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The Effect of Individualized Nurse Report Cards and Unit Case Reports on the Awareness and Attitudes of Nurses towards CLABSI Contributing Factors

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The Effect of Individualized Nurse Report Cards and Unit Case Reports on the
Awareness and Attitudes of Nurses towards CLABSI Contributing Factors

by

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A capstone project submitted to the faculty of
Gardner-Webb University Hunt School of Nursing
in partial fulfillment of the requirements for the degree of
Doctorate of Nursing Practice

Boiling Springs

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Abstract

This DNP project examined the effect of unit case reports and individualized nurse report cards on nurses' awareness of and attitudes toward central line-associated bloodstream infection (CLABSI) contributing factors. This project also sought to determine whether CLABSI incidences differed across units and if that was affected by nurses' awareness of and attitudes toward CLABSI contributing factors.

A convenience sample of registered nurses (RNs) across four medical units was included in this project. Of the 79 RNs who participated in providing feedback on this project, 48 RNs completed pre-implementation surveys, resulting in a response rate of 61%, and 53 completed post-implementation surveys resulting in a response rate of 67%. CLABSI RN Awareness and Attitudes pre- and post-implementation survey responses were compared using descriptive and inferential statistics. The analysis found no significant differences between pre-implementation and post-implementation survey responses and no significant differences between post-implementation responses across units. Included is a discussion on notable findings related to staff perceived readiness and receptiveness to the project intervention and implications for future study.

Keywords: central venous catheter (CVC), healthcare-associated infections (HAIs), central line bloodstream infection (CLABSI), awareness and attitudes, and contributing factors.

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First and foremost I want to offer my gratitude to my Lord and Savior who carried me from the very beginning of this project to its completion knowing the path he had already laid out for my life and ordering my steps so that I could achieve my destination. Even in times of doubt, I was reminded to remain steadfast and that as long as I follow His will, I would surely be successful.

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INTRODUCTION

Healthcare-associated infections (HAIs) are those that patients get while receiving treatment for medical or surgical conditions. They are primarily considered preventable events and are often attributed to medical procedures and devices, such as catheters or ventilators. HAIs are known to increase length of stay, costs, and impact mortality and morbidity in the United States and are associated with a substantial increase in health care costs each year (Office of Disease Prevention and Health Promotion [ODPHP], 2014). According to Magill et al. (2014) at any one time in the United States, one out of every 25 hospitalized patients are affected by an HAI. HAIs can lead to significant complications across the continuum of care and can be transmitted between different health care facilities (ODPHP, 2014). Recent studies suggested however, that implementing existing prevention practices can lead to up to a 70% reduction in certain HAIs (Pronovost et al., 2006). The financial benefit of using prevention practices is estimated to be $25 billion to $31.5 billion in medical cost savings (Scott, 2009).

Studies have shown that proper education and training of health care workers increases compliance with and adoption of best practices (e.g., infection control, hand hygiene, attention to safety culture, and antibiotic stewardship) to prevent HAIs (Agency for Healthcare Research and Quality [AHRQ], 2008). Examples of best practice methods by health care providers includes proper insertion, maintenance, and prompt removal of catheters, as well as the careful and correct use of antibiotics. One of the most common forms of HAIs are bloodstream infections such as central-line associated bloodstream infections (CLABSI).

CHAPTER I

PROBLEM RECOGNITION AND SIGNIFICANCE

Bloodstream infections like CLABSI can lead to significant additional costs in care delivery, the need for antibiotics, and increased length of stay (Brunelli, Turenne, Sibbel, Hunt, & Pfaffle, 2016). Patients who exhibit at least one positive blood culture and clinical signs of infection (i.e. fevers, chills, and/or hypotension) with only a central venous catheter (CVC) as the suspected source is indicative of having CLABSI. Recent estimates show that CLABSIs can cause up to a 35% mortality rate and an excess length of stay up to 24 additional days (Garrett, 2015).

CVCs are vital life-saving devices for many patients but also pose great risk for infection. The Centers for Disease Control and Prevention (CDC) (2010) published a number of strategies to prevent and reduce HAIs and specifically infections in CVCs (O'Grady et al., 2011). Due to the significant costs and effects on health care quality, the U.S. Department of Health and Human Services (HHS) has included the reduction of central line-associated bloodstream infections (CLABSIs) as part of its national Healthcare Associated Infection Action Plan (Jock, Emery, Jameson, & Woods, 2016). This plan along with many others are used across various federal agencies within the HHS to prepare evidence-based clinical resources for prevention of CLABSI, to monitor and report infections across the continuum of care, and to guide quality improvement initiatives. The establishment of the Healthcare-Associated Infections objectives for Healthy People 2020 also reflects the commitment of the U.S. Department of Health and Human Services (HHS) to preventing HAIs (ODPHP, 2014). These high-priority objectives place focus on the significance of CLABSI and inform health care providers

on existing resources to standardize care and address this critical, yet often preventable infection.

Justification of Project

Bloodstream infections impact hospitalization costs, length of stay, and mortality rates. Central line-associated bloodstream infections result in thousands of deaths each year and billions of dollars in added costs to the healthcare system, yet these infections are considered preventable "never-events". According to the lead Infection Preventionist nurse, the project site was penalized 2.9 million dollars in the past fiscal year in "pay for performance" measures by the Centers for Medicare and Medicaid due to HAIs such as CLABSI (personal communication, June 19, 2017). Use of CVCs in the hospital setting significantly impacts risk for CLABSI and may ultimately result in death or poorer patient outcomes (Brunelli et al., 2016). To that end, it is apparent that initiatives to reduce CLABSI have substantive clinical and economic effects.

The U.S. Department of Health and Human Services (HHS) recently developed the HHS Action Plan to Prevent Healthcare-Associated Infections, which sets specific national targets and timelines for monitoring and preventing HAIs such as CLABSI (ODPHP, 2014). In addition, research conducted by Marchetti and Rossiter (2013) found that HAIs in US acute-care hospitals lead to direct and indirect costs totaling $96–$147 billion annually. Marchetti and Rossiter (2013) went on to conclude that the enormous clinical and economic burden of infection places HAIs high on the list of devastating and costly illnesses, such as cancer, heart attack, stroke, and diabetes, thereby mandating further research and greater efforts to contain a pressing healthcare problem.

Problem Statement

A performance improvement project focusing on educating staff on proper insertion, maintenance, and documentation can prove beneficial in reducing the number of CLABSI incidences at a large academic medical center. Individualized nurse report cards and unit case reports will assist in improving knowledge surrounding management of central lines, improve delivery of quality care, as well as decrease negative patient outcomes for such preventable events.

Purpose

The purpose of this Doctorate of Nursing Practice (DNP) Performance Improvement project was to evaluate the impact of individualized nurse report cards and unit case reports on identifying and reducing Central-Line Associated Bloodstream Infection (CLABSI) contributing factors. These specific tools will be deigned to enhance the awareness and knowledge needed to identify contributing CLABSI factors and properly manage care of central lines. This study will primarily explore the clinical question: "Will nurses' awareness and attitudes of CLABSI contributing factors be affected by implementation of individualized nurse report cards and unit care reports?" Data will be collected to determine whether nurses are receptive to this type of educational auditing tool and whether awareness of CLABSI contributing factors impact delivery of quality care in terms of a reduction in CLABSI events. In addition nurse-demographic data will be gathered for descriptive analysis of the study sample. This project was developed using guidance from Melnyk and Fineout-Overholt's (2010) population, intervention, comparison, and outcome (PICO) format:

- Population (P) - The target population for this project was staff RNs working in one of the four designated project units in a large, academic medical center.

- Intervention (I) - Implementation of unit case reports and individualized nurse report cards to enhance awareness of CLABSI contributing factors.

- Comparison (C) - Comparison between the RNs level of perceived awareness and importance of adhering to guidelines for central line management will be compared before and after the distribution of individualized nurse report cards and unit case reports.

- Outcome (O) - To increase perceived staff awareness and attitudes towards proper management of central lines necessary to prevention of CLABSI.

Definition of Terms

Central venous catheters (CVCs), also known as central lines are used primarily in intensive care and oncology units. CVCs are an essential component to delivering timely and necessary care for acute patients. These devices allow for administration of intravenous fluids, medications, blood products, parenteral nutrition, as well as provide access for hemodialysis and hemodynamic monitoring (The Joint Commission, 2012). CVC types include non-tunneled, tunneled, implantable ports, and peripherally inserted central catheters (PICCs). Either their intended life span, site of insertion, or pathway from the skin to the blood vessel (Joint Commission, 2012) often categorizes the different types of CVCs. At the project site, CVCs are often used in the intensive care units (ICUs), comprehensive cancer units, and pediatrics ICUs.

CLABSI, for the purpose of this project, will include bloodstream infections that occur when bacteria or viruses enter the bloodstream through a central venous catheter,

otherwise known as a central line (CDC, 2010). CLABSI is considered as a primary bloodstream infection because no other infection is apparent during the time of onset. CLABSI develops in a patient with a central line in place within the 48-hour period before onset of the bloodstream infection (The Joint Commission, 2012). Microorganisms colonizing the external surface of the device or the fluid pathway when the device is inserted or in the course of its use cause it (The Joint Commission, 2012). It is essential then that strict protocols be followed when inserting central lines to ensure they are placed properly and maintained frequently in accordance to infection control practices. As stated earlier, CLABSI is an example of a healthcare-associated infection (HAI) and one that is currently on the rise at the project institution. The ability to increase staff's knowledge of proper insertion, maintenance, and documentation of central lines will be critical in improving quality standards and decreasing chances of CLABSI.

Project Vision, Mission, and Objectives

The vision of this project was to implement an educational auditing tool that increases RN knowledge and skills for maintenance and care of central lines in order to decrease CLABSI rates at the project site's main campus thus exhibiting quality patient care and improving outcomes.

The mission of this project was to implement an educational intervention that will improve RNs knowledge on the importance of proper maintenance, care, and documentation of central lines. The process included a pre- intervention and post-intervention survey in addition to individualized nurse report cards and unit case reports disseminated as educational tools after visual and documentation audits were completed by the VARS team. The data collected during this project was used to determine whether

this new method of educating and informing proved beneficial in reducing CLABSI rates, whether knowledge gaps existed, and any additional needs as the project site continued to improve metrics surrounding clinical quality indicators. An integral part of the organization's mission is to translate knowledge into prevention, diagnosis, and disease treatment. Likewise, a core value of the institution is to demonstrate the highest standards of patient-centered care. There is congruence between the project and the organization's vision and mission statements. The ultimate goal of this project was to reduce CLABSI rates at the organization's main campus by providing an educational tool that improves professional practice and transcends into optimal patient outcomes. The two identified objectives of this project were:

1. At the completion of this six-week performance improvement project, the effect of the unit case reports and individualized nurse reports cards on the use of evidence-based practice to perform proper maintenance and documentation of central lines in reducing future CLABSI events were determined.

2. At the completion of this six-week performance improvement project, the attitudes and perceptions of nurses receiving the individualized report cards and its influence on educating best practices for central line management were determined.

CHAPTER II

NEEDS ASSESSMENT

Review of Literature

Methods

An automated literature search was conducted utilizing a variety of databases and

search engines. The databases included ProQuest, Medline, PubMed, and the search

engine Google. Key search terms included: *CLABSI, CLABSI and Education, CLABSI*

and Nursing, CLABSI and Prevention. For purposes of this review, CLABSI is defined as

a central line-associated bloodstream infection that occurs when bacteria or viruses enter

the bloodstream through a central line.

The literature was reviewed to identify various CLABSI prevention measures in

nursing practice, nursing process, and/or nursing workflow during the years 2009 to

present. Inclusion criteria were any studies evaluating CLABSI education and prevention

in a clinical setting; by registered nurses and or nursing assistants; directly involved in

patient care; with assessment of improvement in practice through patient outcomes; or

through process improvement. Exclusion criteria were CLABSI studies aimed strictly

toward clinician perceptions, attitudes, or acceptance of CLABSI education or

preventative measures and those studies directly aimed at physicians and/or physician

workflow. Of the potentially relevant articles screened, 28 studies met inclusion and

exclusion criteria with eight specific for nurse-focused CLABSI prevention. Table 1

describes the characteristics of the included studies, which were reviewed utilizing

O'Mathuna, Fineout-Overholt, and Johnston's (2010) Rapid Critical Appraisal

Checklists.

Table 1

Summary of the Evidence Base

Source	Variables	Design and Sample	Study Conclusions
Evanovich Zavotsky et al., 2015	Peer review using a central line management checklist	Pre-Post Study including three oncology units implementing a peer review process and central line management checklist	Decline in CLABSI rates, improved patient outcomes, increased staff satisfaction
Humphrey, 2015	Pre-test, hands-on educational session, and post-test	Pre-Post Study including 64 ICU RNs who attended education intervention	RNs' knowledge of care and maintenance of CLs improved significantly after the intervention
Jock et al., 2016	Multiple CLABSI prevention initiatives being led by various taskforces and departments over six years	Pre-Post Study in 2 hospital locations with 671 licensed beds studies over a six-year period (2009-2015)	ICU consistently able to maintain zero CLABSI rate after 15 months following implementation
Morrison et al., 2017	Educational intervention, implementation of visual audits prompting unit case reports and individual nurse report cards	Non-experimental, quality improvement project in 715-bed, 2-campus acute care community hospital. 620 CLs audited over 16weeks	19.2% visual audits failed. 113 unit case reports and 487 nurse report cards. Over time, frequency of CLABSI contributing factors decreased ($\rho = -0.12$, n = 620, P = .003).
Pérez Parra, 2010	Education intervention only. No follow-up on impact of education to practice	Pre-Post Study in 3 ICUs of tertiary university hospital in Spain	30.3% reduction in the CLABSI incidence density in adult ICUs with already acceptable rates of CLABSI
Raup et al., 2013	RN turnover rates and RN hours per patient day	Pre-Post Study of an interdisciplinary, targeted educational program lasting 3 hours in length and provided to all inpatient staff and clinicians over a two-week period	Reduced CLABSI rates from 17 cases to 5 cases in the 1st year post implementation and down to zero cases by 2nd year post implementation

Taylor et al., 2017	Infant Demographics	Interrupted Time Series Design. 318 Infants and 509 Central Lines inserted	Decline in CLABSI rates by 41%. Checklist compliance for insertion at 70%. Checklist compliance for overall daily maintenance at 66%
Williams, 2015	Pre-intervention group larger than the post-intervention group. Variables included age, gender, and ethnicity. Demographic composition similar for both groups for each variable.	Stepwise, system-based intervention that included education, evidence-based policies, and protocols	Significantly decrease between the pre-intervention and post-intervention groups (8.8% vs. 1.7%, P = .03)

Summary of the Evidence Base

  Improving practice and accountability. In an effort to demonstrate how the use

of checklists can influence prevention of CLABSI, Taylor et al. (2017) studied the use of

checklists for insertion, daily maintenance, and procedural access based on the existing

clinical guideline. Infection rates and compliance were monitored and reported back to

the unit each month over a 24-month period. They performed an interrupted time-series

design collecting data on 318 infants with a total of 509 central lines inserted in a 54-bed

Neonatal Intensive Care Unit before and after implementation of three checklists

designed for insertion, daily maintenance, and procedural line access. In the post-

intervention phase, descriptive statistics were calculated demonstrating a decline in

CLABSI rates by 41%, from 13.8 identified CLABSIs per 1,000 central-line days to 7.8

identified CLABSIs per 1,000 central-line days. Checklist compliance for insertion was

70%, and daily maintenance compliance overall mean was 66%.

  Evanovich Zavotsky, Malast, Festus, & Riskie (2015) were further able to

demonstrate significant impact on three oncology units when using a peer review process

involving the use of checklists to observe and document adherence to clinical guidelines surrounding CLABSI prevention. Over a two-year period, patients on the medical oncology, surgical oncology, and bone marrow transplant units were assessed by a delegated staff nurse each shift who performed a peer review using a central line management checklist. A taskforce comprised of staff nurses from each unit, the Performance Improvement (PI) analysts, director, and clinical nurse educators met weekly for over six months and decided on the specific improvement approach which led to a peer review process, design of a checklist, and instituting a daily interdisciplinary huddle to discuss hot topics such as current CLABSI rates. Nurses on the Unit Based Practice Council (UBPC) were responsible for creating the checklist. Over the span of two years, 2011-2013, CLABSI cases on the oncology units decreased by more than 50%.

Morrison, Raffaele, and Brennaman (2017) explored the effect of providing feedback to managers and bedside nurses on nurses' CLABSI contributing factors. This quality improvement was conducted in a 715-bed, two-campus acute care community hospital health care system. First, a four-part computer-based program training was developed to teach nurses how to manage central lines. The education included content on insertion site and dressing assessment, a detailed 16-step dressing change procedure, intravenous (IV) tubing and central line management, and a guide to appropriate documentation. After the education took place, unit case reports and personalized nurse report cards were disseminated to provide confidential feedback on central line audit deviations as found on both visual and documentation audits. Of the 620 lines visually audited from 14 nursing units, over 16 weeks, 113 lines (19.2%) failed the audit. Each

line triggered an electronic medical record audit, which identified 628 CLABSI contributing factors. Subsequently, nurse managers received 113 unit case reports and 487 bedside nurses received report cards. Over time, the frequency of CLABSI contributing factors decreased ($\rho = -0.12$, n = 620, P = .003).

Educational interventions. Williams (2015) sought to validate the effectiveness of chlorhexidine solution in reducing CLABSI in a clinical hospital setting. He evaluated a CLABSI reduction intervention which included an educational intervention to 73 employees in addition to a newly updated CVC and PICC care policy and care bundle. The study site did have an existing CBVC and PICC policy in place but did not include a standardized cleansing agent and there was minimal consistency with regard to site-cleansing frequency and solution, frequency of dressing changes, and staff awareness of the current policy in place for insertion and care to PICC and other CVC devices. Data from the pre- and post-intervention groups found a statistically significant decrease in CLABSI rates in patients who received the chlorhexidine solution for site cleansing at the time of insertion. The results of this study suggested that site cleansing with chlorhexidine decreases the rate of CLABSI, which led to the recommendation that the organization create an annual competency program and education on this topic. Continuation of the policy and protocol as well as continued data collection by the organizations' quality assurance coordinator were also recommended as a result of this study.

Evidence-based practices on prevention of CLABSI was further evaluated by Raup, Putman, and Cantu (2013) whose study evaluated an interdisciplinary, targeted education approach to teaching best practices on central-line insertion, maintenance

bundles, teamwork, and optimizing patient safety through supplies and hand hygiene. The study aimed to evaluate the effectiveness of this type of educational approach on its potential to decrease incidence of CLABSI in the acute care hospital setting. This study involved face-to-face small group education for every nurse, physician, ancillary service provider, and inpatient staff member employed by the facility over a two-week time period. Any staff attending physician unable to attend received written communication about the program and expectations directly from the chief of staff. The goal of this type of comprehensive, interdisciplinary education was to make a positive impact throughout the hospital in all inpatient areas and facilitate an institutional awareness and culture change. Results showed that CLABSIs dropped significantly in the organization from 24 cases in the pre-implementation year, 17 in the implementation year down to only five cases in the first year post-implementation and ultimately achieving zero cases by the second year post-implementation.

　　　　Capture of significant clinical data. In a process improvement study, Jock et al. (2016) found that the implementation of multiple CLABSI-prevention measures led to a decrease in CLABSI incidences. This multi-faceted approach to reducing CLABSI included the initiation of CLABSI bundles, staff education, chlorhexidine gluconate (CHG) wipes for site care, new CL dressings, and "nose to toes" CHG baths. Before implementation of the above methods, the average infection rate in 2009 was 1.9/1000 CL-days. Incidence of CLABSIs continued to decrease as the organization implemented the additional products and practices. In the 15 months following implementation, the ICU was able to consistently maintain a zero CLABSI rate.

In a pre-post study, Humphrey (2015) sought to explore the effectiveness of an educational session guided by the Healthcare and Technology Synergy Framework. The purpose of this study was to improve RNs' knowledge of evidence-based practice guidelines to decrease the incidence of CLABSI with an ultimate goal of zero cases. A pretest/posttest format was used to evaluate an educational session on the nursing management of central lines (CLs). The study concluded that RNs' knowledge of care and maintenance of CLs improved significantly after the intervention (pretest mean score ¼ 4.6 and posttest mean score ¼ 8.4; P ¼ .0001). As a result of this project, an annual evidence-based practice educational intervention was adopted for RNs at this large regional medical center. Limitations to this study however, included a small sample size, short study duration, and included only ICUs located at one facility. Likewise, the study proved to be significant in terms of revealing comments from the nursing staff on just how little they knew about proper central line maintenance being that central line care and maintenance primarily accounted for nearly 50% of their patient are responsibilities per shift.

Strengths and Limitations

Strengths

Studies evaluating the impact of nurse-focused educational sessions demonstrated both significant differences and improvements pre- and post- implementation (Williams, 2015; Raup et al., 2013). Other studies found compliance of evidence-based care guidelines on reducing CLABSI increased following the implementation of auditing tools such as peer reviews, checklists, and unit-based and individual nurse report cards (Taylor et al., 2017; Evanovich Zavotsky et al., 2015; Morrison et al., 2017). The findings of

these studies support the enormous potential impact nurse-focused CLABSI education has on driving evidence-based practice, quality patient care and improved patient outcomes.

Pérez Parra et al. (2010) found that a simple, evidence-based and updated educational measure resulted in a 30.3% reduction in the CLABSI incidence density in adult ICUs with already acceptable rates of CLABSI. The particular strength of this study demonstrates how an inexpensive, educational intervention can be of value in reducing CLABSI particularly for organizations that lack human or capital resources. Also of note, was that this study demonstrated a positive influence from education alone rather than in combination with CLABSI bundles and other interventions as most commonly studied.

Limitations

The research on CLABSI prevention has noteworthy limitations. The literature review for this study demonstrated similar limiting findings that included pre-post implementation studies, small sample sizes, and convenience sample sets. Randomized controlled trials of a CLABSI prevention intervention would not have been feasible. It would have been unethical to purposefully provide evidence-based care to some patients and not to others. Secondly, several of the studies reviewed in the literature focused solely on one single hospital unit or facility. Thirdly, education could be an effect modifier for the impact of auditing tools such as the checklists, peer reviews, and nurse report cards. It is difficult to determine if the effect of the change was because of the tools themselves or the increase in education performed before implementing the auditing tools.

Gaps in Practice/Literature

A gap in practice exists between recognizing contributing factors to CLABSI amongst competing initiatives. Often, healthcare organizations take a multi-layered approach to CLABSI prevention and initiate several strategies at or around the same time period making it difficult to discern exactly which measures were the most effective in preventing infection. Such was the case at this project site. CLABSI garnered much attention at the site for a number of months preceding the project due to high rates of infection causing several stakeholder groups to initiate preventative measures. A review of literature also exemplified the challenge in identifying the most impactful measures to address CLABSI and infection prevention when multiple initiaves are simultaneously underway.

Identification of the Setting and Sample

Setting

The project institution is a non-profit academic medical center whose 885-bed main campus offers acute care and specialty clinics for patients in a 24-county region in southeastern United States. It is a Level I trauma center, teaching hospital and an American Association of Colleges of Nursing (AACN) Magnet-designated facility. The institution is also home to an award-winning Children's Hospital and a NCI-designated Comprehensive Cancer Center. Its mission is to improve the health of the region, state, and nation and is internationally recognized as providing high quality and balanced excellence in patient care, research, and education.

Sample

A convenience sample was used for this study and selection criteria included full-time, part-time and/or PRN RNs providing direct care on the following units:

- 6th floor inpatient, Medical Oncology unit

- 7th floor inpatient, Cardiovascular Intensive Care (CVICU) unit

- 9th floor inpatient, Oncology unit

- 10th floor inpatient, Burn unit

Exclusion criteria consisted of RNs holding other positions where they provided direct care in areas other than the 6th floor Medical Oncology, 7th floor CVICU, 9th floor Oncology and 10th floor Burn units. The sample size was approximately 125 RNs who work on all four units.

The institution's staff of inpatient nurses working on those designated units took part in the project. A review of adult patient charts on all four units were also gathered during the pre-implementation and post-implementation phases to determine the effectiveness of the education. These units were identified based on their higher incidence of CLABSI rates as compared with the overall institutional rate. Dependent variables were:

- Non-terminal adult patients admitted to the medical oncology, CVICU, oncology, and burn units at main campus with a central line in place at time of admission.

- Non-terminal adult patients admitted to the medical oncology, CVICU, oncology, and burn units at main campus who have a central line inserted during their length of stay.

Stakeholders

Sponsors and stakeholders of this performance improvement project include the following:

- Patients with CVCs/central line devices

- The project site as a whole including, but not limited to:

  o Registered Nurses

  o Certified Nursing Assistants

  o Nurse Managers and Directors of Nursing under the direction of the Chief Nursing Officer

  o Infection Control Department including the Infection Preventionists

  o The Nursing Education Department under the direction of the Assistant Director of Clinical Education

  o Nursing Clinical Systems staff

  o Health Information System (HIS) trainers and analysts

- Surrounding community in terms of public perception of quality standards at project site

Organizational Assessment

Strengths

In order to assess the need for an educational auditing tool and the attitudes and perceptions surrounding its implementation, an analysis of strengths, weaknesses, opportunities and threats (SWOT) was performed. (See Figure 1). Strengths recognized included the buy-in from nursing leadership on the need to improve CLABSI rates at the project site. Several initiatives were already in place to help educate nursing staff on

prevention of CLABSI such as live skills fairs presented by the Nursing Education

Department and a bi-monthly CLABSI work-group comprised of stakeholders reporting

on CLABSI data and current auditing and educational efforts. Patients with active central

lines were also addressed during daily safety huddles throughout the organization to help

ensure the orders were current, necessary and proper maintenance of central lines were

adhered to. This Magnet facility also prides itself in its promotion of evidence-based

clinical outcomes as well as its robust health information system used to collect, store and

retrieve CLABSI-related data.

Weaknesses

Competing priorities at the project site were evident as several quality

improvement initiatives were underway during the project period. Several CLABSI-

focused efforts such as "scrub the hub", use of Chlorhexidine Gluconate (CHG) baths

and recently updated staff education videos specific to proper central line maintenance

were in effect just prior to or at the same time as the project period. Likewise, the project

site was undergoing high turnover rates of RNs with less than two years' experience.

Therefore, nurse staffing was a weakness to maintain support for a change in practice.

Opportunities

There was a large range of opportunities with prevention of CLABSI as reducing

the incidences have potential to significantly reduce length of stay and costs as well as

improve quality standards. An opportunity for interpersonal collaboration also existed in

the daily interdisciplinary team huddles which were found to be inconsistent on some of

the project units.

Threats

  The competing priorities of staff RN duties were an obvious threat to the project. Competing demands included timely medication administration, thorough and real-time documentation, as well as hourly rounding and patient-centered care practices to name just a few. Staffing also played a major factor as the project units were often either under-staffed or utilized float pool staff in order to meet acuity demands. In addition, threats from external forces like that of a Joint Commission visit as well as Magnet re-designation occurred during the project period.

Internal Forces (project)	External Forces (organization or environment)
Strengths	*Opportunities*
- Strong Nursing Education presence with a live skills fair component already familiar to staff - Leadership buy-in and attention towards improving CLABSI - Evidence-based clinical outcomes - Payment model that emphasizes improved quality - Monthly focus group - Current reporting of CLABSI incidences at organizations' daily safety huddles - Robust health information system (HIS) - History and reputation of the organization	- Shared savings and significant incentive potential - Potential to significantly reduce length of stay - Reduction in costs and improved quality standards - Increase interprofessional collaboration during daily interdisciplinary team huddles
Weaknesses	*Threats*
- High volume of RNs with little experience - Requires the involvement and commitment of all healthcare stakeholders - Time commitment to develop new education - Tight labor standard - High turnover rates of RNs with less than two years' experience - Competing priorities quality vs. financial - Lack of debriefing around CLABSI events. - Awareness to patient harm not equal to that of falls, etc.	- TJC and Magnet re-designation underway during time of project - Lack of resources - Ensuring staff adherence and accountability - Shared responsibility

Figure 1. SWOT Analysis

Assessment of Resources

Additional personnel, or nursing staff were not needed to implement this project. Current nursing staff on the pilot units did not need to alter workflow to accommodate the project. However, the VARS team did need to take additional steps in their usual workflow to identify the shifts worked by each nurse identified on the CLABSI audit checklist before sending those findings electronically to the specified Director of Nursing. The cost of paper and ink used in printing of the surveys and demographic questionnaires were absorbed into the project investigator's personal spending budget.

Project Purpose, Question, and Desired Outcomes

The project's purpose of utilizing individualized nurse report cards and unit care reports was to establish a means for educating RNs on the importance of maintaining guidelines compliance in the care of patients with central lines in a large, academic medical center. The specific learning experiences of these tools were designed to enhance the perceived awareness of RNs on the significance of CLABSI and its contributing factors. This study primarily explored the clinical question: "Will nurses' awareness and attitudes of CLABSI contributing factors be affected by implementation of individualized nurse report cards and unit care reports?" In addition, nurse-demographic data were gathered for descriptive analysis of the study sample. The intended outcome was to determine whether nurses were receptive to this type of educational auditing tool as demonstrated by the positive responses to the pre- and -post-implementation surveys. An additional intended outcome was to assess whether awareness of CLABSI contributing factors impacted delivery of quality care in terms of a reduction in CLABSI events as

demonstrated by a comparison between the number of CLABSI incidence on the

designated units 90-days before and 90-days after the project implementation period.

Team Selection

To best facilitate the project, the Doctorate of Nursing Practice faculty assigned

the Chair of the committee. The project investigator utilized organizational experts at the

project institution to serve on the committee. The Chief Nursing Officer (CNO) served as

project sponsor and brought over 25 years of experience in leading successful teams. The

CNO has a history of achieving award-winning results that have translated to optimal

patient care delivery. In her role, she was able to open lines of communication between

project team members and facilitate discussions that fostered project progression. The

Administrative Director of Clinical Operations and Nursing Oncology Service Line

served a primary role on the project team as a point of contact for one of the

implementation units and also oversaw the Vascular Access Resource Specialists

(VARS) team. This individual was also responsible for ensuring patient data was de-

identified and communicated timely to the project investigator. The additional team

members included the Lead Infection Preventionist RN and nursing representative from

the VARS team who were integral in ensuring the CLABSI infection incidences were

communicated, that auditing was performed in a timely manner, and that the project

investigator was well-informed of any practice changes related to management of central

lines.

CHAPTER III

THEORETICAL FRAMEWORK

This study will be conceptualized using Rogers' Diffusion of Innovations Theory (2003). This middle-range nursing theory developed by Everett M. Rogers (2003) was created to describe the process by which an innovation is communicated over time through a social system. The main elements of diffusion theory are innovation, style of communication, steps in decision making, time and the social system (Rogers, 2003). When applied to evidence-based practice (EBP), research findings or evidence represent the innovation, the report or presentation of the research finding are the communication, and the healthcare setting represents the social system. The innovation- decision process involves knowledge, persuasion, decision, implementation, and confirmation. According to Rogers (2003) there are five elements of a new or substitute clinical behavior that will each partly determine whether adoption or diffusion of a new activity will occur: relative advantage, compatibility, complexity, trialability, and observability. In this project, the selection of research instruments, participant recruitment strategies, and data interpretation were guided by this theoretical framework.

Rogers' Diffusion of Innovations model (as cited in Sanson-Fisher, 2004) suggested that there are five steps in the decision making process:

- researchers acquire knowledge about the proposed clinical change;

- The individual clinician is persuaded about the advantages of the innovation;

- The clinician engages in activities that will lead to a choice about adopting or rejecting the innovation;

- The innovation is incorporated into the daily activity of the clinician; and

- The clinician seeks reinforcement about the innovation decisions (e.g., discussion and comparison with peers).

Individuals will then move through this decision process at different rates according to Rogers, depending upon whether they are innovators, or early or late adopters (Sanson-Fisher, 2004).

In applying the Diffusion of Innovations Theory to utilization of nurse-focused report cards and unit case reports geared at identifying CLABSI contributing factors, the nurse is able to receive individualized feedback and education on how to improve central line practices and decrease chance of CLABSI on his or her patient population. The unit case reports allow the nurse managers to debrief at the unit level on CLABSI incidences in order to improve practice and to use as a 1:1 performance improvement plan and debriefing tool for the individualized nurses involved.

The Diffusion of Innovations Theory, in Figure 2, demonstrates the various rates at which individuals adopt newly diffused innovation (Kaminski, 2011). This model is publicly available to be used in the course of this performance improvement project.

http://cjni.net/journal/?p=1444
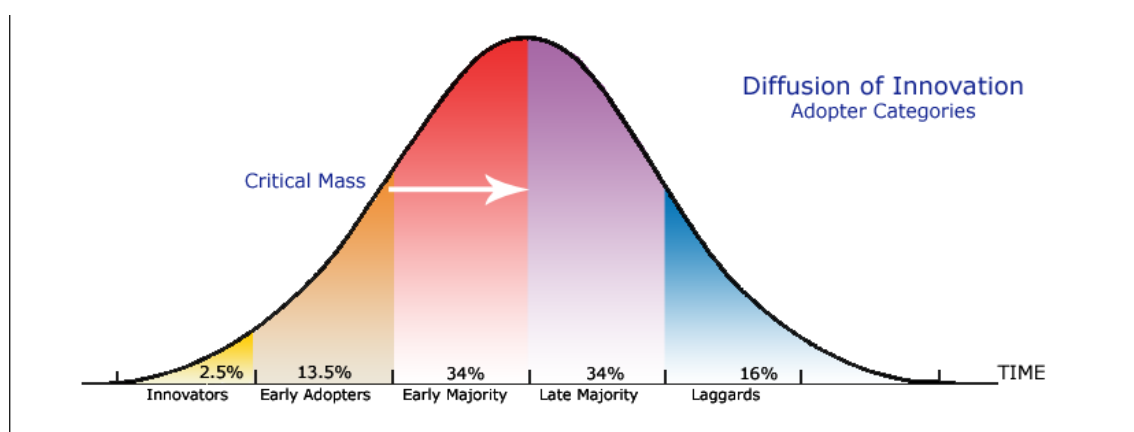
Figure 2. Diffusion of Innovation Theory

A second theory that will provide framework for this project will be the Feedback Intervention Theory (Kluger & DeNisi, 1996). According to Kluger and DeNisi (1996), to impact performance, feedback must be timely, detail focused, delivered in a goal-setting context, and provide information to change behavior and improve performance. Auditing performance indicators and providing feedback assists health care professionals' understanding of the care they provide and may lead to better outcomes (Kluger & DeNisi, 1996). The feedback intervention theory proposes that restating feedback, at a minimum, must be timely, about the right target, non-punitive, and customizable (Hysong, Best, & Pugh, 2006). When the data engages the individual, they become an active participant in the process, rather than a passive recipient of information.

More specifically the model describes application to quality improvement for nurses caring for patients with central lines in place. The Feedback Intervention Theory is utilized in this project to demonstrate value on how timely and customizable education regarding CLABSI contributing factors made available by use of nurse report cards and unit case reports can influence and improve nurses knowledge of proper central line maintenance and decrease incidence of future CLABSI events.

Summary

The tenets of Rogers' Diffusion of Innovations Theory (2003) were foundational to the development of this project specifically in the acceptance or rejection of the unit case reports and individualized nurse report cards and how the tools can be adopted to improve nursing practice. This project was further supported by Kluger and DeNisi's (1996) Feedback Intervention Theory addressing the need for performance feedback to be timely, non-punitive and engaging in order to lead to better outcomes. The use of both

theories was complementary in constructing the theoretical framework for this DNP

project.

CHAPTER IV

PLANNING

Project Proposal

The primary purpose of this nursing-led project was to assess the effects of individualized nurse report cards and unit case reports on identifying and reducing Central-Line Associated Bloodstream Infection (CLABSI) contributing factors. In the section that follows, the components used to plan the project will be described.

Timeline

The appropriate Hospital Institutional Review Board and the University's Research Review Board approvals were obtained for the purpose of this study. Confidentiality of patients and nurses were maintained through the use of non-identifying patient encounter numbers and encoded nurse identifiers for the time periods specified. Data was aggregated from the appropriate hospital databases and summarized for statistical analysis. Assessing the overall goals and intent of the project, a reasonable and achievable timeline of six to 12 months was projected and met. Specific activities are outlined in the following Table 2.

Table 2

Timetable

	Procedures	Timeline
SUMMER SEMSTER 2017	Secure Capstone Project Chair and Advisory Committee	June 2017
	Meet with Chair and Define Project Topic	June 2017
	Secure Preceptor and Practice Site for Practice Immersion	June 2017
	Begin Practice Immersion Experience with Focus on Computerized Clinical Decision Support (CCDS) and Meaningful Use	June 2017
	Preparatory Meetings with Practice Sponsor, Associate Director of Clinical Education, and Infection Prevention Specialists	June 2017
	Complete CITI Research Training for both GWU and hospital site	August 2017
	Begin attending bimonthly CLABSI stakeholders workgroup	August 2017
	Meet with Hospital-Assigned Nursing Research Mentor, Infection Preventionist, VARS team, and other project committee members	Beginning August 2017 through Culmination of Research Project
	Register for NURS 708 and 711	August 2017
FALL SEMESTER 2017	Continue Practice Immersion Experience	August –December 2017
	Create Design for Unit Case reports and Individualized Nurse Report Cards	Early October 2017
	Complete and Submit Project Proposal	Early October 2017
	Complete Application for Hospital IRB for Exempt Status	Mid-Term, October 2017
	Complete Application for GWU IRB for Exempt Status	November 2017

	Register for NURS 707 and 712	December 2017
	Begin Data Aggregation and Analysis	Pending Project Proposal and IRB Approvals
SPRING SEMESTER 2018	Register for NURS 715 and 712	April 2018
	Complete Practice Immersion Experience	May – July 2018
	Complete Data Aggregation and Analysis	May-June 2018
	Present Findings in Formal Paper and Prepare for Oral Defense	June-July 2018
	ProQuest Submission	July 2018
	Graduation	August 2018

Budget

There was not a budget for this project and the resource costs were measured

strictly in time required to aggregate, assimilate and disseminate data, and findings as

well as time spent to construct and implement the education. There was no cost

incurrence for access and/or utilization of the existing databases. The implementation

including pre- and post-surveys took place during the usual shift schedule of the

employees. This decreased the need to pay for overtime. The project investigator did

however, need to travel to be on-site to distribute the pre- and post-surveys during the

shift change in effort to achieve the best survey response rate from RNs.

CHAPTER V

EVALUATION PLAN

The aim of this project was to develop and integrate an educational tool to be used with RNs to help identify and reduce CLABSI contributing factors. Unit case reports and individualized nursing report cards were designed and implemented in response to visual and documentation audits that identify CLABSI contributing factors. The primary objective was to determine the effect of the unit case reports and individualized nurse reports cards on the use of evidence-based practice to perform proper maintenance and documentation of central lines in reducing future CLABSI events. The secondary objective was to determine the attitudes and perceptions of nurses receiving the individualized report cards and its influence on educating best practices for central line management.

Facilitators

Strong support from members of the project team and other nursing leaders was vital to the success of the project. Staff buy-in was positive for those units whose managers appeared to also buy-in to the project objectives. Finally, the VARS team were also open to minor changes in their workflow to accommodate project needs and deliver timely information throughout the span of the implementation period.

Barriers

Lack of face-to-face time to interface with the nurse managers on how and when they were using the unit case reports and individualized nurse report cards with their staff was an identified barrier. Likewise, not being present as an employee at the project site or directly involved in the completion or reporting of the initial CLABSI audits on the units

also posed a barrier to both communication and time. In addition, competing priorities on

the RN staff as well as staffing were recognized.

CHAPTER VI

IMPLEMENTATION

Protection of Human Subjects

Permission to conduct the project was obtained from the university and project

institution's Institutional Review Boards. This project was deemed exempt due to non-

identifiable surveys. Participation in the nurse surveys were voluntary and no identifying

data was placed on completed surveys, maintaining anonymity. Any registered nurse on

the four designated project units was subject to receiving an individualized nurse report

card during the six-week period only if auditing finds that nurse did care for a patient that

met criteria for CLABSI and whose care may have *potentially* contributed to the

incidence of CLABSI. However, participation in the pre-implementation and post-

implementation surveys for data collection purposes was voluntary, and the decision to

participate or not to participate did not have any consequences. At any time during the

study participants could withdraw participating in the survey data collection without any

consequences. Participants were provided a Letter of Information/Consent (Appendix A)

of the project purpose and that response is voluntary and anonymous. This brief session

took place during shift change and directly before dissemination of the pre-

implementation surveys. Response to the surveys were considered consent.

Threats and Barriers

Project threats worth mentioning are the use of tools that rely on self-reporting

measures and the potential for participants to either inflate or diminish their perception of

self-knowledge and skills. Likewise, it was notable that the project investigator projected

a sample size of 125 survey respondents, however the project closed with a final sample

of 79; of which only 35 received an individualized nurse report card as a result of

providing direct care to a patient positively identified with CLABSI. The design criteria

could be a potential barrier but was thought to be adequate given that the project

investigator was not employed or had access to patient chart data or audit findings and

therefore required an increased level of assistance from project team members to

successfully retrieve and share findings with the necessary stakeholder groups.

Time and availability of nurse managers to adjust work flow to attend additional

education sessions regarding the project objectives and purpose was another barrier. Of

note, the number of respondents on the pre- and post-implementation surveys was not as

high as intended likely due to the minimal exposure time the manager had or their

competing demands that decreased the opportunity to provide their nursing staff project

expectations. It is worthwhile to mention that only one Nurse Manager and two Nursing

Directors were present during the education session. The managers whose units were

added to the project in the final two weeks did not have the ability to attend an

educational session but rather received all project-related information and resources via

email and phone communication only. This likely affected the buy-in of those managers

and their RN staff as was observed in decreased communication and lower return rates on

surveys.

Steps in Implementation

Pilot Education

An educational session was held for the nurse managers of the pilot units to

discuss the project plan, objectives, and recommended use of the unit case reports and

individualized nurse report cards. Direct care registered nurses (RN) on the four pilot

units and on both 12-hour shifts were educated by receiving face-to-face explanation on the purpose and objectives of the project prior to implementation.

Interventions

The following interventions were implemented as part of this CLABSI performance improvement project: (1) Educational Session for Managers: Managers of the designated project units received face-to-face education on the purpose and objective of the overall project and project tools including the unit case reports and individualized nurse report cards. Managers were also given a document titled "Delivering Actionable Feedback" as a resource when discussing the results of the individualized nurse report cards and unit case reports with staff RNs (Appendix B). (2) CLABSI RN Awareness and Attitudes Pre- and Post-Implementation Surveys: These surveys were administered to staff RNs on the designated units directly prior to and after the implementation of individualized report cards to measure their awareness of the significance of CLABSI and its contributing factors and attitudes towards receiving individualized feedback on care of patients with central lines (Appendices C-D). (3) Demographics Questionnaire: The questionnaires were attached to the pre-implementation survey and used for descriptive statistics of the survey sample (Appendix E). (4) CLABSI Unit Case Reports: The unit case reports allow the nurse managers to debrief at the unit level on CLABSI incidences in order to improve practice and to use as a 1:1 performance improvement plan and debriefing tool for the individualized nurses involved (Appendix F). (5) Finally, the CLABSI Individualized Nurse Report Cards: Distributed electronically to the nurse managers of the designated units to be shared with the identified staff RNs as a means to educate and de-brief on the CLABSI incidence (Appendix G).

Project Design and Implementation

Design

This performance improvement project included a pre- and post-implementation evaluation performed to measure awareness and attitudes of nursing staff. De-identified patient information on cases who have central line infections were collected by the Lead Infection Preventionist using existing guidelines and practices from the project site. Documentation audits were administered by the Vascular Access Resource Specialist (VARS) Team. This team of registered nurses are responsible for placement of peripherally-inserted central catheters (PICC) lines and assist with placement of other central lines and management of care. The VARS team has been performing documentation audits for years as part of their role and reporting their audit findings including nurse documentation, to nurse managers. The VARS Team had recently begun using a specific checklist over the past several months during this process. They used that same checklist to document audit findings and that information was patient de-identified and then reported to the project investigator. At that point, the project investigator populated a unit case report for the designated project unit that had experienced a recent CLABSI event as well as populated a nurse report card for each individualized staff RN providing direct care of the patient within the 72 hours prior to the positive CLABSI infection and to be shared with that nurse by their direct manager.

Implementation

   This project intended to assess awareness and attitudes towards CLABSI contributing factors with the intent to increase knowledge and proper adherence to guidelines for central line maintenance. The project was implemented in February 2018 across four adult, inpatient medical units. Resources for project development and implementation either already existed as part of the organization's workflow and according to existing guidelines or were created by the project investigator and shared with the organization to be used over the duration of the project.

<div align="center">

Instrument

</div>

   The CLABSI RN Awareness and Attitudes Survey was designed by the project investigator using CLABSI recognition and response standards and guidelines (Centers for Disease Prevention and Control, 2018; personal communication, October 11, 2017) for content validity and was reviewed for face validity by two expert nurse educators and one quality expert executive nurse leader. The survey was developed to measure outcomes of an educational tool to promote awareness on the significance of CLABSI, proper central line maintenance, and CLABSI contributing factors. This validated tool included six questions, each utilizing a 5-point Likert-type scale with responses ranging from "strongly disagree" to "strongly agree" with one additional item equating to "does not apply."

   Wilcoxon signed-rank tests were used to compare the post-implementation survey mean to the pre-implementation survey mean of both tools. Paired-samples t-tests were used to compare the 90-day post-implementation CLABSI incidences on the four affected medical units with the 90-day pre-implementation CLABSI incidences to determine any

significant effect of unit case reports and individualized nurse reports cards on CLABSI cases. Nurse-specific demographic data including years of experience, shift worked, and highest level of nursing education obtained from the Demographics Questionnaire were used for descriptive statistics of the survey sample.

Process

This performance improvement project included a pre- and post-implementation evaluation performed to measure awareness and attitudes of nursing staff. De-identified patient information on cases who have central line infections were collected by the Lead Infection Preventionist using existing guidelines and practices from the project site. Documentation audits were administered by the Vascular Access Resource Specialist (VARS) Team. This team of registered nurses are responsible for placement of peripherally-inserted central catheters (PICC lines) and assist with placement of other central lines and management of care. The VARS team has been performing documentation audits for years as part of their role and reporting their audit findings including nurse documentation, to nurse managers. The VARS Team had recently begun using a specific checklist over the past several months during this process. They used that same checklist to document audit findings and that information was patient de-identified and then reported to the project investigator. At that point, the project investigator populated a unit case report for the designated project unit that had experienced a recent CLABSI event as well as populated a nurse report card for each individualized staff RN providing direct care of the patient within the 72 hours prior to the positive CLABSI infection and to be shared with that nurse by their direct manager.

Project Closure

Central line-associated bloodstream infections (CLABSIs) result in thousands of deaths each year and billions of dollars in added costs to the healthcare system. Despite those staggering numbers, CLABSI infections are considered preventable. For that reason, it is imperative that healthcare organizations, leaders, and nursing staff promote strategies to combat CLABSI incidences.

Over the six-week implementation period, all four of the designated project units received a unit case report for a CLABSI incidence identified on their unit; two of the four units received an additional one or two unit case report as a result multiple confirmed cases of CLABSI. In total, there were eight confirmed cases of CLABSI that occurred during the six-week implementation period. In addition to the unit case reports sent to nurse managers, individualized nurse report cards were also provided to the manager to be shared with each staff RN on that unit providing direct care of the identified patient within 72 hours of the confirmed infection. The project closed with a sample of 35 RNs receiving one individualized nurse report card, of which three received two reports.

The use of the individualized nurse report cards and unit case reports will allow the facility to continue this form of auditing staff through education and ensure the sustainability of the process. During a meeting with the stakeholders, project findings were reviewed. Managers of the project units were given opportunity to offer feedback on how best to use the tools moving forward. The goal of the project institution was to decrease incidences of CLABSI. Performing this project was a positive step in the right direction by providing a means to improve staff awareness on the significance of

CLABSI, improve adherence to central line management guidelines, and potentially

decrease incidence of future CLABSI events.

CHAPTER VII

INTERPRETATION OF DATA

This section will present project findings obtained through descriptive and inferential analyses. These results present the effects of Unit Case Reports and Individualized Nurse Report Cards on the awareness and attitudes of nursing regarding CLABSI contributing factors. A convenience sample was used for this project, of which 79 inpatient RNs, working either day or night shift across four medical units participated. Over the six-week implementation period, eight CLABSI incidences were identified across the four units. During this time, 35 individualized nurse report cards were distributed to nurses who were responsible for the care of a patient who tested positive for CLABSI infection within 72 hours. Three out of the 35 RNs received an individualized report card for two separate patient events.

Data Collection

Data was collected at two time points to measure nurses' awareness and attitudes towards CLABSI contributing factors using a six question, Likert-type survey. Data collection points occurred one week prior to the start of implementation for baseline collection, and one week after project implementation. Scores were collected and recorded by the project investigator. The project data was recorded and organized on a personal computer utilizing Google spreadsheets. Statistical Package for Social Science (SPSS) was used to perform statistical data analysis.

Data Analysis

The differences in nurse awareness and attitudes regarding CLABSI and its contributing factors were analyzed. A Wilcoxon signed-rank test was used to examine

differences between nurse's scores before and after the project period on two of the four project units (see Table 3). Only those two units were compared using the Wilcoxon signed-rank test because they provided both pre- and post-implementation survey results. The test did not show statistically- significant differences between pre- and post-implementation scores at the alpha=0.05 level for those defined units (p-values ranged from 0.102 to 0.748 for paired responses).

Table 3

Wilcoxon Signed-Rank Test Pre- and Post-Survey Scores on Two Medical Units

Wilcoxon Signed-Rank test 2-tailed p-values by medical unit and question						
	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6
Medical Unit 6	0.255	0.715	0.458	0.748	.0102	.0201
Medical Unit 7	0.102	0.157	0.564	0.109	0.317	0.564

A Kruskal-Wallis test was used to compare post-implementation survey scores across all four project units (see Table 4). The test did not show statistically-significant different scores between units at the alpha=0.05 level (p-values ranged from 0.113 to 0.655 for question responses).

Table 4

Kruskal-Wallis Test Comparing Post Survey Scores across all Four Medical Units

Kruskal-Wallis- test p-value by question					
Question 1	Question 2	Question 3	Question 4	Question 5	Question 6
0.427	0.113	0.655	0.299	0.263	0.302

Descriptive statistics were also evaluated when determining the demographic makeup of the project participants. Roughly 63% (50) of the RNs sample size worked day shift as opposed to 37% (29) who worked night shift (See Figure 3). Thirty-eight percent (30) of the survey respondents had an Associate's Degree as their highest nursing degree held as opposed to 62% (49) who had a Bachelor's Degree. None of the 79 RNs surveyed held a nursing degree beyond that of a Bachelor's Degree (See Figure 4). Years of experience varied across all 79 RN participants, with the 35% majority of RNs (27) having 0-2 years of experience (See Figure 5).
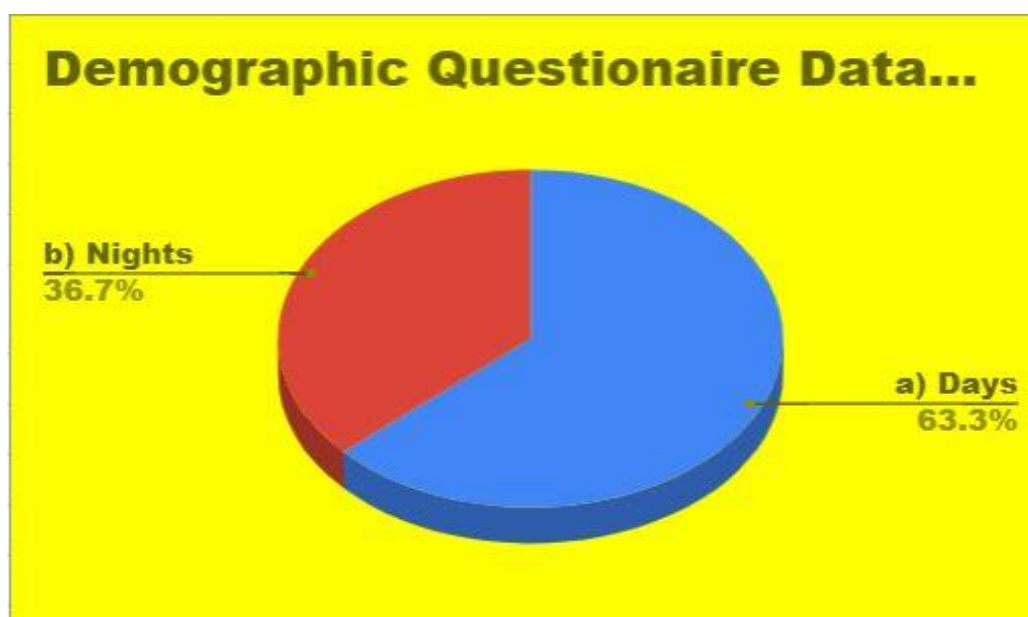

Figure 3. Demographics Questionnaire - Shift Worked

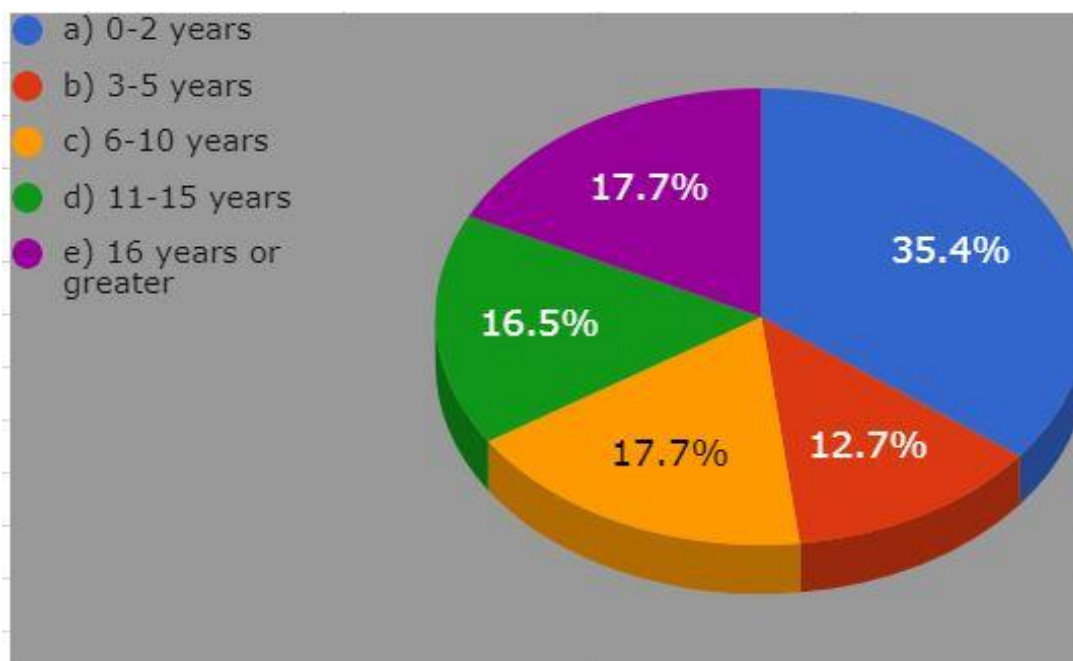*Figure 4*. Demographics Questionnaire - Highest Nursing Degree Held

Figure 5. Demographics Questionnaire - Years of Nursing Experience

CHAPTER VIII

UTILIZATION AND REPORT OF RESULTS

The aim of this project was to develop and integrate an educational tool to be used with RNs to help identify and reduce CLABSI contributing factors. Unit case reports and individualized nursing report cards were implemented in response to documentation audits that identified RNs responsible for the care of patients recently identified with CLABSI and potential contributing factors. A main objective was to determine the attitudes and awareness of nurses receiving the individualized report cards and its influence on educating best practices for central line management. The Wilcoxon signed-rank test and descriptive statistics were used to compare RNs' level of perceived awareness prior to and following the implementation of these tools as measured by the CLABSI RN Awareness and Attitudes Survey. The following chapter presents the implication of project findings as well as the limitations and final conclusion.

Implication of Findings

Performing descriptive statistics tests performed to compare post-implementation survey scores across all four project units, no statistically significant differences were found. Rather, the comparison confirmed that all four project units responded similarly after implementation of unit case reports and individualized nurse report cards (See Table 5). One conclusion that could be made from these results is that the RN staff already had or felt readiness towards receiving feedback regarding CLABSI events. Descriptive data including measures of central tendencies for each question on the post-implementation survey revealed most RNs agreed or strongly agreed that they did find it helpful to receive an educational tool that raised their awareness of factors that contribute to

CLABSI, they did appreciate their manager debriefing with them personally about workflow practices that may have contributed to incidence of CLABSI on their unit, and did appreciate their manager debriefing with the staff at the unit level about workflow practices that may have contributed to incidence of CLABSI on the unit.

Table 5

Distribution of Post-Survey Scores by Unit

	Unit	Median	Standard Deviation
Question 1 - I feel somewhat uncomfortable working with central line devices	6	1	1.528
	7	2	1.225
	9	2	1.345
	10	2	1.628
Question 2- If I need more information about how to manage care of central lines, I would use resources available at my job site (ex. Healthstream, policies and procedures accessible via WakeOne etc.)	6	4.5	1.193
	7	5	0
	9	5	.488
	10	5	.892
Question 3- If I need more information about how to manage care of central lines, I would feel comfortable asking people I work with	6	5	.669
	7	5	.447
	9	5	.488
	10	5	1.033
Question 4- I would/did find it helpful to receive an educational tool that raises my awareness of factors that contribute to CLABSI	6	4	.853
	7	5	.894
	9	5	.787
	10	5	.719
Question 5- I would/did appreciate my manager to debrief with me personally about workflow practices that may have contributed to incidence of CLABSI on my unit	6	4.5	.778
	7	5	0
	9	5	.787
	10	5	.814
Question 6- I would/did appreciate my manager to debrief with the staff at the unit level about workflow practices that may have contributed to incidence of CLABSI on the unit	6	4.5	.669
	7	5	0
	9	5	.756
	10	5	.814

Limitations

Limitations of this study, including small sample sizes, short time period to disseminate the tool and provide the education, and low incidences of CLABSI during the project period made it difficult to generalize results among RN staff across a large, acute care setting. Knowledge gained from this project highlights the need for further research to determine the effectiveness of unit case report and individualized nurse report cards as a CLABSI educational tool for RN staff.

Additionally, it is notable that the initial project scope included implementation on only two medical units. However, there were no CLABSI occurrences four weeks into the six-week project and therefore two additional units were added late in the project after IRB addendum approval. Ultimately, eight total CLABSI incidents occurred during the project across all four units. The lack pre-project planning did not occur with the nurse managers of either of the two units added medical units which may have impacted manager and staff buy-in of the project goals. This lack of prior notice and planning also resulted in no pre-implementation surveys being distributed to those units which affected the ability to fully ascertain consistent comparative analysis of the survey results.

Recommendations

The infrastructure to sustain this effort moving forward is in place, but will require a commitment that involves stakeholder monitoring and buy-in from the top down to ensure full effectiveness and compliance with the initiative. While this project did support the notion that RNs are receptive to feedback from management both individually and at the unit-level regarding CLABSI events, it will ultimately be up to the

organization's leaders to determine how, when, and where that information will be utilized moving forward.

Recommendations for future practice include automating current processes. Manual documentation audits performed by the VARS team and formatting of that information into unit case reports and individualized nurse report cards, should this project be sustained, can become automated. Real-time electronic dashboards currently exist in the organization's health information system (HIS). The same type of data collected during this project could be displayed to the nurse managers and to the staff RNs themselves with the use of dashboards in the HIS triggered by specific data elements at specific points in time during the patient's hospital stay. The healthcare organization would be incentivized to create such a dashboard that identified CLABSI contributing factors at the point of care and provides immediate feedback that influence quality and delivery of care for patients with central lines.

Conclusion

With the increased demand on improving medical and social services, it is imperative that healthcare organizations take measures consistent with the Institute of Health Improvement's (IHI) (2018) focus on the Triple Aim. As such, this project has important implications to improving the patient experience of care, improving the health of populations and reducing the per capita cost of health care (IHI, 2018). The greatest impact this project can have is increasing awareness of CLABSI contributing factors so that care and management of central line devices improves and CLABSI incidences decrease. That ripple effect of turning data into information into wisdom is what transforms practice and ultimately improves the quality and delivery of patient care. This

project illustrates the need for further research on feedback delivery to RNs regarding CLABSI incidences and increasing the awareness of its contributing factors. Continuing to assess and improve CLABSI measures are essential to creating workable solutions beneficial to all stakeholders.

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Appendix A

Letter of Information

Project Title: The Effect of Individualized Nurse Report Cards and Unit Case Reports on the Awareness and Attitudes of Nurses towards CLABSI Contributing Factors

Project Leader: Shannon Hawkins, MSN, RN-BC, CNE

As part of the requirements for the Doctorate of Nursing Practice Degree, I am conducting a project about the effect of an educational auditing tool on the awareness and attitudes of nursing staff managing care of patients with central line devices. You have been selected for inclusion in this project because you are a registered nurse working on a unit that historically has had a higher number of CLABSI rates. Before you decide to participate in this project, it is important that you understand why the project is being done and what it will involve. Please take the time to read the following information carefully.

The purpose of this DNP project is to examine the level of awareness and attitudes following implementation of individualized nurse report cards and unit case reports after CLABSI identification has occurred on your primary unit of work. Your expected time commitment for this survey is approximately 5-10 minutes. You will be asked to complete an anonymous demographics questionnaire and a CLABSI RN Awareness and Attitudes Survey administered during shift change.
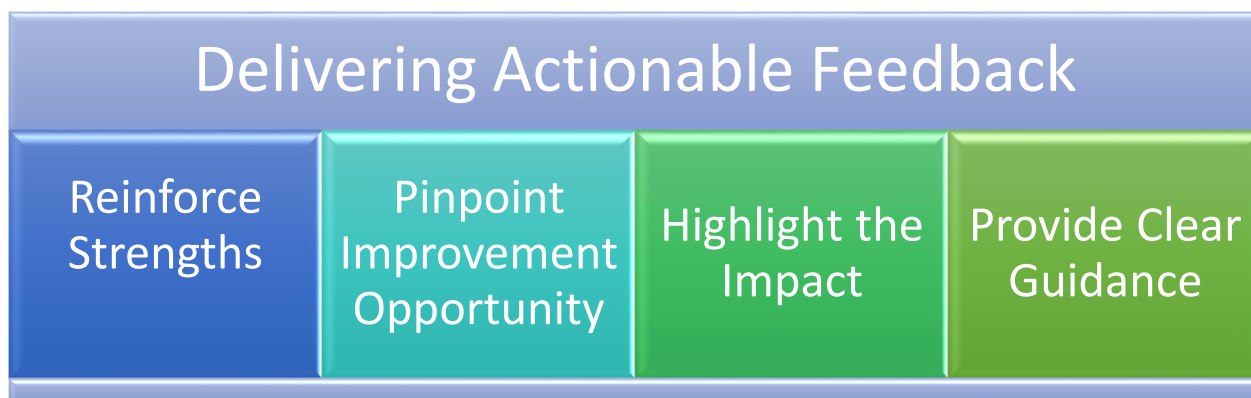
The risks of this project are minimal. These risks are similar to those you experience when disclosing information to others. You may decline to answer any or all questions if you choose. This will not affect your standing as an employee of the hospital. There may be risks that are not anticipated. However, every effort will be made to minimize any risks. The benefits of this project are that information will be used to inform further research.

Completion of the survey is anonymous and voluntary. There will be no direct benefit to you for your participation in this project. There is no monetary compensation or extra credit to you for your participation in this project. You may withdraw from the project at any time. Participation in the project or the decision not to participate in the project will in no way affect your employment or relationship to the hospital. It is up to you to decide whether or not to take part in this DNP project.

Your responses will be anonymous and confidential. Please do not write any identifying information on your questionnaire. Should you have any questions about the project or any related matters, please contact the project leader shawkins2@gardner-webb.edu or my faculty chair, Dr. Nicole Waters at nwaters@gardner-webb.edu. By submitting the CLABSI RN Awareness and Attitudes Survey, I confirm that I have read and understood the information. I understand that my participation is voluntary, and that I am free to withdraw at any time. The Institutional Review Board (IRB) is a group of people who review the project to protect your rights. If you have a question about your rights as a project participant, or you would like to discuss problems or concerns, have questions or want to offer input, or you want to obtain additional information, you should contact the Chairman of the IRB at (336)716-4542.

Appendix B

Delivering Actionable Feedback

Delivering Actionable Feedback

| Reinforce Strengths | Pinpoint Improvement Opportunity | Highlight the Impact | Provide Clear Guidance |

What did the nurse do well?

Share specific examples of what the nurse did well to build confidence and reinforce good practices.

What skill or behavior can the nurse improve?

Share specific examples of what you have observed.

How can improvement in this area have an impact on patient care?

Describe how improving this skill or behavior can have a postive impact on safety or patient care.

How can this nurse change this behavior to improve?

Explain the steps the nurse should take to improve. Include tips and tricks.

Source: HR Advancement Center. *The Manager's Guide to Accurate Evaluations*. Washington, D.C. Advisory Board, 2014. Nursing Executive Center research and analysis.

Appendix C

CLABSI RN Awareness and Attitudes Survey
Pre-Implementation

Use the scale of 1 to 5 (1=Strongly Disagree, 3=No Opinion, 5=Strongly Agree) to
indicate how much you agree or disagree with each statement.
Please note that the questionnaire is only about your attitudes and awareness of caring for
patients with central line devices, not the unit or hospital facility.

	General Awareness and Attitudes Regarding Education about Managing Central Venous Catheters (CVCs or also known as central lines)	**Does Not Apply**	**Strongly Disagree**	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1.	I feel somewhat uncomfortable working with central line devices.	☐	1	2	3	4	5
2.	If I need more information about how to manage care of central lines, I would use resources available at my job site (for example, Healthstream, policies and procedures accessible via WakeOne, etc.).	☐	1	2	3	4	5
3.	If I need more information about how to manage care of central lines I would feel comfortable asking people I work with.	☐	1	2	3	4	5
4.	I would find it helpful to receive an educational tool that raises my awareness of factors that contribute to CLABSI.	☐	1	2	3	4	5
5.	I would appreciate my manager to debrief with me personally about workflow practices that may have contributed to incidences of CLABSI on my unit.	☐	1	2	3	4	5
6.	I would appreciate my manager to debrief with the staff at the unit level about workflow practices that may have contributed to incidences of CLABSI on the unit.	☐	1	2	3	4	5

Appendix D
CLABSI RN Awareness and Attitudes Survey
Post-Implementation

Use the scale of 1 to 5 (1=Strongly Disagree, 3=No Opinion, 5=Strongly Agree) to
indicate how much you agree or disagree with each statement.
Please note that the questionnaire is only about your attitudes and awareness of caring for
patients with central line devices, not the unit or hospital facility.

	General Awareness and Attitudes Regarding Education about Managing Central Venous Catheters (CVCs or also known as central lines)	**Does Not Apply**	**Strongly Disagree**	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1.	I feel somewhat uncomfortable working with central line devices.	☐	1	2	3	4	5
2.	If I need more information about how to manage care of central lines, I would use resources available at my job site (for example, Healthstream, policies and procedures accessible via WakeOne, etc.).	☐	1	2	3	4	5
3.	If I need more information about how to manage care of central lines I would feel comfortable asking people I work with.	☐	1	2	3	4	5
4.	I found it helpful to receive an educational tool that raised my awareness of factors that contribute to CLABSI.	☐	1	2	3	4	5
5.	I appreciated my manager debriefing with me personally about workflow practices that may have contributed to incidences of CLABSI on my unit.	☐	1	2	3	4	5
6.	I appreciated my manager debriefing with the staff at the unit level about workflow practices that may have contributed to incidences of CLABSI on the unit.	☐	1	2	3	4	5

Appendix E

Demographic Questionnaire

Select or fill in the appropriate answer that most accurately reflects your nursing practice.

1. Which shift do you primarily work?
   a. Days
   b. Nights
2. Please specify the number of years of experience as a registered nurse
   a. 0-2 years
   b. 3-5 years
   c. 6-10 years
   d. 11-15 years
   e. 16 years or greater
3. What is your highest nursing degree held?
   a. Associate Degree in Nursing (ADN)
   b. Bachelor of Science in Nursing (BSN)
   c. Master of Science in Nursing Degree (MSN)
   d. Doctorate of Nursing Practice (DNP) or other terminal degree

Appendix F

CLABSI Unit Case Report

CLABSI Unit Case Report
Timeframe: February 12th-18th, 2018
Presented by the DNP Project Investigator & VARS Team

Introduction
Below are CLABSI-related findings gathered from the Infection Control Department and Vascular Access Resource Specialists (VARS) Team. The following information provides a visual report of CLABSI incidences on your unit and the contributing factors that led to the incidence based on visual and documentation auditing.

Weekly CLABSI Incidences on Unit
The following patients scored positive for CLABSI according to the NHSN criteria and identified by an Infection Preventionist during the timeframe listed above.
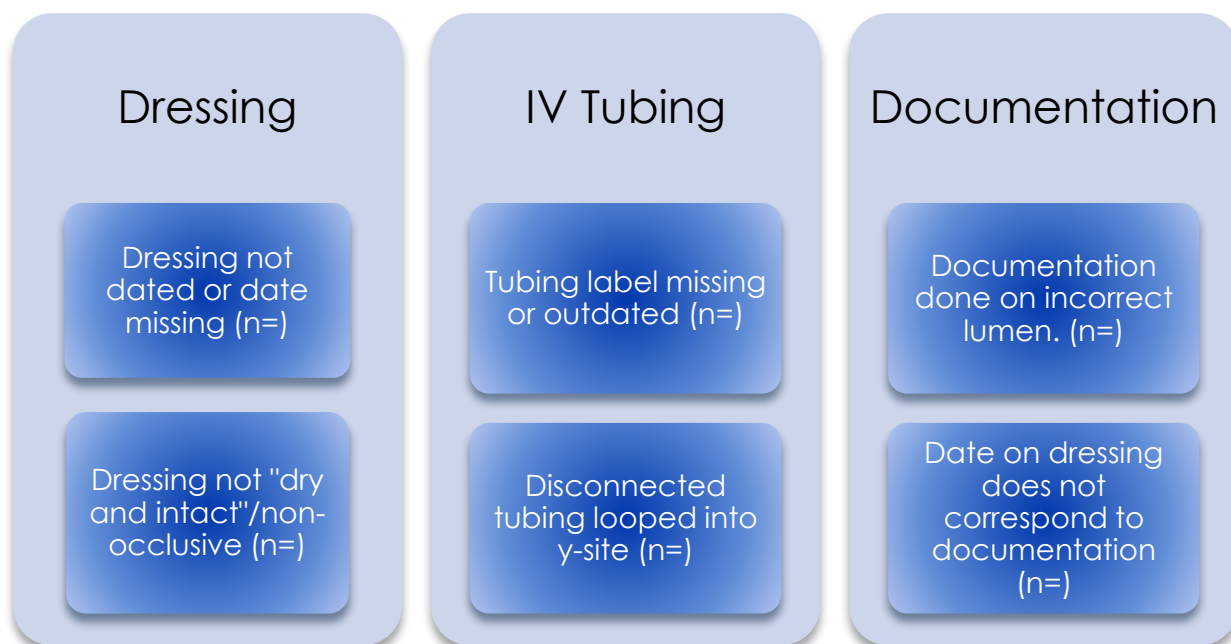
Patient (de-identified)	Date of Onset	Pathogen
Patient 1		
Patient 2		
Patient 3		

RN Attributes

RN Name	Primary Unit Worked & Shift	CLABSI Date	Audit date	CLABSI Contributing Factor
RN X	7CVICU/Nights			
RN Y	7 CVICU- Days			
RN Z	7 CVICU- Nights			

Commonalities across the Unit

The following CLABSI contributing factors identified during this timeframe can be categorized into the 3 areas below.

Dressing	IV Tubing	Documentation
Dressing not dated or date missing (n=)	Tubing label missing or outdated (n=)	Documentation done on incorrect lumen. (n=)
Dressing not "dry and intact"/non-occlusive (n=)	Disconnected tubing looped into y-site (n=)	Date on dressing does not correspond to documentation (n=)

Policies/Guidelines

WFBH Management of Intravascular Devices Intensive Care. 2017

WFBH Nursing Policy on Central Venous Access

Healthstream Education

Recommendations

Unit case reports provide management an opportunity to debrief at the unit level regarding such "never-events" as CLABSI. The purpose is to increase staff's knowledge regarding the significance of CLABSI, proper adherence to guidelines for management of central line devices, and awareness of CLABSI contributing factors.

Please take this opportunity to also distribute the following individualized nurse report cards to the RNs identified on this report for 1:1 learning opportunities to enhance professional growth and improve delivery of high quality patient care.

Appendix G

CLABSI Nursing Report Card

CLABSI Nursing Report Card
Timeframe: February 12th-18th, 2018

Introduction

Below are CLABSI-related findings gathered from the Infection Control Department and Vascular Access Resource Specialists (VARS) Team. The following information provides a visual report of CLABSI incidences on your unit and the contributing factors that led to the incidence based upon visual and documentation auditing. These findings occurred during the timeframe listed below and are specific to your role in managing central line devices and/or occurred during a time period for which the patient was under your direct care.

Recommendations

Individualized Nursing Report Cards provide RNs an educational tool intended to enhance professional growth and improve delivery of high quality patient care. The purpose is to increase knowledge regarding the significance of CLABSI, proper adherence to guidelines for management of central lines, and awareness of CLABSI contributing factors. These cards are not meant to be punitive in nature.

Please take this opportunity to review these findings with your direct supervisor and discuss opportunities for improvement and/or additional educational support.

Weekly CLABSI Incidences on Unit

The following patients scored positive for CLABSI according to NHSN criteria and identified by an Infection Preventionist during the timeframe listed above. Visual and documentation audits suggest the CLABSI contributing factors listed below occurred in some part relative to your management of the patient(s) central line device(s).
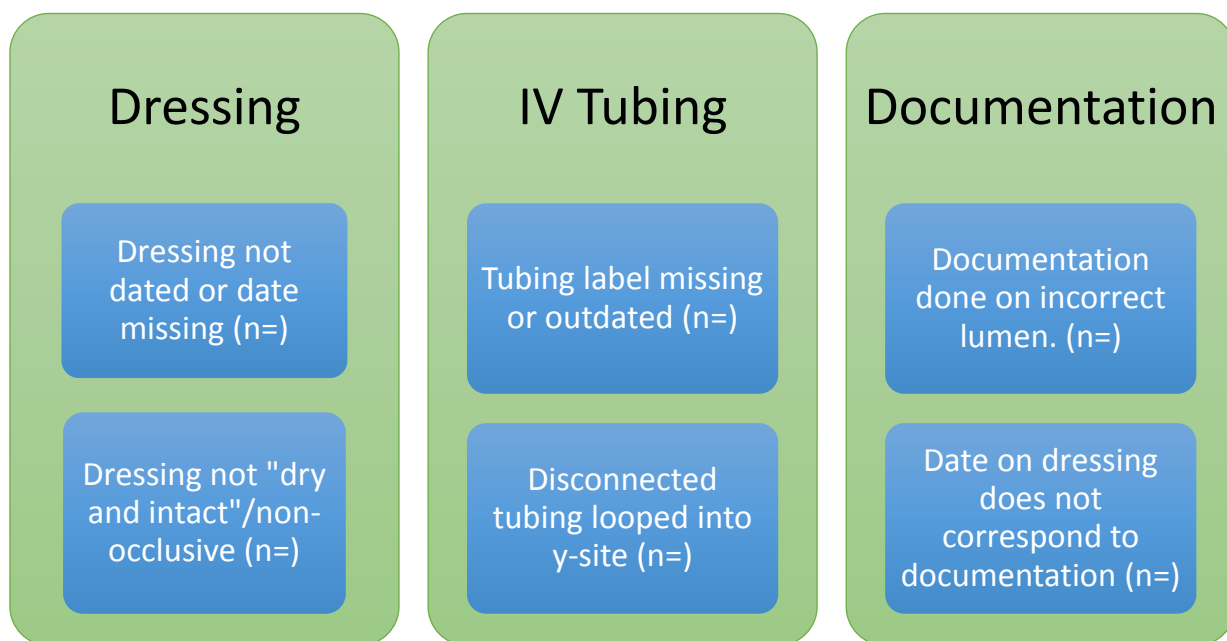
"I believe in zero CLABSIs"

Patient Name (de-identified)	CLABSI Date	Audit date	CLABSI Contributing Factor(s)
Patient X			
Patient Y			
Patient Z			

Commonalities in Contributing Factors

The following CLABSI contributing factors identified during this timeframe can be categorized into the 3 areas below.

Dressing

- Dressing not dated or date missing (n=)
- Dressing not "dry and intact"/non-occlusive (n=)

IV Tubing

- Tubing label missing or outdated (n=)
- Disconnected tubing looped into y-site (n=)

Documentation

- Documentation done on incorrect lumen. (n=)
- Date on dressing does not correspond to documentation (n=)

Policies/Guidelines

WFBH Management of Intravascular Devices Intensive Care. 2017

WFBH Nursing Policy on Central Venous Access

Healthstream Education