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Registered Nurses' Practices and Perceptions of Indwelling Urinary Catheters and Number of Indwelling Urinary Catheter Days in a Hospitalized Population

Janice Martin
Gardner-Webb University

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Registered Nurses' Practice and Perceptions
of Indwelling Urinary Catheters and Number of Indwelling
Urinary Catheter Days in a Hospitalized Population

By

Janice Martin, BSN, RN, CIC, CSHA

A scholarly thesis presented to the faculty of
Gardner-Webb University School of Nursing
in partial fulfillment of the requirements for the
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2012

Submitted by:

Approved by:

Janice S. Martin BSN, RN, CIC, CSHA

Reimund Serafica, PhD, MSN, RN

Date

Date

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Abstract

Prevention of catheter associated urinary tract infections is an important component of the delivery of safe quality care. A common theme is emerging from the literature: not all indwelling urinary catheters are appropriate for the duration of the catheterization, which places the patient at an increased risk of CAUTI (Blodgett, 2009). Often, the reasoning used for determining if a patient needs a catheter is not evidence-based. The placement and maintenance of indwelling urinary catheters (IUCs) are in the scope of practice for registered nurses. Nurses should play an integral role in developing strategies to limit the use of catheters thereby reducing the incidence of CAUTIs. The purpose of the pilot study is to describe registered nurses' practice and perceptions of IUCs and the actual number of days patients have IUCs. A convenience sample of fifty registered nurses' perceptions of urinary catheters was measured with an instrument developed for use in this study. The *Likert scale* was used for the instrument design (Burns & Grove, 2005). The instrument addressed both agreement and frequency, and was measured using a five-point scale. Patient catheter days data was collected monthly from every unit from the hospital *Device Day Data Form*. The participants were registered nurses working on the medical, surgical, and intensive care units of a 143 bed acute care hospital. The results substantiate that indwelling urinary catheters are often an acceptable convenience for the nursing staff, and that the number of catheter days experienced by the patient is not viewed as an important driver in the care planning process. In order to decrease the number of catheter days, the norms, attitudes, and

intentions of the nursing staff will have to be changed through education and revision of organizational policy and procedure.

Chapter 1

Introduction

Urinary catheters are important medical devices used in the treatment of numerous diagnoses in healthcare. Although used widely, the inappropriate use of these devices may lead to an increased risk of healthcare-acquired infection. In the past three decades, the major focus of catheter-associated urinary tract infection (CAUTI) prevention research has been evaluation of new devices or materials that will prevent CAUTI (Blodgett, 2009). More recently, a common theme is emerging from the literature: not all indwelling urinary catheters are appropriate for the duration of the catheterization, which places the patient at an increased risk of CAUTI (Blodgett, 2009). Often, the reasoning used for determining if a patient needs a catheter is not evidence-based. The placement and maintenance of indwelling urinary catheters (IUCs) are in the scope of practice for registered nurses. Nurses should play a role in developing strategies to limit the use of catheters thereby reducing the incidence of CAUTIs.

Significance

There is a plethora of research relating the presence of IUCs to urinary tract infections. Urinary tract infections are the most common hospital-acquired infections (Brosnahan, Jull, & Tracy, 2007). In the United States, these infections account for up to thirty-two percent of all hospital-acquired infections (Elpern, Killeen, Ketchum, Wiley, Patel, & Lateef, 2009). In the United States, somewhere between sixteen and twenty-five percent of hospitalized patients have an indwelling urinary catheter (Saint & Kolwalski, 2008). The risk of developing a urinary tract infection increases between three to ten percent per day that the catheter is present (Blodgett, 2009). Up to half of patients

requiring an indwelling urinary catheter (IUC) for five days or longer will have bacteria or yeast in their urine (Blodgett, 2009). Up to eighty percent of hospital-acquired urinary tract infections are associated with the use of urinary catheters (Blodgett, 2009). In order to provide the highest standards of quality and safety for the patient, it is imperative that all causative factors be thoroughly explored in order to decrease the number of CAUTIs.

Catheter-associated urinary tract infection (CAUTI) has been a leading cause of morbidity and mortality in hospitalized patients (Saint, et al., 2008). The risk of developing complications such as delirium, falls, pyelonephritis, immobility, and urosepsis increases with the duration of indwelling catheter use (Blodgett, 2009). In addition to increased morbidity and mortality, infections associated with the use of urinary catheters lead to increased healthcare costs and patient discomfort (Saint, 2008). In 2007, Medicare ruled to disallow incremental payments associated with eight secondary conditions that it sees as preventable complications of healthcare (Rosenthal M., 2007). As of October 2008 catheter-associated urinary tract infections (CAUTIs), if not present at the time of admission, are no longer be taken into account in calculating payment to hospitals (Dunham-Taylor & Pinczuk, 2010). Not only is using evidence-based interventions to prevent CAUTI the right thing to do for the patient, it also has important financial implications for healthcare organizations.

Hospital-acquired urinary tract infection is a serious patient safety concern. Beginning January 1, 2012, the Joint Commission listed prevention of CAUTI as a National Patient Safety Goal (The Joint Commission, 2012). Hospitals have until January 1, 2013 to meet the following elements of performance:

- Insert IUCs in accordance with evidence-based guidelines that address limiting the the use and duration of IUCs and using aseptic technique for site preparation and supplies.
- Manage IUCs in accordance with evidence-based guidelines for mitigating risks of CAUTI.
- Measure and monitor CAUTI prevention processes in areas with a high volume of IUCs. Facilities must select measures, monitor, and evaluate the effectiveness of their CAUTI prevention program in accordance with evidence-based guidelines (The Joint Commission, 2012).

After twenty-seven years since the first guideline was published in 1981, the Centers for Disease Control issued new guidelines for the prevention of CAUTI in 2009. Appropriate catheter placement and avoiding inappropriate catheter days are addressed as primary strategies to prevent CAUTI in the guidelines (Centers for Disease Control, 2009). The new guidelines assist the infection control practitioner in mitigating patient risk for CAUTI through development of process improvements designed to decrease the number of catheter days experienced by the patient.

Statement of the Problem

Although the research relating the presence of IUCs to urinary tract infection is clear, only ten percent of hospitals have systems in place for daily evaluation of catheter necessity or standing orders calling for automatic removal (Saint, 2008). The major focus in the management of CAUTI must be to avoid unnecessary urinary catheterization whenever possible (Dailly, 2011). With prevention of CAUTI a major goal, avoiding the

use of urinary catheters, or limiting the duration of use to the shortest time possible, is the most effective strategy.

Indwelling urinary catheters are often used inappropriately. According to Saint, outdated published recommendations, and ignorance of these recommendations accounts for part of the problem (Saint & Kolwalski, 2008). Other reasons include uncertainty about the patient's medical course and reluctance to cause reinsertion, and convenience of the hospital staff (Saint & Kolwalski, 2008). The presence of an indwelling catheter often eliminates the need to change wet clothing or bedding, and the number of times the patient has to get out of bed to go to the bathroom with assistance from staff (Saint S., EurekAlert, 2008). In addition, caregivers often forget that the patient has an indwelling catheter, and it often remains in place until a catheter-related complication occurs or until the patient is discharged (Saint S., EurekAlert, 2008).

The registered nurse is responsible for placing and maintaining IUC systems. A study to describe the effect of the registered nurses' perceptions of IUCs on the overall number of catheter days will be helpful in developing organizational strategies for prevention of hospital-associated urinary tract infection.

Purpose

The purpose of the pilot study is to describe registered nurses' practice and perceptions of IUCs and the actual number of days patients have IUCs.

Research Questions

- What are registered nurses' perceptions of indwelling urinary catheters?
- What is the total number of catheter days patients have indwelling catheters on a medical-surgical unit?

Definition of Terms

The keywords in this study are indwelling urinary catheter, catheter associated urinary tract infection, patient catheter days, CAUTI rates, and the perception of the registered nurse. The Centers for Disease Control National Health and Safety Network (NHSN) provides the following definitions for terms associated with the insertion of urinary catheters, and the monitoring of complications associated with them (Andrus, 2010).

1. An IUC is a drainage tube that is inserted into the bladder through the urethra that is left in place and connected to a closed drainage system (Andrus, 2010).
2. CAUTI is either symptomatic or asymptomatic. For the purpose of this study, only the definition of symptomatic CAUTI will be used because asymptomatic CAUTI is neither routinely treated by physicians nor rate-calculated by infection control practitioners (Andrus, 2010). The definition of symptomatic CAUTI has the following elements according to NHSN:
 - The patient has an IUC within 48 hours of the onset of the urinary tract infection symptoms.
 - The patient has a fever of $> 100.4^{\circ}\text{F}$, urgency, frequency, dysuria, or suprapubic tenderness.
 - A positive urine culture with $>100,000$ microorganisms per cc of urine with no more than two species of microorganisms. (Andrus, 2010).
3. A patient catheter day is a single twenty-four hour period that the patient has an IUC, and is the dependent variable in this study. Patient catheter days are calculated at the same time each day per nursing unit. At the study hospital,

the number of patients with IUCs are counted and recorded each night at midnight. CAUTI rates are calculated as the number of CAUTIs identified/the total number of catheter days on a unit X 1000 patient days (Andrus, 2010).

4. Perception is defined as a cognition process involved in obtaining and storing information, or becoming aware of something via the senses (Farlex, 2006).

The registered nurse's perception of indwelling urinary catheters is the independent variable and will be the focus of this study.

Conceptual Framework

The *Theory of Reasoned Action* (TRA) by Icek Ajzen and Martin Fishbein is the theoretical framework for the proposed study. The TRA was developed in 1967 and originated in the field of social psychology (Villarruel, Bishop, & Simpson, 2001). This theory provides a framework to study attitudes towards behaviors, and is well supported as a theoretical framework for nursing research in the literature. The TRA is an appropriate theory foundation for construction of the study because the continued use of IUCs is most often due to established behaviors and norms on the nursing unit.

According to the TRA, the most important determinant of a person's behavior is behavioral intent (Perkins, Jensen, & Jaccard, 2007). The other two major concepts of the theory are subjective norm and attitude (Perkins et al., 2007). Subjective norms, or normative beliefs involve both one's beliefs about the opinions of others, and the person's motivation to conform to the opinions of others (McEwen & Wills, 2002). To put it more simply, people behave as they feel others expect them to behave (McEwen & Wills, 2002). The literature supports the fact that the continued use of IUCs is an expectation of the nursing staff. Lastly, attitude is a combination of feelings, beliefs,

intentions, and perceptions, and refers to the individual's positive or negative evaluation of performing the behavior (McEwen & Wills, 2002). Indwelling urinary catheters are often an acceptable convenience for the nursing staff. In order to decrease the number of catheter days, the norms, attitudes, and intentions of the nursing staff will have to be changed through education.

The TRA assumes that humans are rational beings and make systematic use of the information available to them, and that people consider the implications of their actions before they decide to engage or not engage in certain behaviors (Ajzen, Czasch, & Flood, 2009). Education about the relationship of inappropriate catheter days to CAUTI will hopefully assist the nursing staff to consider the relationship of their actions to their patients' outcomes. The goal of the theory is to understand and predict behaviors that are under an individual's control (McEwen & Wills, 2002). The research concepts in the study are: indwelling urinary catheters, indwelling urinary catheter days, and the perceptions of the registered nurse. There are no theoretical definitions of indwelling urinary catheter and indwelling urinary catheter days. Perception is defined as a cognition process involved in obtaining and storing information, or becoming aware of something via the senses (Farlex, 2006). Within the TRA framework, the registered nurses' perceptions would be the result of behavioral intentions, the perceived subjective norms, and their attitudes towards indwelling urinary catheters. There are no relevant theoretical statements related to this study, which is not uncommon in descriptive design studies (Burns & Grove, 2005). The following diagram illustrates the Theory of Reasoned Action (Ajzen & Fishbein, 1975).

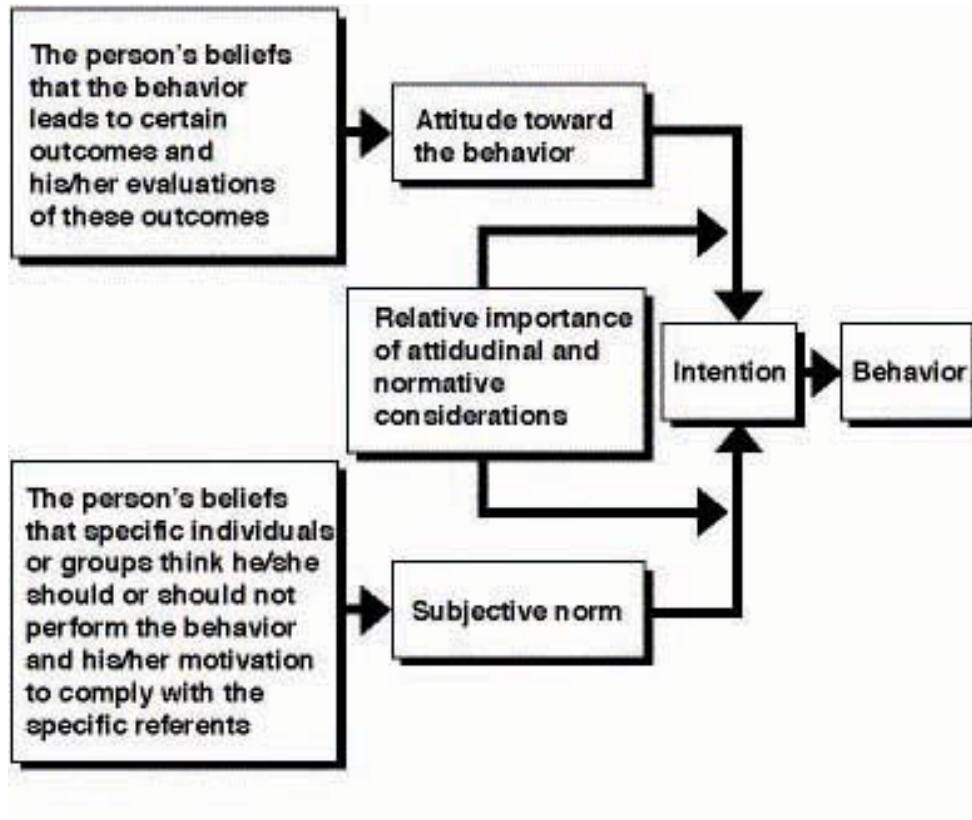


Figure 1. Theory of reasoned action (Ajzen & Fishbein, 1975).

Chapter 2

Review of the Literature

The following review of literature will address three areas of research related to registered nurses' practice and perceptions of indwelling urinary catheters and the number of indwelling urinary catheter days in hospitalized medical-surgical patients. In the first section, research studies related to the impact of indwelling urinary catheters (IUCs) on catheter-associated urinary tract infection (CAUTI) will be explored. The second section reviews the literature regarding registered nurse perceptions of IUCs. Finally, the third section will review the literature exploring inappropriate catheter days and strategies designed to prevent CAUTI.

Indwelling Urinary Catheters

Silver-coated silicone-based catheters were not effective in prevention of CAUTI in a study by Srinivasan and Karchmer (2006). The twenty-four month prospective trial was conducted in a one thousand bed tertiary care center. Medical-surgical patients who had indwelling catheters for greater than forty-eight hours were enrolled in the study for a total of 3,036 patients. Thirty-eight percent of the patients' catheters were silicone-based and silver-coated, compared with sixty-two percent of the patient's had non-coated catheters. The CAUTI rates prior to implementation of the silicone silver catheters were used as a baseline for comparison. In a multivariate analysis, silicone silver catheters did not delay the onset of CAUTI, nor was it protective against CAUTI. The rate of CAUTI per 1000 patient days was 14.29 in the silver-coated catheter group, and 16.15 in the non-coated catheter group. The median length of catheterization prior to the onset of CAUTI was four days. The reduction was not found to be statistically significant thereby raising

the question of whether or not such a modest reduction justifies the increased expense of the silver catheter.

The researchers clearly identified that despite the prospective design of the trial, the study was limited by the fact that the groups were not identical. There were more men and one less catheter day in the silver group and more urine cultures collected in the non-silver group. Sixty-two percent of the study group had non-silver catheters and problems with the suppliers of the silver catheter resulted in only ten months of silver catheter use. The results of the study may be biased towards the null hypothesis because daily urine cultures were not performed on all patients. Although the results of the study demonstrated a slight reduction in CAUTI in the silver catheter group, the researchers clearly stated the need for further study.

Kuman and Hashimoto (2001) conducted a randomized clinical trial to study the impact of anti-infective catheter materials on the formation of biofilm. Previous studies have demonstrated an association between biofilm development and subsequent development of CAUTI. The study examined segments of indwelling urinary catheters collected from patients in an intensive care unit at an unidentified hospital. The catheter segments were cultured and examined in a clinical laboratory. The rate of biofilm development and bacterial growth on silver-alloy coated catheters was compared with silver-alloy and lecithin. The silver-alloy and lecithin coated catheter demonstrated more effective inhibition of biofilm development and bacterial attachment. However, Kumon clearly stated that the number of catheter days was directly related to the formation of biofilm, attachment of bacteria to the catheter material, and the subsequent development of CAUTI. Depending on the patient's level of bacteriuria, biofilm development can

begin as early as three to four hours after insertion of an indwelling urinary catheter. The researchers did not identify any significant limitations of this study.

Lai and Fontecchio (2002) conducted a correlation study in a university medical center tertiary care center to determine whether or not the use of silver-hydrogel urinary catheters resulted in decreased costs and decreased CAUTIs in all patients with an indwelling urinary catheter during the study period. They discovered that there was a delay in onset of bacteriuria and subsequent CAUTI in patients with short-term catheterization of two to seven days, and no difference in patients with longer-term catheterization of greater than seven days. The increased cost of a silver-hydrogel catheter was determined to be eight dollars more than a standard non-coated catheter. The results demonstrated a non-significant decrease in CAUTI and only a modest costs savings. According to the study authors, the rate of CAUTI for non-coated catheters was 4.9/1000 patient days, compared with 2.7/1000 patient days for the coated catheters for a total reduction of 45% ($P=0.1$). The reason that a reduction of 45% was deemed non-significant to the study authors is unclear. The benefits of using a silver-hydrogel catheter were impacted negatively as the number of catheter days increased.

The study had several limitations. It was not a randomized, double-blind controlled study; it compared the rates of CAUTIs with silver-coated catheters with a historical control of non-coated catheters. Neither risk factors for CAUTIs nor etiologic agents for CAUTIs were considered or compared in the study group. In addition, patient days instead of device days were used as the denominator for the CAUTI rate calculation. Although the rate was not calculated in accordance with the guidelines from the Centers of Disease Control recommendations, the method was consistently applied which would

identify any significant trends. Although the staff was educated about the new catheter prior to implementation, the researchers attempted to reduce potential bias by monitoring over several months. The CAUTI rates at the beginning of the study were not significantly different to the rates at the end of the study after one year of use.

In yet another study examining the effect of silver-coated catheters on CAUTI, there was a significant decline in CAUTI in participants with silver-coated catheters. A two year prospective study by Rupp, et al., (2004) in ten patient care units in a 600-bed tertiary care center was conducted to determine the rate of CAUTI. Historic control data was used to assess the impact of silver-coated catheters. The data were analyzed using a Poisson regression model. The rate of CAUTI fell from 6.13 to 2.62 ($p=.002$). The study was limited by its retrospective nature. In addition, the limitations of this study were similar to other studies reviewed in that it did not adjust for risks of developing CAUTI. The cost-effectiveness of the silver-coated catheters was deemed modest when compared to the costs of a CAUTI, but the researchers conceded that the true cost of a CAUTI was undetermined.

Although the majority of the research related to the relationship of catheter material and biofilm to CAUTI occurred a decade ago, the findings laid the foundation for current guidelines for the prevention of CAUTI. Although silver-coated catheters demonstrated some improvements in CAUTI rates, the research demonstrated mixed results. In the past ten years, the focus of the research has evolved from catheter materials, biofilm, and the efficacy of antimicrobial prophylaxis to reduction of catheter days by examining registered nurses' perceptions of IUCs and reducing inappropriate catheter days. The literature reveals interventions such as best-practice bundles, nurse-

driven protocols and checklists, and automatic stops for physician orders have resulted in dramatic reductions in CAUTI rates.

Registered Nurse and Caregiver Perceptions of Indwelling Urinary Catheters

Current studies on registered nurses' perceptions of indwelling urinary catheters were less difficult to discover. Siegel (2006) conducted a descriptive exploratory study on a convenience sample of eighty-two medical-surgical and critical registered nurses in a community medical center to determine whether or not they perceive catheter stabilization of the catheter as a necessary aspect of care. Sixty percent of the registered nurse participants had more than fifteen years of experience. The *Catheter Anchor Survey* (CAS) was developed for use in the study. Statistics of central tendency were used to analyze the data.

The results revealed that even though the nurses perceived that stabilization of the indwelling urinary catheter decreases the risk of CAUTI, their perceptions did not match their practice. The prevalence of catheter stabilization in the hospital during the study was only 4.4%. A limitation of the study is the use of a tool without well-established validity in the literature. The researcher was quick to note the need for an updated standard of care from the Centers for Disease Control, as the latest published guideline at the time of the research publication was dated February 1981. A new guideline from the Centers for Disease Control was published in 2009 (Andrus, 2010).

In another quantitative exploratory study, Dingwell and McLafferty (2006) explored nurses' perceptions of whether continence is promoted in older people, or whether indwelling urinary catheters are used to manage incontinence. The study was conducted in one university teaching hospital and three primary care centers in the United

Kingdom. The data was collected from a convenience sample using focus group and single interviews of twenty-three registered and non-registered nurses in medical-surgical, rehabilitation, and long-term care units. The data from the audiotapes were entered into a computer software program for coding and thematic analysis.

The results revealed that ongoing indwelling urinary catheterization is most often a nursing decision in the interest of convenience for either the nursing staff or the patient. Limitations of the study include a low response rate to the invitation to participate in the study, and the fact that those who chose to participate had a biased interest in the subject. The findings came from a small group of nurses ($n=21$) and may not be representative of all areas of nursing. All of the participants were aware of the need for increased attention to continence training and the risks of CAUTI associated with indwelling urinary catheters. The researchers stressed the need for further study of nurses' perceptions about indwelling urinary catheters and the relationship to the duration of catheterization.

Another nursing research study explored the outcome of examining the relationship of perceptions of registered nurses regarding indwelling urinary catheters (IUCs) and the implementation of a nurse-driven protocol to remove IUCs. Gotelli et al., (2008) used quality improvement methodology as a framework and conducted the study at the University of North Carolina in Chapel- Hill. The purpose of the study was to reduce hospital-acquired CAUTI and reduce the prevalence of IUCs through a nurse-driven protocol. The researchers collected baseline data on CAUTI rates, total catheter days, and clinical indications for use in the hospital's 8 bed tower unit for a period of one year. The baseline data indicated that approximately twenty-four percent of the patients had a urinary catheter for at least three days, and that clinical indications for use were

present only fifty percent of the time. This led the researcher to believe that registered nurses drive the process of getting the catheter removed.

A nurse-driven catheter removal program was initiated and results were collected using retrospective medical record review three months after the initiation of the protocol. A checklist of strict criteria and daily required rounds were used to review the clinical appropriateness of the IUC. The presence of catheters for nursing convenience or patient request was not acceptable criteria for continuation of the catheter. After the launch of the protocol, the daily prevalence of IUCs fell from twenty-four percent to seventeen percent.

The researchers acknowledged that due to the methodology used in this study, measurable changes in functional status by decreasing the overall use of catheters was not captured. There was no decrease in the overall rate of CAUTI, but the researchers reported that the facility rates of CAUTI were below the national average overall. The use of strict criteria for continued catheter use eliminated the possibility that registered nurse convenience or patient preference caused an increase in the number of catheter days.

The relationship between registered nurses' perceptions of IUCs and the number of catheter days was also explored in the context of a large study by Saint et. al., (2008). Both quantitative and qualitative methods were employed. This study was conducted in three phases. The first phase was a quantitative study of survey results from the lead infection control practitioners (ICPs) at over 719 hospitals. During the second and third phases of the study, the researchers sought to examine why facilities were using or not using certain practices by rigorously collecting and analyzing qualitative data. Telephone

interviews were conducted with thirty-eight key personnel in fourteen hospitals, and site visits were conducted in five hospitals where an additional thirty-nine key personnel were interviewed.

As a result of the study, four themes of how hospitals addressed hospital-acquired CAUTI emerged:

1. Preventing CAUTI was a low-priority although there was substantial recognition of the value of early removal as a strategy to reduce CAUTI. Nursing convenience was listed as a high priority amongst registered nurses working in medical-surgical units.
2. Hospitals that made CAUTI prevention a high priority focused on non-infectious complications and had committed champions. Process improvement teams with designated champions presented additional complications including immobility and the protection of patient dignity as additional reasons for early removal of IUCs.
3. Hospital-specific pilot studies were useful in determining whether or not to use silver impregnated catheters as a strategy to reduce CAUTI. In some organizations, the benefits of using the silver catheter did not outweigh the costs.
4. Public reporting and other external forces affected CAUTI surveillance and prevention activities. In states with public reporting mandates, CAUTI surveillance and prevention activities were a higher priority.

The researchers identified the limitations of the study included the methods used did not allow generalization to all six thousand hospitals in the United States regardless

of the large sample size, and the qualitative analysis of the interviews were limited to the researchers ability to understand and interpret the meaning of the participants' responses. Regardless of the limitations, the study revealed important themes underlying how hospitals approach CAUTI prevention, and the influence of registered nurses' perceptions.

Finally, a quasi-experimental study with a control group implemented in three phases was explored by Fakhri et al., (2008). The purpose of the study was to determine the effect of nurse-led multidisciplinary rounds on reducing unnecessary use of IUCs. The study was conducted in a 608 bed tertiary care teaching hospital and included twelve medical-surgical units. Each unit had a pre-existing multidisciplinary team that met daily to review each patient's progress. Each unit was received education on appropriate clinical justifications for the continued use of IUCs. Registered nurse perceptions of IUCs were thoroughly explored in education sessions and included nursing convenience as a reason for continued catheterization. The explicit criteria were placed on a checklist. There was a significant reduction in catheter days from 203 catheter days per 1000 patient days during the pre-intervention phase to 162 days per 1000 patient days during the intervention phase ($P=.002$). The number of catheter days post-intervention was slightly higher than during the intervention at 187 days per 1000 patient days. The rate of unnecessary use fell from 102 days per 1000 patient days pre-intervention to only 64 days during the intervention phase of the study. Significantly, the rate rose to 91 days post-intervention after the intensive daily monitoring was discontinued.

More than two thirds of the IUCs with no indication for placement did not have a clear reason for placement. The researchers listed nursing convenience and perceived

decreased in workload as potential reasons, although the study did not specifically measure this correlation. The researchers listed performing the intervention at only one hospital as a limitation. Individual physician and nurse commitment to evaluating every catheter every day may have influenced the results. Additionally, the emergency department was not included in the study. Overall, the nurse-led multidisciplinary approach was successful in reducing the use of IUCs.

Inappropriate Catheter Days and Catheter-Associated Urinary Tract Infection

Finally, the literature was reviewed for interventions that were effective in lowering the number of inappropriate catheter days and subsequent catheter-associated urinary tract infection (CAUTI). In a quasi-experimental study examining pre-intervention and post-intervention data, the Apisarnthanarak and Thongphubeth (2007) found that implementing a process improvement to remind physicians to remove unnecessary catheters significantly reduced the number of catheter days and the CAUTI rate. The study was conducted over a two year period in a 450 bed tertiary care university hospital in Thailand. The study population consisted of 2412 patients with indwelling urinary catheters over a two year period. A twelve month baseline observation phase was followed by a twelve month intervention phase in which number of catheter days and CAUTI rates were compared. The hospital implemented a three day automatic stop order for indwelling catheters along with face-to face discussions with physicians by nursing staff which resulted in a seventy-three percent reduction in the total number of catheter days.

One limitation of the study is that it was not a randomized trial, as this would have been difficult in a single hospital. The results were also based on surveillance data

from symptomatic patients rather than prospective daily urine culture results which would be inclusive of patients with asymptomatic bacteriuria. It is also possible that bias may have been introduced due to the study being unblinded. The researchers used a checklist of explicit criteria to collect the results and did not feel that participant bias significantly affected the outcome of the study. One noteworthy observation is the cost-effectiveness of this intervention, the minimal resources it consumed, and that it did not require expensive equipment.

In another qualitative exploratory study by Apisarnthanarak and Rutjanawe, (2007), inappropriate use of ICUs in a 450 bed tertiary care hospital in Thailand was determined to be increased in female, nonambulatory, and medical ICU patients. The participants were all patients admitted to the hospital for one year (n=895). The purpose of the study was to evaluate the epidemiology and outcomes for inappropriate urinary catheterization in hospitalized patients.

Independent observers reviewed medical records, interviewed patients and staff, and assessed the need for continued IUC daily. Patients were followed by the same observer until the IUC was discontinued. Outcomes measured included mortality rate, CAUTI rate, length of stay, cost of hospitalization and cost of antibiotic therapy. There were no clinical indications for IUC in twenty-eight percent of the patients. There was no increase in mortality in patients with increased duration of IUC, but they did experience increased length of stay, increased CAUTI, and increased cost of hospitalization and antibiotic therapy when compared to patients with early discontinuation of ICU. These outcomes were observed to be more common in female, nonambulatory, and medical ICU patients. The researchers listed the presence of observers as a limitation of the

study, as their presence may have influenced the physician to discontinue the catheter. The researchers admitted they did not adhere strictly to defined criteria for justification, often giving the staff “the benefit of the doubt”. The validity of the study would be questionable if the defined criteria were not strictly followed.

Wald, Epstein, Radcliff, and Kramer (2008) conducted a retrospective cohort study to explore the relationship between the extended use of IUCs and outcomes for older surgical patients and to describe the patient and hospital characteristics associated with extended use of IUCs. The researchers studied 170,791 Medicare patients aged 65 years or older who were admitted to a skilled nursing facility after discharge from hospital with a discharge diagnosis code indicating major cardiac, vascular, orthopedic, or gastrointestinal surgery in 200. Bivariate comparisons of patient characteristics were conducted for patients with and without IUCs.

The researchers concluded that extended use of postoperative IUCs is associated with poor outcomes in older patient populations. Twenty-three percent of the study population were admitted to the skilled nursing facility with an IUC, which confirmed the need for aggressive inpatient interventions for early IUC removal. Patients with catheters in all surgical groups had significantly greater odds of rehospitalization for CAUTI within thirty days, and significantly greater odds of death within thirty days of admission to a skilled nursing facility. In addition, surgical patients in the Northeast and South had a lower incidence of extended IUC use than in the West. According to the researchers, this finding was consistent with regional variations in the use of many healthcare services by the Medicare population.

Although the study was limited by its observational, retrospective nature and possible referral bias regarding the site of postacute care, the researchers concluded that variation in postoperative IUC use may reflect practice differences that contribute to poor outcomes for older surgical patients. The findings are consistent with the plethora of information available in the literature that links the length of time catheterized with an increased risk of CAUTI.

Decreasing the CAUTI rate by implementing nursing interventions designed to limit the number of inappropriate catheter days was the focus of a nursing research study in a 613-bed non-profit inner city academic medical center. The study was conducted by Elpern, et al., (2009) in the medical intensive care unit on a population of 337 patients with a total of 1432 IUC days. The population consisted of all consecutive patients admitted to the medical intensive care unit From December 1, 2007 to May 31, 2008. Prior to the study period a team of clinicians collected baseline data on the number of catheter days and CAUTI rate, and developed evidence-based criteria for determining appropriate continuation of IUCs. During the six month study period, patients were reviewed daily by the nurse investigators. Daily evaluations continued until the IUC was removed.

The results were consistent with other studies in the literature. The mean number of catheter days fell from 311.7 prior to the intervention, to 238.5 after the intervention. Additionally, the CAUTI rate fell from 4.7 to 0. Overall thirty-two percent of the catheter days were determined to be inappropriate. Reasons for continued catheterization offered most commonly by nurses included patient request, incontinence, concern for skin integrity, and obesity. Generalization of the outcomes was limited by use of a single

unit in one hospital and by restricting the study sample to patients with IUC only. Device days and CAUTI rates were compared pre and post-intervention rather than by using a concurrent control group, which suggests that other influencing factors were not examined. Subjectivity was also involved in the daily evaluations. The researchers stated that when differences of opinion occurred, the evaluators were more likely to give more weight to the judgement of the nurse providing direct patient care. This limitation of subjectivity was mentioned in three of the studies reviewed. Regardless of the limitations, the direct relationship of total number of catheter days to CAUTI rates was supported. Reductions in CAUTIs can be achieved through nurse-based interventions to avoid inappropriate catheter days.

Finally, Saint and Kowalski (2008) conducted a nationwide study examining hospitals' strategies to prevent CAUTI and reviewed the strategies to explore proven options for process improvement projects. In the qualitative exploratory study, no widely used nationwide strategy was being used to prevent CAUTI. Written surveys were mailed to infection control practitioners at 719 federal and non-federal hospitals across the country to ask about practices to decrease CAUTI and other device-associated infections. Only ten percent of hospitals were using simple, economic, evidence-based strategies to decrease the number of catheter days and subsequent CAUTI, highlighting the need for process improvement in US hospitals.

A few limitations were identified by the researchers. First, the researchers relied on self-reported data from the lead infection control practitioner (ICP) at each facility. This could have resulted in overstating or understating of the problem by the ICP. Second, although the sampling strategy aimed to conduct a nationally representative

sample, participating hospitals may have been different than non-participating hospital which would render the results less generalizable. Lastly, the multivariable model did not allow for participant interview, so the direct causative relationship between contributing factors and the use of certain practices was not conclusively determined. The researchers provided valuable evidence that healthcare organizations do not consistently implement recognized strategies to prevent CAUTI.

Summary

There is a vast amount of literature on the effect of urinary catheter material on subsequent development of CAUTI, and the results either support a slight decrease in CAUTI rates with the use of silver silicone catheters, or no significant decrease (Srinivasan & Karchmer, 2006). In fact, most of the literature related to the prevention of CAUTI from 1998-2003 is focused on catheter material. In all studies reviewed, the development of CAUTI was directly related to the number of days the patient had an indwelling urinary catheter, regardless of the type of indwelling catheter. This supports the need for further study on nursing interventions designed to decrease the total number of catheter days experienced by the patient. Unfortunately, in the first-ever national study of hospital effort to decrease CAUTI, a disturbing trend was discovered. In many cases, physicians and other members of the health care team forget that patients are catheterized (Saint & Kolwalski, 2008). Nearly half of the hospitals lack a system to tell them which patients have catheters, three-quarters lack a system to tell them how long a patient has been catheterized, and nearly a third do not even monitor CAUTI (Saint & Kolwalski, 2008). The literature review supports the fact that systems to remind caregivers that an indwelling foley is present, and increased focus on appropriate care of indwelling urinary

catheters results in a decreased number of catheter days and subsequent decrease in the risk of CAUTI.

Registered nurses are primarily responsible for insertion and maintenance of indwelling urinary catheters (Dingwell & McLafferty, 2006). However, there are very few studies that focus on the effect the registered nurse's perception of indwelling urinary catheters. The review of the literature supports that although registered nurses are aware of the link between indwelling urinary catheters and CAUTI, they are not aggressive taking the appropriate action to get it removed. In fact, nursing staff convenience was listed as a reason for inappropriate catheter days in all reviewed studies. Review of the literature confirms the need to further explore the effects of the registered nurse's perception on the number of catheter days.

Chapter 3

Method

This pilot study describes registered nurses' practice and perceptions of indwelling urinary catheters (IUCs) and the overall number of patient catheter days. Opportunities for improvement in the organizational approach to prevention of hospital-associated urinary tract infection were identified and communicated to front line staff and senior leadership. A common theme emerged from the extensive literature search: not all IUCs are appropriate for the duration of the catheterization, which places the patient at an increased risk of catheter-associated urinary tract infection (CAUTI). Often, the reasoning used for determining if a patient needs a catheter is not evidence-based.

The following research questions were addressed in this study:

1. What are registered nurses' perceptions of indwelling urinary catheters?
2. What is the total number of catheter days patients have indwelling catheters on a medical-surgical unit?

The study was conducted using a descriptive design and is non-experimental. No attempt was made to control or manipulate the data gathered from the participants. Patient catheter days were collected from every medical-surgical unit using the hospital *Device Day Data Form*. The *Device Day Data Form* is an internal form used by the infection control practitioner to track the number of IUC days. The total number of catheter days was calculated for a period of three months prior to the administration of the study instrument in order to establish a baseline for improvement.

Setting

The study was administered in a 143 bed, acute care, rural, for-profit hospital located in North Carolina. The average daily census is 80-85 and the organization employs 325 registered nurses. Registered nurses represent the highest percentage of employees. The top medical diagnostic-related groups (DRGs) are congestive heart failure and chronic obstructive pulmonary disease. The most common surgical DRGs are total joints and colon resections.

Sample and Participants

The participants were registered nurses working on the medical, surgical, telemetry, and intensive care units. There were 50 participants. All of the study participants speak English. Exclusion criteria only existed if the participants refused to participate. The questionnaire required a time commitment of approximately fifteen minutes. A convenience sample of registered nurses was recruited from all medical-surgical units, including intensive care. Methods of recruitment included a poster campaign and informational sessions during staff meetings. In order to ensure the protection of human subjects, the volunteers were asked to sign a consent (Appendix C) and the study was approved by the Gardner-Webb University Investigational Review Board (IRB; Appendix A). Approval from an IRB was not required by the organization where the study was conducted (Appendix B).

Measurement Instruments

The researcher collected the data from the registered nurses who work on the medical, telemetry, ICU, second and fifth floors medical-surgical units. All registered nurses were asked to participate and complete a demographic data sheet which included

their age, years of practice as a registered nurse, type of nursing degree, and the unit on which they work. The only exclusion criterion was if a registered nurse declined to participate, or was on leave or absent during the study period (Appendix D). The questionnaire was distributed during change of shift, rounds by the researcher, via hospital intranet, and by leaving them in the conference rooms with a poster presentation about the study. The questionnaire was accompanied by instructions, and the researcher was available to answer questions during normal office hours, or by pager during the off-hours. Patient catheter days data was collected monthly from every unit from the hospital *Device Day Data Form*. To determine the number of catheter days per unit, registered nurses count the total number of patients with IUCs daily at midnight and enter the number on the *Device Day Data Form*. The completed form is faxed to the infection control office at the end of the month.

Registered nurse perceptions of urinary catheters were measured with an instrument developed for use in this study (Appendix E). The *Likert scale* was used for the instrument design (Burns & Grove, 2005). The instrument addressed both agreement and frequency, and was measured using the following five-point scale:

1. Strongly disagree
2. Disagree
3. Uncertain
4. Agree
5. Strongly
6. Strongly Agree

The instrument was scored by the researcher and each response was entered into the *Statistical Package 20 for the Social Sciences (SPSS)* software program. The reliability and validity of the study instrument has not been established. However, the reliability and validity of the *Likert scale* has been established.

Data Analysis

The quantitative data collected from the *Device Day Data Forms* was compiled retrospectively for three months to establish a baseline for improvement. The data collected from the questionnaire will determine what perceptions registered nurses have about indwelling urinary catheters and will be used to design a comprehensive, mandatory, nursing staff education program based on the findings of the questionnaire. The descriptive statistics from this research was analyzed using the current version of *Statistical Package 20 for the Social Sciences (SPSS)* software.

Chapter 4

Results

The findings of the study demonstrate multiple opportunities for nursing education about the patient safety concerns related to indwelling urinary catheters. The purpose of the pilot study is to describe registered nurses' practice and perceptions of indwelling urinary catheters (IUCs) and the actual number of days patients have IUCs. The subjects consisted of a convenience sample of registered nurses working on the medical, surgical, telemetry, and intensive care units. The research questions answered in the study are:

- What are registered nurses' perceptions of indwelling urinary catheters?
- What is the total number of catheter days patients have indwelling catheters on a medical-surgical unit?

Study Participants

The study participants were registered nurses working on the medical, surgical, and intensive care units of a 143 bed acute care hospital. A convenience sample of 50 participants was selected. Demographic data for age, years of experience, and level of education was collected. Thirty percent of the participants were between the ages of 21-30, 22% were between the ages of 41-50, and 18% were between the ages of 51-60. A total of 12% of the participants were older than 61 years of age. Table 1 gives the frequency and percent of the ages of the study population.

The study population was comprised of registered nurses (RNs) with multiple years of experience. Fourteen percent of the study population was RNs who have practiced for less than 1 year. Seventy percent of the study population had more than six

Table 1

Age of Participants

	Age	Frequency	%
	21–30	15	30.0
	31–40	7	14.0
	41–50	11	22.0
Valid	51–60	9	18.0
	61–70	6	12.0
	>70	2	4.0
	Total	50	100.0

years of experience. Twenty-eight percent of the population had more than twenty total years of experience. Table 2 gives the frequency and percent of the years of experience amongst the study group.

Table 2

Years of Experience

	Years of experience	Frequency	%
	<1	7	14.0
	1–5	8	16.0
	6–10	12	24.0
Valid	11–15	3	6.0
	16–20	6	12.0
	>20	14	28.0
	Total	50	100.0

Finally, the data collection for the education level of the population demonstrates that 42% of the study population has an associate degree, 14% graduated from a diploma program, 34% has a bachelor's degree, and 10% were master's prepared or higher. Table 3 gives the frequency and percent of the education level of the participants.

Table 3

Education Level of Participants

	Education level	Frequency	%
Valid	ADN	21	42.0
	Diploma	7	14.0
	BSN	17	34.0
	MSN/PhD/DNP	5	10.0
	Total	50	100.0

Measurement Instruments

Registered nurse perceptions of urinary catheters were measured with an instrument developed for use in this study. The *Likert scale* was used for the instrument design (Burns & Grove, 2005). The instrument addressed both agreement and frequency, and was measured using a five-point scale.

The questionnaire was distributed during change of shift, rounds by the researcher, via hospital intranet, and by leaving them in the conference rooms with a poster presentation about the study. The questionnaire was accompanied by instructions, and the researcher was available to answer questions during normal office hours, or by pager during the off-hours.

Patient catheter days data was collected monthly from every unit via the hospital *Device Day Data Form*. To determine the number of catheter days per unit, registered nurses count the total number of patients with IUCs daily at midnight and enter the number on the *Device Day Data Form*.

Descriptive Statistics for Respondent Surveys

There were 50 participants in the study (N=50). Eight- four percent of the respondents agree or strongly agree that they know which of their patients have

indwelling urinary catheters (IUCs). On the Likert Scale questionnaire used for this pilot study, the mean response was 4.12 (SD 1.06). Only 18% agree or strongly agree that they know how many days each of their patients have had an IUC. Sixty-eight percent disagreed or strongly disagreed that they know how many days each of their patients have had an IUC. The mean was 2.48 (SD 1.1). However, an overwhelming 90% of respondents stated that the presence of a catheter is reported at shift change, with a mean of 4.2 (SD .78). Consistent with the findings from the literature review, 74% of the respondents strongly disagreed or disagreed that the number of catheter days is reported at shift change, with a mean of 2.2 (SD .84). Figure 2 illustrates the responses.

Sixty-eight percent strongly disagreed or disagreed that they sometimes forget which of their patients have an IUC with a mean of 2.33 (SD 1.2). On the subject of whether or not RNs view IUCs as convenient, 42% of the respondents strongly disagreed or agreed, and 42% agreed or strongly agreed, with 12% reported as being uncertain about their perceptions. The mean was 4.2 (SD 2.9). Figure 3 presents a graphic display of this survey item.

Only 50% of the respondents agree or strongly agree that they remind the physician daily which of their patients have an IUC, with a mean of 3.2 (SD 1.2). Ten percent disclosed that they were uncertain. Thirty-six percent strongly disagreed or disagreed that patients who are incontinent should have indwelling urinary catheters, while 54% agreed or strongly agreed that the patients should have catheters if incontinent. The mean was 3.1 (SD 1.2). Respondents had slightly different perceptions about patients who have difficulty getting to the bathroom. Fifty-two percent strongly disagree or disagree that they should have IUCs, while 36% agree. No respondents

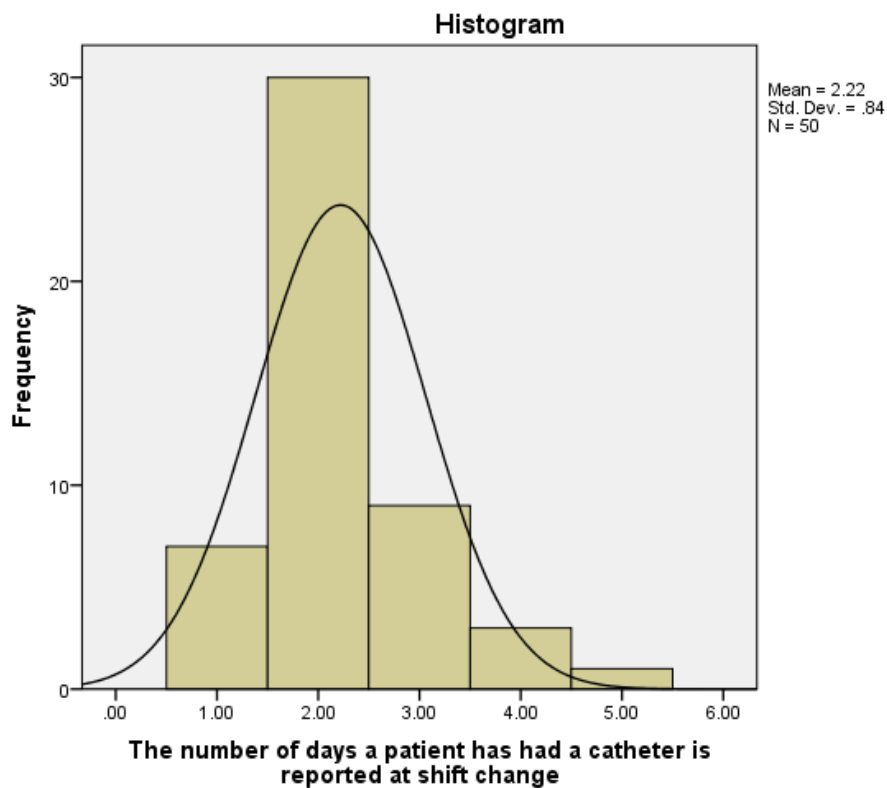


Figure 2. The number of catheter days is reported at shift change.

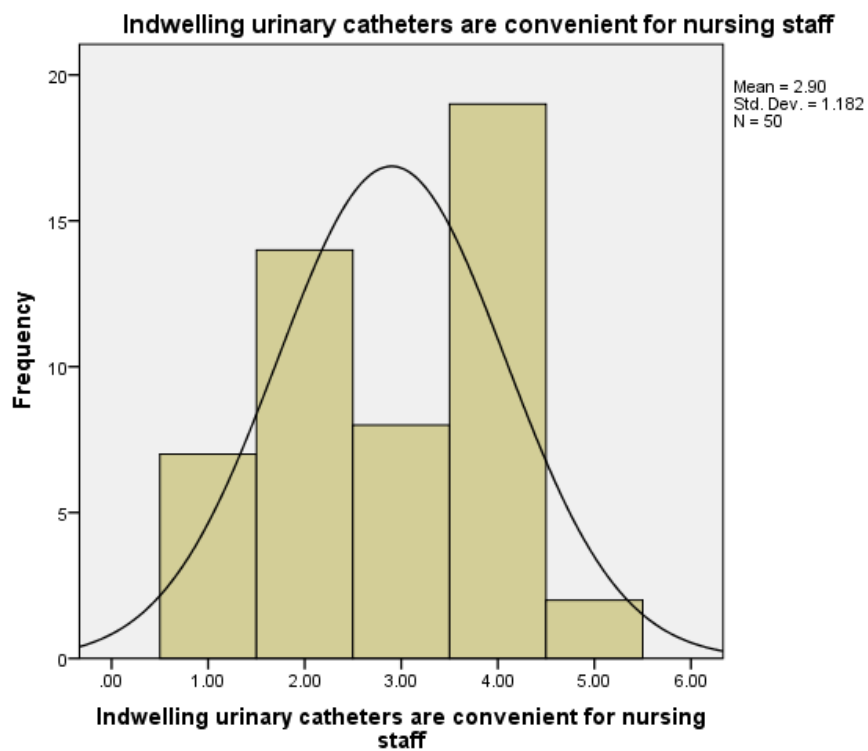


Figure 3. Histogram illustrating convenience.

strongly agree. The mean is 2.7 (SD 1.1) Finally, 90% agree that patients with skin breakdown should have an IUC, and 10% were uncertain. The mean response was 41. (SD .6). Table 4 is a compilation of all the descriptive statistics of the survey.

Table 4

Descriptive Statistics From Respondent Surveys

Statement of perception	<i>N</i>	<i>M</i>	<i>SD</i>
I know which of my patients have an indwelling urinary catheter	50	4.1200	1.06
I know how many days each of my patients have had a catheter	50	2.4800	1.07
The presence of a catheter is reported at shift change	50	4.2000	.78
The number of days a patient has had a catheter is reported at shift change	50	2.2200	.84
I sometimes forget which of my patients have indwelling urinary catheters	50	2.3200	1.27
Indwelling urinary catheters are convenient for nursing staff	50	2.9000	1.18
Patients who are incontinent should have indwelling urinary catheters	50	3.1600	1.20
Patients who have difficulty going to the bathroom should have indwelling urinary catheters	50	2.7000	1.11
Patients who have skin breakdown should have indwelling urinary catheters	50	4.1400	.57

Descriptive Statistics From Device Day Data Form

The total number of catheter days from the medical, surgical and intensive care units is collected using the *Device Day Data Form*. To determine the number of catheter days per unit, registered nurses count the total number of patients with IUCs daily at midnight and enter the number on the *Device Day Data Form*. Prior to collecting the

data regarding registered nurses' practice and perceptions of IUCs, a poster campaign announcing the addition of CAUTI prevention as a Joint Commission National Patient Safety Goal was posted on all the nursing units. In addition, reminder posters about nurse-driven IUC policy and procedure were distributed on all of the nursing units. The just-in-time education provided by the researcher about the study seemed to increase awareness of the need to remove catheters as soon as possible. Figure 4 illustrates the number of catheter days for the medical, surgical, and intensive care units for three months prior to data collection, and one month after the data collection.

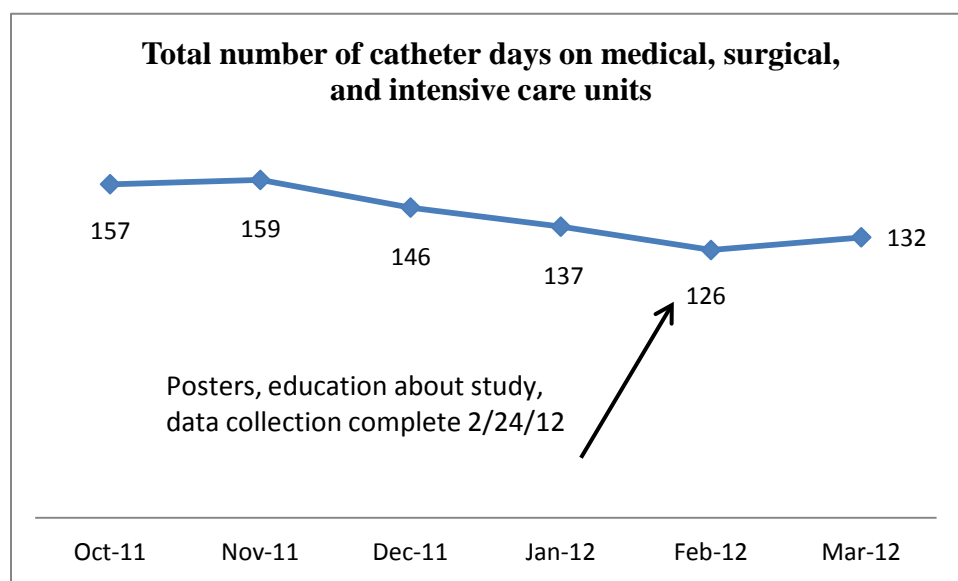


Figure 4. Catheter days.

Chapter 5

Discussion

The purpose of the proposed study is to describe registered nurses' practice and perceptions of indwelling urinary catheters and the actual number of days patients have indwelling urinary catheters (IUCs) in an acute care hospital. The presence of an IUC puts the patient at risk for developing a potentially life-threatening hospital-acquired infection. The results support the findings from the limited amount of research available on registered nurses' perceptions of IUCs (Saint & Kolwalski, 2008). The data in this study was not sufficient to demonstrate a conclusive relationship between registered nurses' practice and perceptions of IUCs and the number of catheter days experienced by the patients. The findings validate the presence of perceptions that lead to an increased number of catheter days.

The majority of the study participants knew which of their patients had an indwelling urinary catheter (IUC), but did not know how many days their patients had IUCs. Although the presence of an IUC is reported at shift, the number of days a patient has an IUC is not reported at shift change. It is well demonstrated in the literature that the number of days a patient has an IUC has a direct relationship on the risk of developing a catheter-associated urinary tract infection (CAUTI) (Blodgett, 2009). The findings validate a process for assisting the registered nurses to easily identify the number of catheter days and education to reinforce the importance of reporting the number of catheter days at shift change is needed to further reduce the total number of catheter days experienced by the patient.

Forty-two percent of the study group felt the presence of an IUC was convenient, while 12% were uncertain about their perceptions related to the convenience of an IUC. The study participants remember which of their patients have IUCs, but half of them do not remember to remind the physicians that their patients have IUCs. The findings validate the practice and perceptions of the registered nurses' in the study group are not consistent with the evidence-based guidelines for prevention of CAUTI.

Limitations

This study has a few limitations. Generalizations of the findings of the study are limited due to the small sample size. The researcher has little statistical training, which could affect the analysis of the data. Also, the participants could be biased as they are being questioned about their practice. Another limitation is that the questionnaire does not have established reliability, validity, and internal consistency. It was developed for use in this study by the researcher after a thorough review of the literature. The post-study monitoring period was only 6 weeks in length, which is not adequate time to establish whether or not the study was effective in lowering the number of catheter days for an extended period of time.

Strengths of the Study

Although the period of time to evaluate the effects of the study on the number of catheter days was only six weeks, the results validated the need for a process improvement project for the senior leadership of the organization. The findings validated that the study participants experienced perceptions that put patients at risk for development of CAUTI. The results were shared with senior leadership and medical

staff, and the infection control practitioner was charged with forming a process improvement team to begin the culture shift.

Relationship of Findings to the Theoretical Framework

The *Theory of Reasoned Action* by Icek Ajzen and Martin Fishbein is an appropriate theory foundation for construction of the study because the continued use of IUCs is most often due to established behaviors and norms on the nursing unit. This theory provides a framework to study attitudes towards behaviors, and is well supported as a theoretical framework for nursing research in the literature (McEwen & Wills, 2002). The TRA assumes that humans are rational beings and make systematic use of the information available to them, and that people consider the implications of their actions before they decide to engage or not engage in certain behaviors (Ajzen, Czasch, & Flood, 2009). Education about the relationship of inappropriate catheter days to CAUTI, and the study findings regarding the perceptions of the study participants will hopefully assist the nursing staff to consider the relationship of their actions to their patients' outcomes.

Implications for Nursing

In order to prevent CAUTIs, registered nurses must adhere to evidence-based guidelines. The findings validate that indwelling urinary catheters are often an acceptable convenience for the nursing staff, and that the number of catheter days experienced by the patient is not viewed as an important driver in the care planning process. In order to decrease the number of catheter days, the norms, attitudes, and intentions of the nursing staff will have to be changed through education and revision of organizational policy and procedure.

Recommendations for Future Research

Subsequent studies over a longer period of time are needed to firmly establish the relationship of registered nurses' practice and perceptions of IUCs to the number of catheter days experienced by the patients. Would knowledge of their perceptions change the behavior of the registered nurses and norms of the unit related to care of the patient with an IUC? What effect does education about evidence-based guidelines for the prevention of CAUTI have on the perceptions of the registered nurse? In order to provide the highest standards of quality and safety for the patient, it is imperative that all causative factors be thoroughly explored in order to decrease the number of CAUTIs.

There is limited research about the relationship of nursing perceptions of IUCs to the number of catheter days. The registered nurse is responsible for placing and maintaining IUC systems. Additional studies to describe the relationship of the registered nurses' perceptions of IUCs on the overall number of catheter days could be helpful in developing organizational strategies for prevention of hospital-associated urinary tract infection. Hospital-acquired infections are a serious patient safety concern. Discovering causative factors and implementing strategies for the prevention of CAUTIs is vital for the delivery of safe, quality patient care.

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Appendix A

Institutional Review Board Approval



THE INSTITUTIONAL REVIEW BOARD of GARDNER-WEBB UNIVERSITY

This is to certify that the research project titled:

The Relationship of Registered Nurses' Practice and Perceptions of Effect of Indwelling Urinary Catheter Days in a Hospitalized Population

being conducted by Janice S. Martin

has received approval by the Gardner-Webb University IRB.

Date 1/30/12

Exempt Research

Signed Cindy Miller
Department/School/Program IRB Representative
K. B. Miller
Department/School/Program IRB Member

Expedited Research

Signed _____
Department/School/Program IRB Representative

Department/School/Program IRB Member

IRB Administrator or Chair or Institutional Officer

Non-Exempt (Full Review)

Signed _____
IRB Administrator

IRB Chair

IRB Institutional Officer

Expiration date 1/30/12

Appendix B

Facility Approval Letter



January 27, 2012

To Whom It May Concern,

It is with great pleasure that I accept Jan Martin's proposal to conduct a research project on registered nurses' perceptions of indwelling urinary catheters. The Joint Commission now requires facilities to put a plan of action in place to address prevention of catheter-associated urinary tract infections.

We do not require approval from an IRB for this pilot study, and look forward to reviewing the results!

Sincerely,

A handwritten signature in black ink, appearing to read "V. Cherry".

Vince Cherry
Chief Executive Officer
Davis Regional Medical Center

A handwritten signature in black ink, appearing to read "Michele Pilon".

Michele Pilon, RN, MSN
Chief Nursing Officer
Davis Regional Medical Center

Appendix C

Consent for Participation in Research

Study title: The Relationship of Registered Nurses' Perceptions of Effect of Indwelling Urinary Catheters and Number of Indwelling Urinary Catheter Days in a Hospitalized Population

Investigator: Ms. Jan Martin, RN, BSN, CIC

Jan Martin is a registered nurse studying how your perceptions of indwelling urinary catheters may affect the total number of catheter days experienced by your patients. Although the study will not benefit you directly, it will provide valuable information that will help develop an organization-wide process improvement plan to decrease the overall number of indwelling urinary catheter days.

The study and its procedures have been approved by hospital administration. Participation in the study may cause a limited amount of emotional conflict as you reflect on your perceptions of indwelling urinary catheters. The procedures include: (1) responding to a survey developed by the investigator about your perceptions of indwelling urinary catheters, and (2) completing a demographic data sheet. Participation in this study will take approximately 15-20 minutes of your time. You are free to ask questions about the study, or being a participant in the study. You may call Jan Martin at 704-838-7153 and your questions will be answered by the following business day.

Your participation in this study is voluntary and you are under no obligation to participate. Under no circumstances will your job security or performance evaluation be affected by your decision not to participate, or by your decision to withdraw from the study.

The study data will not identify you in any way. Your identity will not be revealed while the study is being conducted, or when the study is reported. All study data will be collected by Jan Martin and stored in a secure place. Under no circumstances will your data be shared with other entities.

I have read this consent form and voluntarily consent to participate in this study:

Participant's signature

Date

I have explained this study to the above participant and sought her understanding for informed consent:

Investigator's signature

Date

Appendix D
Demographic Data Sheet

Unit: _____

Please complete the following information. Circle the correct answer:

1. Age
 - a. <20
 - b. 20-30
 - c. 31-40
 - d. 41-50
 - e. 51-60
 - f. 61-70
 - g. >70

2. Years of practice as a registered nurse:
 - a. <1
 - b. 1-5
 - c. 6-10
 - d. 11-15
 - e. 16-20
 - f. >20

3. Type of nursing degree
 - a. Associate Degree
 - b. Diploma from hospital school of nursing
 - c. BSN
 - d. MSN/PhD/DNP

Appendix E

Participant Survey

Unit: _____

The following questions will tell me something about your perceptions about indwelling urinary catheters. Please place X in the box that best describes your current practice and perceptions.

	Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5
I know which of my patients have an indwelling urinary catheter					
I know how many days each of my patients have had a catheter					
The presence of a catheter is reported at shift change.					
The number of days the patient has had a catheter is reported at shift change.					
I sometimes forget which of my patients have indwelling urinary catheters.					
Indwelling urinary catheters are convenient for nursing staff.					
I remind the physicians daily which of their patients have indwelling urinary catheters.					
Patients who are incontinent should have indwelling urinary catheters.					
Patients who have difficulty getting to the bathroom should have indwelling urinary catheters.					
Patients who have skin breakdown should have indwelling urinary catheters					