplars of the study. Three participants in this study exemplified the meaning of patient-centered care in their experience as it relates to caring for patients with IUCs, although elements of shortcutting care as well as workarounds were acknowledged, recognized and understood within each participant’s story. The three exemplars shared a commonality in their stories of engagement in control over practice by participating within unit-based and/or system wide quality committees as well as participating in leadership positions - informally and formally - on their unit. These patterns offer insight into the challenges nurses’ face in keeping up with current evidence, managing complex patients within an inflexible, non-acuity-based, staffing matrix, and prioritization in practice based on competing demands within their shift. In light of the shift in organizational accountability in delivering quality care, nurse leaders may need to assess and modify how they engage nurses in care practices by providing some means of control in their work.
Clinical practice. The most profound implication of this study is the need for nurses to live more authentically through their core values. The core values in nursing practice are based on the ethical principles of autonomy, nonmaleficence, beneficence, fidelity, veracity, and justice. Philosophically, Heidegger describes living authentically in terms of exercising calculative and meditative thinking (Heidegger, 1966). The imbalance in the two thought processes determines the inauthentic nature of being. Calculative thinking is necessary as it drives intention to organizational goals of benchmarking, a healthcare management approach to providing best practices with financial efficiency. For nurses, calculative thinking enables essential tasks of practice to be completed, e.g., documentation, medication administration, vital signs, assessment, and catheter care. Meditative thinking creates mindfulness to nursing practice as it mandates congruency with core nursing values, e.g., holistic attention to interpretation of patient needs and a caring and compassionate response, and the impacts of such actions to patient outcomes. For example, if a nurse begins the shift by calculating the various care activities to be accomplished with being reflective of how each action aligns with core values, the practice shifts to not what is best for the nurse to get through the shift but what is best practice to have optimal patient outcomes. When nurses predominantly utilize calculative thinking to get through their shift, shortcuts in care and workarounds become more of the acceptable norm in practice.

How does one practice with more meditative thinking? Based on this study’s results, nurse engagement in practice was identified in the exemplars as beneficial to patients with IUCs, i.e., infection prevention practices were prioritized in spite of environmental constraints. Vollman’s (2013) framework (Figure 4) for sustaining best practices illustrates the importance of combining both skills and knowledge with supportive resources and system infrastructure along with the attitude and accountability in nurses.
Healthcare organizations should not rely solely on providing and reinforcing annual skills and knowledge of best practice initiatives and/or updates to practice changes. Skills and knowledge alone are not enough in today’s delivery of care due to the dynamic evolution of best practices, complexity in patient care, and overarching fiscal challenges in hospital systems.

Healthcare organizations that desire sustainable attitudes of inquiry and engagement must support resources and system infrastructure to facilitate bedside nurses’ control over practice. Who better than the bedside nurse to provide solutions for consistency and sustainability of best practices for patients with IUCs?

Figure 4. Sustaining Nursing Practice. Reprinted from the article, Interventional patient hygiene: Discussion of the issues and a proposed model for implementation of the nursing care basics, Vollman, K. (2013). Intensive Critical Care Nursing, 29, p. 253. Reprinted with permission from Kathleen Vollman at Advancing Nursing LLC.
Returning to the conceptual framework used for this research, Donabedian’s (1980) quality assessment model posits three targets for quality improvement (QI) processes within health systems to include structure, process, and outcomes. Donnabedian’s (1980) quality assessment model in addition to Vollman’s EBP model (2013) provides a framework for understanding the various factors necessary for nurses to value and be accountable for safe quality care. When patient safety and quality care falter adverse patient outcomes such as CAUTI may occur. However, the outcomes do not explain why the CAUTI event occurred only that there was a problem in either the structure or processes in which care is delivered. All three components, structure, process, and outcomes, within Donabedian’s model are linked rather than independent of each other. The same is true for sustaining nursing practice. Nurses understood the link to infection risk in patients with urinary catheters. Nurses have been educated on the maintenance bundle of infection prevention and aseptic technique on catheter insertion. The implications from this study suggest structures and resources within the hospital system may enable nurses to modify practice through shortcuts and workarounds. This in turn places patients with IUCs at risk for developing CAUTI.

Regulatory and oversight agencies of healthcare such as the Institute of Medicine (now known as the National Academy of Medicine), the Joint Commission, the Agency for Health Care Regulatory and Quality (AHRQ), the National Quality Forum, Centers for Medicare and Medicaid Services (CMS), Department of Health (DOH), Institute for Health Care Improvement (IHI), and Det Norske Veritas (DNV) have created an age of accountability in quality of care throughout U. S. hospitals, in particular with CMS’s financial disincentives and the possibility of losing accreditation (Vollman, 2013). Lastly, when resources and system structures support nurses’ abilities to provide best practices in the care of patients, nurse accountability in
performance of best practices may be valued. Based on participants’ stories, the results suggest the nurse’s accountability in providing best practices for patients with indwelling IUCs was inadequate, not only between peers, but within administrative performance appraisal. Inadequate staffing has been associated with falls, readmissions and mortality (Penoyer, 2010; ANA Nurse Staffing White Paper, 2015). There must be organizational structures in place that promote and support nurse engagement in best practices in order for nurses to view quality measures such as reduction in CAUTI as a priority and value the interventions associated with eliminating these events.

**Communication and collaboration.** Another important nurse factor impacting patients with IUCs was communication and collaboration in practice. In this study, communication and collaboration between the 1) RN and NAC, 2) RN and the LIP, and 3) RN and the patient were inconsistent, minimal, and seemed to occur if there was more of a problem with the urinary catheter itself rather than based on value in proactive measures of infection prevention. As an example, the majority of the participants indicated minimal communication was given and/or received during shift change between nursing staff specific to CAUTI bundle elements in patients with IUCs. Missed elements of nursing care correlates to staff perception of teamwork as well as adequate staffing (Bragadóttir, Kalisch & Tryggvadóttir, 2017). Communication and collaboration are essential elements in safety and quality initiatives not only within each discipline but also as well as between disciplines. Every role is detrimental to infection prevention including that between the RN, the patient, and family members.

The NAC plays a foundational role in preventing CAUTI. In interviews from this study, most participants indicated that they relied on NACs to provide maintenance bundle elements in CAUTI prevention. However, the nurse oversight of NAC care practices, in relation to the
patient with the IUC was assumed and not seen as a priority. The communication between the RN-to-NAC was not clearly defined across units. When change of shift report occurred, the NACs are not included in the RN-to-RN shift report. The assumption reported by the participants was the nurse might eventually have a conversation with the NAC about the overall assignment without discussing a care plan for the patient. This compromised the tasks important in caring for the patient with the IUC including, 1) if or when the catheter was removed, 2) when catheter care was completed and by whom during the shift, 3) how competence in catheter care was important, 4) toileting parameters if the catheter was removed secondary to possible urinary retention, 5) keeping the catheter secured, and 6) keeping the bag below the bladder. Part of excluding the NAC from the nurse shift report was partly due to the staffing matrix structure of assignments or potentially a secondary consequence to an oppressive work environment. The NAC was shared between two to three nurses. The ability for the NACs to be included in the nurse shift report would be impossible given the number of patients assigned per NAC (i.e., upwards to eight to ten) and timing the shift report with various nurses for each patient assignment. Why are NAC ratios not similar to RNs given the increase complexity of patients and organizational priority in quality and safety? Cost may be one factor. Hospitals are continually finding ways to be more efficient without detracting from safe, quality care. Unfortunately, these cost saving measures have equated to staffing matrixes that do not account for accuracy in acuity, the dynamic nature of complexity in care, and the flexibility in management of patients in particular when the results of this study point to shortcuts and workarounds in foundational aspects of care. CAUTI costs contribute to an estimated $390 to $450 million annually to healthcare institutions. There must be a balance between organizational cost containment and staffing requirements necessary for completing quality and safety measures. In the interest of quality and safety, organizational
leadership must seek engagement with the people who provide the bedside care in order to reshape the healthcare landscape while balancing cost. The solution lies, not only, in staffing ratios, but also with valuing those that provide the foundations of care in infection prevention. Kalisch, McLaughlin, and Dabney (2012) found nurses’ perceived inadequacy of staffing was correlated with inadequate NAC staffing. The potential consequence of parallel roles in caring for a patient with an IUC was inconsistent accountability in care practices, which ultimately, may tip CAUTI onset in hospitalized patients. The NAC role may be underutilized in CAUTI prevention and hospitals may be assuming RNs are overseeing this role with more precision and assuming collaboration has been occurring between the two roles than actually occurred; from the results this assumption in the management of care may be partly responsible for infection risk not visible or accounted for in quality measures. The idea RNs may view the oversight of NAC care practices, as not in the RN scope of their practice should give pause to organizations in how they structure staffing matrixes and structure educational initiatives in silos. This was one of the gaps not addressed in CAUTI prevention throughout the literature.

Currently, annual education efforts at this facility have not been collaborative between the RNs and NACs; RNs and NACs attend separate annual education days even though these roles are linked. The foundational elements of care have been essential to CAUTI prevention as well as a host of other HAIs. If collaborating and communicating foundational aspects of care between RNs and NACs in patients with urinary indwelling catheters has been a priority, organizations may benefit from readdressing how RNs and NACs partner when the NAC has been shared between multiple RNs. Also, if quality and safety is a priority in organizations the quantity of NACs in the staffing matrix must be reevaluated. The NAC plays an essential role to
quality and safety in patient care. Foundational aspects of care performed by the NACs are instrumental in not only CAUTI prevention but also all hospital onset acquired infections.

Secondly, collaboration and communication between the nurse and LIP are essential to quality in healthcare. The hierarchy of power at this facility and throughout many healthcare organizations has been a real threat to safety and quality in patient care. Historically, nurses’ roles have been seen primarily centered around physician support: the nurse carries out physicians’ orders and physicians ultimately have the power to dictate care practices in lieu of best practice. Coombs’ (2003) study found power differentials between physician and nurses left nurses feeling devalued in clinical decision making. In Coombs’ study, not only were nurses discredited in their value or contribution in clinical decision making but solutions to this dilemma of power difference was directed at the nurses “lack” of interpersonal skills rather than addressing the culture of working within an oppressive environment. The results of this study illustrate how physician interaction modifies nurses’ care practices and may alter care at the detriment of safety and quality in the patient with an IUC. In order for quality and safety to be the priority in care delivery, organizational leaders may need to restructure how collaboration occurs between nurses and physicians within and outside of bedside care. Currently, policy and procedures that establish best practices at this facility have been reviewed, updated, and completed predominately by Clinical Nurse Specialists (CNSs). No one would dispute the importance of collaboration between medicine and nursing in best practices. However, the structures in place for interdisciplinary collaboration with physician colleagues related to best practices have been minimal at best in particular with physician specialties, i.e., surgeons. Most physician committees at this facility have been without nurse representation and of the selected nurse members on physician committees, few, if any, committees have representation of bedside
nurses or nurses that are considered equal partners in decision-making. Reshaping care delivery should begin with infrastructure that supports interdisciplinary collaboration and communication both at the bedside and within practice committees supporting quality care. Medicine and nursing should have an equal and valued voice in quality patient care and accountability in behaviors that shift power from one discipline over another by administrative leaders. Interdisciplinary collaboration in reviewing and promoting best practices and problem-solving quality and safety gaps is necessary to reshape quality care practices and changing the landscape of an oppressive culture at this facility.

Problems arise from unclear or uncertain policies within facilities. What is the standard and regulatory accountability when a patient refuses aspects of care that may impact the patient’s outcomes, e.g., removal of the catheter? Who is held accountable and how is this information captured in the documentation? These questions would be important to answer in light of reportable performance measures that indicate organizational quality care. This ethical dilemma of patient autonomy in refusal of catheter removal was a theme among participants. Organizations need to provide guidance and clear communication regarding ethical dilemmas for caregivers, in particular, when autonomy and safety are at odds.

Engagement. The results of this study implied RN engagement with the patient related to infection prevention care aspects was minimal. Similar to this study, Kalisch, Gosselin, & Choi (2012) found patient care activities that were frequently missed during hospitalization were patient education and informing patients about their plan of care. If patients are treated more as reductionist activities that equate to checking a box, caring practice remains shortened, allowing for workarounds that modify best practices. The facility’s recent employee engagement survey, suggested the majority of nurses have been feeling what is termed nurse “burn out” along with
perceiving a lack of support and trust from senior nurse leadership (R. Rassilyer, Personal communication, December 8, 2017). Organizations that have engaged employees have higher rates of retention and better outcomes (Harter, Schmidt, & Hayes, 2002). Kutney-Lee et al. (2016) found that nurses that were engaged had better ratings of quality and safety in practice as well as job satisfaction. Nurses that are involved in clinical decision-making are more empowered (Barden, Griffin, Donahue, & Fitzpatrick, 2011).

What does this mean for this facility in terms of quality and safety for patients? In Silber et al.’s (2016) retrospective matched-cohort design study comparing 30-day hospital mortality with healthy work environments and overall cost of care found adequate staffing and healthy work environments not only had better patient outcomes as compared to hospitals with lower staffing and less than optimal work environments but also hospitals with better outcomes and healthy work environments were just as cost effective. Reshaping caring practices in hospitals as it relates to a dynamic, increasingly complex work environment along with quality and safety in patient outcomes need a balance of caregiver skills and knowledge, resources and system support in order to instill value and accountability to best practices. The way healthcare organizations deliver quality in care is no longer a mystery. Consumers of healthcare along with providers of healthcare have access to quality metrics that define which organization is best at prioritizing safe practices. Transparency in hospital quality and safety may be one way to inspire reshaping care practices. Hospitals must recognize the landscape of healthcare quality and safety accountability is in part solved by engaging their bedside staff in the process of implementing best practices as well as valuing their input in reshaping care practices that support organizational rules, norms, and core values while balancing cost, healthy work environments, and positive patient outcomes.
**Nursing Education.** Currently, the American Association of Colleges of Nursing (AACN) assumes best practices as well as safety and quality care is being operationalized within educational programs throughout the U. S. (AACN, 2008). However, there is variation as to how each college of nursing integrates and operationalizes infection prevention strategies into the care of the patient with an IUC. The graduate nurse is expected to have a foundation of infection prevention concepts in caring for patients, e.g., adhering to contact precautions in caring for patients with open wounds. However, where infection prevention education may fall short is with integrating CAUTI bundle elements of infection prevention while caring for patients with IUCs. Students may need practice in providing patient-centered care to patients with IUCs. Simulation activities that script scenarios for student application of tasks, e.g., sterility of catheter insertion, maintenance interventions of catheter care, securing the device, keeping the bag below the bladder, early removal, are important to prepare students to care for patients with IUCs. Student nurses may benefit from delegating care activities to unlicensed personnel during simulation. Lastly, it is important for colleges of nursing to incorporate patient-centered care activities that allow students to practice engaging patients in the plan of care including infection prevention activities surrounding indwelling catheters. There may be opportunities for nursing education to provide students with better understanding of their role in preventing and monitoring HAIs, e.g., CAUTI, the quality metrics used to evaluate HAIs, and how their role as a nurse graduate oversees delegation practices of the NAC in the care of the patient with an IUC. Delegation and the understanding of what that implies is a brief concept in nursing school that leaves the nurse graduate potentially feeling unprepared for the “real” world of healthcare and how the manager of care is operationalized. Quality and safety in healthcare must be better scripted upon entry in the development of the nursing student. Quality and safety starts not only
at the patient’s bedside in foundational aspects of care by way of lab skill acquisition but also with educating the patient on expected care practices in infection prevention. Ideally, colleges of nursing and medicine should integrate patient care activities that dispel power differences in practice by promoting collaboration and understanding of each other’s contribution to best quality care.

Historically, students may feel “being a nurse” is centered on the tasks to be mastered, e.g., intravenous access, catheter insertion, and nasogastric tube insertion. This calculative thinking regarding how to get the tasks done is important however, it is not expected upon graduation. Skill mastery arises more so after graduation based on necessity of the skill within the unit employed as well as the robust nature of the residency program and/or the preceptor assigned. Meditative thinking is just as important in the development of nurses’ way of being and perhaps more important in the dynamic and complexity of caring for patients in hospitals today. Meditative thinking may be more difficult after graduation if not emphasized as valuable early in the development of the nurse. Nursing programs throughout the U.S. must reshape curriculum to prepare nurse graduates for the dynamic evolution of best practices. In addition, nursing programs must prepare nurse graduates to question, advocate, and be leaders in the management of care upon graduation while maintaining authenticity in core values of practice.

**Policy.** Staffing models that account for the dynamic nature and complexity in caring for multiple patients during a shift is necessary for quality and safety prioritization in hospital settings. The American Nurse Association (ANA) executive summary (2015) on “Optimal Nurse Staffing to Improve Quality of Care and Patient Outcomes” advocates for legislation to allow nurses to determine staffing needs and control practice with instituting more flexible staffing models. Seven states, Washington being among them, passed nurse-staffing laws requiring
hospitals to have staffing committees that plan and monitor staffing ratios (ANA, 2015). Poor patient outcomes have been directly linked to inadequacy in staffing and skill level mix (Penoyer, 2010; Future of Nursing: Institute of Medicine, 2010). Several factors including patient need, nurse experience, practice environment, staffing guidelines, and a continuous evaluation process for staffing models should be considered for reshaping care practices (ANA, 2015). It is not discussed in the literature if or how staff nurses’ input contributes to state mandated staffing committees over daily flexibility in staffing levels and staffing mix within hospitals. Simply requiring hospitals to have a recognized staffing committee is not sufficient enough to ensure 1) staff nurses have a voice in decision-making and that 2) there is flexibility in staffing models. Staffing model flexibility should allow for prioritization in activities of quality and safety in a dynamic work environment where the flow of admissions, discharges, and patient complexity changes throughout the day. More efforts need to be made in establishing criteria in policy-making efforts that allow for flexibility in staffing. Also, in combination with flexible staffing models, regulatory agents of healthcare should consider incentives for hospitals that address staffing challenges through internal policies that provide guidance as to how staffing can be adjusted based on the flexibility needs of patient care in particular when discrepancies in quality of care may be impacted.

**Research.** The goal of this study was to develop an understanding of caring for patients with IUCs at this facility. The overarching discourse throughout hospitals has been finding factors that eliminate CAUTIs and build a sustainable culture of best practices. In this study, each participant acknowledged shortcuts and workarounds in caring for patients with IUCs that modified values, rules, and norms based on their work environment. Three participants described certain aspects of their experience that are worth exploring with further research. For example, further research
exploring the impact of engaging bedside care providers in best practices and how that engagement supports 1) peer to peer accountability, 2) collaborative practice 3) patient-centered care and 4) a culture of sustainability for best practices in caring for patients with IUCs.

Another future study that focuses on NAC involvement in safety and quality may provide a better understanding of their role in quality. NACs provide foundational infection prevention aspects of care to patients with indwelling IUCs. Replicating this study with NACs to better understanding their experience in caring for patients with IUCs may provide a unique perspective not yet known in the literature. Future research may illuminate a better understanding of the NAC experience and factors that may not be accounted for in caring for patients with catheters and infection prevention.

This study exposed the lack of communication between nurses at shift change regarding catheter information and care. Exploring other factors in CAUTI prevention may reshape priorities in care practices in particular surrounding how nurses communicate bundle elements during shift change. What is beneficial to communicate during shift change regarding patients with indwelling catheters that may eliminate missed care practices in hospitals? The literature has not provided clear understanding in how peer accountability to quality measures during shift change may reshape practice and more importantly, prioritize bundle elements of care in patients with indwelling catheters. Further studies exploring how to utilize dedicated unit-based nurse champions, similar to the exemplars in this study, as well as incorporating peer-to-peer accountability may better define engagement activities that impact quality outcomes.

Effective communication and collaboration are detrimental aspects of providing safe, quality care. Little if any dedicated education or practice is devoted to collaborative efforts that provide guidance in effective communication between disciplines prior to entering perspective
professional practice or upon entering the workforce. Maxson et al. (2011) found that high fidelity simulation enhanced communication and collaboration in decision-making between physicians and nurses. Multidisciplinary teamwork in hospitals is rarely practiced outside of patient care to discover inherent differences in communication style or promote partnership in decision-making. Foundational practices of essential “soft” skills may infuse a culture shift in historical power differences between nurses and physicians. In a dynamic, complex healthcare environment, further research in multi-disciplinary simulated educational opportunities within hospitals may provide solutions to narrowing the gap in adverse patient outcomes.

Limitations of the Study

There are limitations of this study. Although, the participant pool of 14 was appropriate for a phenomenological study, it is relatively small when examining the phenomenon of caring for patients with IUCs. However, saturation was achieved given that no new information emerged from latter interviews. Replicating this study at another comparable hospital system would be beneficial. Investigating this phenomenon further in another hospital may help to determine if experiences of nurses are similar and if not, what new information may benefit hospitals in reshaping application of best practices in managing these patients. Participants may have known the researcher from nursing activities within the facility. The interpretive team members were cognitive of role of the researcher and through relevance to their own experiences as nurses caring for patients with IUCs as well as what meaning transpired through the iterative interpretive process of the transcripts provided trustworthiness to the findings of the study.

Conclusion

This study provided a deeper understanding into what it means “being” a nurse caring for patients with IUCs in an acute care setting at a large urban Northwest hospital. The patterns that
emerged from the interpretations were *Shortcutting the Care Based on Competing Priorities to Get Through the Shift and Working Around Established Values, Rules, and Norms by Modifying Practice within an Oppressive Culture*. Shortcuts and workarounds in practice lead to incomplete care that can and do have negative consequences to patients with IUCs. These patterns suggest reshaping care practices is warranted in order to shift nursing culture from “the way nurses have always done it” to accepting and implementing the evolving nature of best practices.

Hospitals have ownership in the reshaping of practice by providing an environment that cultivates equal value in the caregiving of patients. The value in quality care is only as good as the resources and system infrastructure that supports the nurses’ skills and knowledge of best practices through engaging peer to peer accountability in quality care. While this study provided information for caring for patients with IUCs, it also has implications for hierarchical power differentials within hospitals. These power dynamics between nursing and medicine have been long standing throughout healthcare and may have consequences in quality of care. Therefore, it is imperative that schools of nursing and medicine begin collaboration and break down historical power dynamics between the disciplines at the point of entry into programs of study. Academia can begin this work of reshaping care practices by working together in courses that intersect patient care activities and help one another understand the uniqueness of each discipline as well as the interdependent aspects of collaborative care that promote positive patient outcomes. Until this occurs, nursing may continue to struggle in finding equal value in the hospital environments.
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APPENDIX A
CONSENT FORM

WASHINGTON STATE UNIVERSITY
College of Nursing

Research Study Consent Form

**Study Title:** Experiences of Nurses in Caring for Patients with Short Term Indwelling Urinary Catheters During Hospitalization

**Researchers:**

- **Principal Investigator:** Dr. Gail Oneal, Assistant Professor, College of Nursing, Washington State University. Phone: 509-324-7263.
- **Co-investigator:** Alecia Nye, PhD Student, College of Nursing, Washington State University. Phone: 360-286-6662.
- **Co-investigator:** Dr. Billie Severtsen, Associate Professor, College of Nursing, Washington State University. Phone: 509-324-7286.
- **Co-investigator:** Dr. Janessa Graves, Assistant Professor, College of Nursing, Washington State University. Phone: 509-324-7257.
- **Co-investigator:** George Novan, M.D., Associate Dean, Graduate Medical Education and Clinical Education, Elson S. Floyd College of Medicine, Washington State University. Phone: 509-368-6718.

You are being asked to take part in a research study carried out by Gail Oneal and Alecia Nye. This form explains the research study and your part in it if you decide to join the study. Please read the form carefully, taking as much time as you need. Ask the researcher to explain anything you don’t understand. You can decide not to join the study. If you join the study, you can change your mind later or quit at any time. There will be no penalty or loss of services or benefits if you decide to not take part in the study or quit later. This study has been approved for human subject participation by the Washington State University Institutional Review Board and the this hospital’s Institutional Review Board.

**What is this study about?**

This research study is being done to help health care providers understand what it is like for nurses to care for patients with indwelling urinary catheters. You are being asked to take part because you are a registered nurse who works with patients with indwelling urinary catheters. Taking part in the study will take about an hour of your time.

You cannot take part in this study if you not a registered nurse, work less than 24 hours per week, are not an employee of this hospital, have not worked with patients who have an indwelling urinary catheter, or are unwilling to have your interview voice recorded.

**What will I be asked to do if I am in this study?**
If you take part in the study, you will be asked to tell your story about working with who have an indwelling urinary catheter. This interview will be like a conversation with only a few questions asked by the researcher to help the researcher understand your story. At the end of the interview the researcher will ask you demographic questions. The researcher will be using a voice recorder to record the entire interview for later analysis. Prior to the interview you will be asked to choose a pseudonym or “fake” name. The researcher will use this name to refer to you in the interview and in any excerpt from the interview used in the research study.

Examples of questions the researcher might ask are as follows:
- For the purposes of this interview, what name would you like to use? This will be your name for the interview and no one will know that this name belongs to you except for yourself and the researchers.
- Tell me what it is like caring for patients who have an indwelling urinary catheter?
- Is there anything in particular you would like to share about your experience in caring for patients with an indwelling urinary catheter?

Demographic questions:
- What is your current age?
- How many years have you been a registered nurse?
- What is your highest educational nursing degree, Associate Degree in Nursing (ADN), Diploma Program, Bachelor’s Degree in Nursing (BSN), Master’s of Nursing (MN), Master’s of Science in Nursing (MSN), Doctorate Degree in Nursing (DNP), or Ph.D.?
- What ethnicity do you identify with?
- What gender do you identify with (male, female, transgender)?
- How many years have you worked at this hospital?
- How many years have you worked on this unit?

You may refuse to answer any questions and, if at any time during the interview you feel uncomfortable or would like to stop the interview, you may tell the researcher that you wish to discontinue the interview. In addition, you can withdraw from the study at any time before the interview is completed.

Are there any benefits to me if I am in this study?
The potential benefits to you for taking part in this study are:
- You may feel better by having an opportunity to share your story. You may help others in the future to understand their own experiences better. Additionally, you may help the researchers eventually discover better ways of caring for patients with indwelling urinary catheters through sharing your experiences.

Are there any risks to me if I am in this study?
The potential risks from taking part in this study are:
- It is possible that you could feel a little uncomfortable in sharing some parts of your story. If you disclose that you are having any emotional or physical problems during the course of the interview then the researcher will give you information about how to seek treatment if needed. In addition, there are some things that the researcher would be obligated by law to report if they are made known to her. For example, if you disclose that you are seriously considering harming yourself or others then the researcher must report this to Mental Health. If you disclose that you
have committed acts of abuse to your child or that you have been the victim of abuse from another household member, then the researcher must report that to Family Advocacy. While reporting incidences to these agencies, the researcher will also refer you to these agencies for treatment.

**Will my information be kept private?**
The data for this study will be kept confidential to the extent allowed by federal and state law. No published results will identify you and your name will not be associated with the findings. Under certain circumstances, information that identifies you may be released for internal and external reviews of this project. All interviews will be kept private and will not be discussed with anyone outside of the research study. Voice recordings and transcripts will be kept in locked cabinets or password protected computer files that only the research team has access to. Audiotapes will not be labeled with your name or personally identifiable information with the exception of the “fake” name that you choose. The research team includes: Gail Oneal, Alecia Nye, Billie Severtsen, Janessa Graves, George Novan, and Washington State University College of Nursing faculty and graduate students involved with qualitative research studies, and the Washington State University Institutional Review Board.

Data from this study will be kept for 3 years and then will be destroyed. Results from this study may be published or presented at professional meetings but the identities of all research participants will remain anonymous.

**Are there any costs or payments for being in this study?**
There will be no costs to you for taking part in this study. You will not receive money or any other form of compensation for taking part in this study.

**Who can I talk to if I have questions?**
If you have questions about this study or the information in this form, please contact the researcher Alecia Nye by phone: 360-286-6662 or by email: alecia.nye@wsu.edu. If you have questions about your rights as a research participant, or would like to report a concern or complaint about this study, please contact the Washington State University Institutional Review Board at (509) 335-3668, or e-mail irb@wsu.edu, or regular mail at: Albrook 205, PO Box 643005, Pullman, WA 99164-3005.

**What are my rights as a research study volunteer?**
Your participation in this research study is completely voluntary. You may choose not to be a part of this study. There will be no penalty to you if you choose not to take part. You may choose not to answer specific questions or to stop participating at any time.

**What does my signature on this consent form mean?**
Your signature on this form means that:
- You understand the information given to you in this form
- You have been able to ask the researcher questions and state any concerns
- The researcher has responded to your questions and concerns
- You believe you understand the research study and the potential benefits and risks that are involved.
Statement of Consent

_____ (initials) I understand that my interview will be audio recorded.

I give my voluntary consent to take part in this study. I will be given a copy of this consent document for my records.

__________________________________  ______________________
Signature of Participant               Date

__________________________________
Printed Name of Participant

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:
• Speaks the language used to explain this research
• Reads well enough to understand this form or, if not, this person is able to hear and understand when the form is read to him or her
• Does not have any problems that could make it hard to understand what it means to take part in this research.

__________________________________  ______________________
Signature of Person Obtaining Consent  Date

__________________________________
Printed Name of Person Obtaining Consent  Role in the Research Study
APPENDIX B

DEMOGRAPHIC INFORMATION FROM

Experience of Nurses in Caring for Patients with Short Term Indwelling Urinary Catheters During Hospitalization

Demographic Information Form

Alecia Nye, MN, RN
Doctoral Student
Washington State University, College of Nursing
(360) 286-6662

Please fill out information below:

Age: ______________  Gender: ______________

Ethnic origin/Race/Cultural Identify: ____________________

How many years have you been a nurse? _____________________

Circle your highest degree in Nursing?
Associates Degree in Nursing (ADN)
Diploma Degree
Bachelor of Science in Nursing (BSN)
Master of Science in Nursing (MSN)
Master of Nursing (MN)

How many years have you worked at this hospital? _________________

Are you certified in your specialty area in nursing (i.e., medical-surgical certification)? ______
APPENDIX C

INTERVIEW QUESTIONS

Interview Questions

Experience of Nurses Caring for Patients with Indwelling Urinary Catheters

This study will be conducted using phenomenology as informed by Heidegger. In Heideggerian phenomenology, the purpose of the interview is to find the meaning of a lived experience through the narrative description by the participant (Dinkins 2005). A list of specific predetermined questions is not considered to be the best approach to eliciting the narrative. Instead it is recommended that the researcher begins with a general opening question to facilitate the telling of the story and then follow-up with clarifying questions as needed to elicit a full description of the experience (Dinkins 2005). Therefore, the initial interview question that will be presented to the participants is:

“I am interested in the experience of nurses who have had to care for patients with indwelling urinary catheters. Could you tell me about your experience with caring for this patient population? Is there a specific experience or memory that you can think of when you know you will be caring for a patient with an indwelling urinary catheter?

Examples of additional clarifying questions that could be asked are:

“Is there something about the experience of caring for patients with urinary catheters that stands out in your mind that you would like to share?”

“You mentioned ________, could you tell me more about this particular aspect of your experience?”

“Are there any other aspects about this experience that you would like to share?”

Reference:

Research Participants Needed

Research Study:
What are the experiences of nurses who care for patients with short-term indwelling urinary catheters during hospitalization?

I need volunteers to share their experiences with me. Only YOU can tell the story.

Who? You must be an RN with experience working with patients who have indwelling urinary catheters
Where? A convenient location designated by you
How long will it take? Approximately one hour for an interview
How will my data be used? The data will be anonymous and used to better understand the experience of nurses caring for patients with indwelling urinary catheters
Compensation for your time? A $25 gift card will be given for your participation.

Interested or have questions? Find out more by contacting Alecia Nye, PhD(c), MN, RN Doctoral Student, WSU, College of Nursing at alecia.nye@swedish.org or (360) 286-3662
- IRB approval has been granted by Swedish & WSU
APPENDIX E

PATTERNS AND THEMES

Shortcutting the Care Based on Competing Priorities to Get Through the Shift
- Nurses’ struggle to meet the demands of practice
  - Partnering/not partnering with the patient
  - Inconsistent staff communication in catheter maintenance
- Nurses’ perception of catheters
  - Convenience, incontinence, immobility, urinary retention, and skin issues are reasons catheters are used as a tool in patients
  - Catheter are an invisible threat to patients: “Just a catheter”/ “one of the lines”
  - Concerns about providing nursing care to the “private parts”

Experience of Nurses Caring for Patients with Indwelling Urinary Catheters

Working Around Established Values, Rules and Norms by Modifying Practice within an Oppressive Culture
- Challenge in keeping up with Evidence Based Practice (EBP)
- Issues of staffing inconsistency and administration “cracking down” on overtime
- Licensed Independent Provider (LIP) interaction, communication, collaboration influences nursing practice (Power differential)
- Professional apathy: The consequence of the culture