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Changing the Ways Bedside Nursing Staff Think About 'All Things Urinary Catheters

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by

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Abstract

The purpose of this project was to bring attention to the importance of the bedside nursing staff's "back to the basics" approach to nurse-led interventions to help reduce the number of increasing hospital-acquired infections (HAI), specifically catheter-associated urinary tract infections (CAUTI). The motivation to address this problem was due to the bedside nursing staff under-utilizing best practice interventions to prevent insertions and re-insertions of urinary catheters. A high number of urinary catheter insertions and re-insertions increases the risk of a CAUTI. Evidence-based interventions should be reinforced and utilized by bedside nursing staff to prevent insertions and re-insertions. Evidence-based nurse-led practices such as bladder scanning (to assess urinary bladder volumes), encouraging fluids by mouth or intravenous (if applicable), and mobilizing the patient frequently and as soon as possible post-surgery (Simsek & Sureyya, 2017). Methods used to address this quality improvement project are education via poster board presentation and pre and post-test questionnaires to evaluate the knowledge level of the bedside nursing staff. Nursing staff includes registered nurses (RN), licensed practical nurses (LPN), and certified nursing assistants (CNAs). The nursing staff plays an integral part in the care, maintenance, and reduction of catheter-associated urinary tract infections (CAUTIs). Education of best practices and supportive measures to decrease catheter-associated insertions and re-insertions to reduce CAUTI rates were discussed. Reinforcing and re-educating on evidence-based nurse-led practices will continue to be the most critical interventions to improve patient outcomes. (Parker et al., 2017).

Keywords: urinary catheters, hospital-acquired infections, HAIs, supportive measures, nurse-led, evidence-based education

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Problem Recognition

An increase in hospital-acquired infections (HAI) globally, specifically catheter-associated urinary tract infections (CAUTI), has significantly raised the priority of preventing HAIs. Urinary tract infection (UTI) is the most common infection, accounting for up to 36% of all healthcare-associated infections. CAUTIs represent the majority of UTIs, up to 67% in all hospital inpatients (Parker et al., 2017).

A high number of urinary catheter insertions and re-insertions increases the risk of a CAUTI. At a 950-bed acute care facility in the southeastern United States, 1,972 patients had a urinary catheter inserted during the fourth quarter of 2020. This resulted in the cost of approximately $6,000 monthly to the acute care facility for the cost of the urinary catheter kits. Of those patients with a urinary catheter inserted, 22 of them developed a CAUTI. The cost increased to $40,000 per patient who was identified with a CAUTI.

In 2021, there was an increase in CAUTI rates compared to 2020 first-quarter data (Novant Health, 2020). The number of re-insertions continued to increase each month, and the number of CAUTIs also increased. To combat rising CAUTI rates, a standardized "No CAUTI" bundle is recommended by the Centers for Disease Control and Prevention (CDC)(2015) and utilized by Urinary Catheter Care Teams (UCCT) in this acute care facility upon urinary catheter placement. Additionally, a post-removal urinary catheter standing order set is in place to prevent re-insertions.

In this quality improvement project, bedside nursing staff will be educated on evidence-based interventions to decrease urinary catheter insertions and re-insertions. Evidence-based practices such as using a bladder scanner to assess for bladder volumes,

encouraging fluids by mouth or intravenous (if applicable), and mobilizing the patient as soon as possible, are supportive measures to avoid urinary catheter insertions and re-insertions in this specific inpatient unit, in the hopes of reducing CAUTI rates.

Problem Statement

There is a problem with increasing HAIs, specifically CAUTIs, due to bedside nursing staff underutilizing best practices interventions to prevent insertions/re-insertion of urinary catheters. High catheter insertions (1,972) and re-insertions (728) led to an increase in CAUTIs in the fourth quarter of 2020 and need to be continually addressed (Novant Health, 2020). Evidence-based interventions should be reinforced and utilized by bedside nursing staff to prevent insertions and re-insertions.

Needs Assessment

Population

Chronic urinary retention can occur in a broad set of medical conditions with neurological and non-neurological causes. As a result, it is laborious to accurately estimate the affected population (Health Quality Ontario, 2019). The patient population to be discussed in this project is adult men and women that require an indwelling urinary catheter. Indwelling urinary catheter for chronic use, urinary retention, or status post-surgery insertion. Necessity criteria used at this 950-bed acute care facility to determine urinary catheter necessity are: critical illness patients who are hemodynamically unstable, with vasoactive/ inotrope medication infusing, urologic procedures/surgery, pelvic injury, and or bladder injury, prolonged immobilization, end-of-life, acute retention/kidney obstruction, open sacral/perineal wounds (Novant Health, 2020).

The nursing staff plays an integral part in the care, maintenance, and reduction of catheter-associated urinary tract infections (CAUTIs). Therefore, re-educating and reinforcing evidence-based practice is essential. Nursing staff to be included in this project educational sessions are registered nurses (RN), licensed practical nurses (LPN), and certified nursing assistants (CNA). The RN assesses the patient and determines if further interventions are needed before inserting a urinary catheter. Tasks are delegated to the LPN and or the CNA to perform supportive measures and or insert a urinary catheter if needed.

Intervention

Clinician education is needed to adhere to the recommended practice interventions to address catheter use, care, and maintenance and reduce CAUTIs (Parker et al., 2017). In this quality improvement project, evidence-based nurse-led interventions that should be practiced at the bedside to decrease urinary catheter insertions and re-insertions will be discussed. Evidence-based practices include using a bladder scanner to assess bladder volumes, encouraging fluids by mouth or intravenous (if applicable), and mobilizing the patient frequently and as soon as possible post-surgery (Simsek & Sureyya, 2017). Education to be provided on evidence-based practice supportive measures to avoid urinary catheter insertions and re-insertions to bedside nursing staff, reducing the number of urinary catheter insertions and decreasing CAUTI rates.

Comparison

This project seeks to assess the impact that receiving education has on the staff/units compared to the units/staff who did not receive the intervention. To address the learning needs of the learner, a variety of learning techniques for the auditory, visual, and

or tactile learner will be made available. This will allow interaction and opportunity for team members to be engaged, interact, and ask questions. Education in various formats is necessary for nurses' success in the ever-changing health care environment (Mangold et al., 2018).

Outcome

The expected outcomes of this educational intervention are twofold. First, increase the nursing staff's knowledge about interventions and supportive measures to avoid urinary catheter insertions and re-insertions. Secondly, raise nursing staff awareness of the negative impact of managing a CAUTI. The education will equip the staff to be more knowledgeable about decreasing urinary catheter utilization. Also, decrease in CAUTI rates of the unit that received the education.

Time

Over 2 weeks, a medical-surgical unit at the acute care facility will receive the educational in-services. This education will be delivered face to face via a poster board presentation, and the results will be disclosed via Zoom during the unit's monthly staff meeting. Not all team members will be able to participate in the educational sessions due to the demands of patient care and responsibilities at the bedside or if they are off duty during the time the in-services will be provided.

Sponsors

The sponsors identified have a vested interest and are vital to the outcome of this project. This includes unit nurse leaders from the specific medical-surgical unit. This unit serves an array of patient populations who are more susceptible to acquiring a hospital-acquired infection (HAI) due to multiple co-morbidities. Another integral sponsor is the

practice partner/Nurse Scientist. This individual is the facility researcher who partners with academic institutions to help students/team members navigate the matrix of the project setting (Zaccagnini & Pechacek, 2021).

Resources

Available resources of bladder scanners for this unit are an area of opportunity. One or more units share bladder scanner devices. The estimated cost of a bladder scanner is over $5,000. Some units are not able to include a bladder scan device in their annual fiscal budget due to the need for other priority devices (such as telemetry boxes and blood pressure devices). If a unit has a bladder scanner readily available, they are more likely to follow the urinary catheter standing orders and achieve better compliance with using a bladder scanner device.

Staffing constraints due to the pandemic surge of nursing staff, increased workloads/ higher patient acuity, and nurse travelers filling in the staffing gaps; however, not being invested in the facility's mission, visions, and values have caused significant stumbling blocks in the processes in place to decrease CAUTI rates. Also, the clinical education department operates in a global/system-wide approach, not unit specific. Therefore, learning gaps and support are identified in many domains of nursing, especially with new nurses and temporary nursing staff. Backorders/supply chain limitations of urinary catheters make it a challenge whenever resources are not readily available.

Scope of Project

Facilities globally are searching for solutions to combat hospital-acquired infections (HAIs), specifically catheter-associated urinary tract infections (CAUTIs). The

educational information "back to basics" utilized in this project will benefit other regional and potentially global facilities. This project's scope is to decrease the utilization of urinary catheters that do not meet the criteria for medical necessity. The educational materials developed in this project of evidence-based supportive measures to avoid urinary catheter insertions and re-insertion can be shared from facility to facility. Reducing the number of urinary catheter insertions/re-insertion will help decrease CAUTI rates, and the cost will ultimately be decreased.

Goals, Objectives, Mission Statement

Goals

- The purpose of this project is patient safety.
- Decrease CAUTI rates by 20% on this specific unit within three months post-interventions
- Educate the nursing staff on a specific medical-surgical unit about CAUTI prevention.

Interventions to Achieve Goals

Staff education of evidence-based practice supportive measures/interventions to avoid urinary catheter insertions and re-insertions, therefore reducing the number of urinary catheter insertions, decreasing CAUTI rates, and decreasing costs associated with CAUTI.

Objectives

- The learner will be able to identify interventions to keep patients CAUTI- free.
- The learner will be able to implement supportive measures to avoid insertions, re-insertion of urinary catheters.

- The learner will be able to verbalize the importance of using alternate interventions (i.e., toileting, urinal use).

Desired Outcomes

- No CAUTI were identified on the unit that received evidence-based face-to-face education.
- No CAUTI were identified from data collected in 2 weeks.
- Necessary equipment (bladder scanner device) readily available, required education to 75% of staff on the day and night shifts
- Use of alternate methods/ supportive measures to decrease urinary catheter insertions/re-insertions.

Mission Statement

To create a positive learning environment to engage others through teaching and coaching. To decrease CAUTI rates and keep patients safe. According to Parker et al. (2017), clinician education is needed for adherence to recommended practice interventions (Parker et al., 2017). Education and reinforcing evidence-based practices are essential. The nursing staff plays an integral part in the care, maintenance, and reduction of CAUTIs. Nursing staff include registered nurses (RN), licensed practical nurses (LPN), and certified nursing assistants (CNA).

To provide a robust learning environment and assess the value of the education provided, a variety of learning techniques will be offered. Education will be made available for auditory and visual learners. These various learning environments allow interaction and opportunity for team members to be engaged, interact, and ask questions.

Education in various formats is essential to nurses' success in the ever-changing health care environment (Mangold et al., 2018).

Theoretical Framework

Kurt Lewin's Change Theory is the theoretical framework used to steer this Doctor of Nursing Practice (DNP) scholarly project (Appendix A). This framework was suitable because its foundation is based on the premise that change is a process that occurs over time. Change is a process that takes place over time and is unavoidable. The aim of this project was to increase the medical-surgical unit nursing staff' level of knowledge regarding interventions to decrease urinary catheter insertions and re-insertions and reduce catheter-associated urinary catheter infections (CAUTI) rates.

Integration of Lewin's Change Theory into the Project

Lewin's three-step model found readiness for change (unfreezing) creates satisfaction with change (moving) which then fosters employee engagement (refreezing) (Memon et al., 2021). Step one of the change theory is unfreezing. Lewin argues before learning new things, it is necessary to unlearn and get rid of old behaviors. Therefore, it is essential to unfreeze the status quo and create a hunger for change. Different approaches are needed for different situations. An emotional stir-up is needed to remove the prejudices and feelings of self-righteousness (Bakari et al., 2017). During this stage, support from executive leadership and unit leaders must have a vested interest and are vital in the outcome of the project. The project leader must be present and actively engaged to earn buy-in from the medical-surgical nursing staff.

Step two of the change theory is change. In this step, motivation is developed to learn new behaviors, but as Lewin declares, there are complex forces in the change

process. For change to be permanent behavior, reinforcement must be mandatory. Without a sustained commitment to change, the initiative will quickly fail due to the involvement of complex opponent forces and psychological processes (Bakari et al., 2017). Sharing information and the rationale for the change is vital in this stage. Education will be available for auditory, visual, and or tactile learners. The need for education in various formats is essential to nurses' success in the ever-changing healthcare environment (Mangold et al., 2018).

Step three is the final stage of the change theory. This stage moves from an individual phenomenon to a group matter. According to Bakari et al. (2017), Lewin suggests routines and norms regarded by a group are supposed to be adjusted at this stage. From an organizational perspective, refreezing means stability at a new stage that brings a change in organizational culture and procedures (Bakari et al., 2017). To include the education of evidence-based practice supportive measures/interventions in the medical-surgical units as part of the units onboarding and the annual continuing education would indicate a change has become a permanent part of the unit's process of educating new team members of evidenced-based practice supportive measures/interventions to avoid urinary catheter insertions and re-insertions.

Project Management

Planning

Work planning is beneficial in this scholarly project phase of the Doctor of Nursing Practice (DNP). The work planning phase prioritizes and keeps track of the project to stay within its desired timeline (Appendix B). Important topics to be discussed in this project management plan are project timeline (using a Gantt chart), work

breakdown structure (WBS), and budget (direct and indirect cost for implementation of the project) (Zaccagnini & Pechacek, 2021).

Project Management Tools

The Gantt chart breaks down the project's timeline. The timeline begins with gathering data from the nurse manager dashboard. This data does not reveal any pertinent patient information. It reveals the number of patients with urinary catheters in each unit. Data collection identifies units that have a large number of urinary catheter insertions and re-insertions. The initial step of the Gantt chart establishes a partnership with unit leaders and data sharing regarding the number of urinary catheter insertions, re-insertions, and catheter-associated urinary catheter infections (CAUTI) rates. Also, the data can help determine if the indwelling urinary catheter is for chronic use, urinary retention, or a post-surgical insertion.

Work breakdown structure (WBS) discusses four phases. (Appendix C). Design, planning implementation, and evaluation. The design phase discusses problem recognition and knowledge deficits in preventing CAUTIs. The planning phase includes creating and designing a poster board presentation, pretest, and posttest questionnaires for educational resources. In the implementation phase, the pretest will be hand-delivered to the nursing staff of the specific unit with many insertions, re-insertions, and CAUTI rates.

Education will be given to this specific unit via poster board presentation and educational flyers posted in various locations throughout the unit. During the evaluation phase, the post-test will be given to the same participants who received the pretest; then, data findings will be presented during the monthly Zoom unit staff meetings (Zoom meetings are pre-scheduled).

Budget

This budget breaks down the direct and indirect costs associated with the implementation of the project with examples of expenses to be discussed (Singh, 2017) **(**Appendix D**).** The nursing staff plays an integral part in the care, maintenance, and reduction of CAUTIs. Direct cost includes salaries of nursing staff, including registered nurses (RN), licensed practical nurses (LPN), and certified nursing assistants (CNA). Also, to include the salaries of the unit leaders, nurse managers, and assistant nurse managers. Printing copies, ink, paper products, and materials to create poster presentations and flyers are included in the direct costs associated with the project implementation.

Indirect costs associated with project implementation include office rental space of approximately 200-square feet. According to Price It Here (2021), the US average cost for office space by square foot is between $8-$23. Utilities (electric energy, telephone, and internet usage), the average cost for commercial buildings is $2.10 per square foot cost per square foot (IotaComm, 2020) **(**Appendix D).

Quality Improvement Model

PDSA Cycle

This quality improvement project will use the plan-do-study-act (PDSA) cycle to identify the problem, refine a change, execute a plan, and analyze the data (Appendix E). The problem was identified as the bedside nursing staff underutilizing best practices interventions to prevent insertions and re-insertions of urinary catheters. The lack of utilizing evidence-based practices increases hospital-acquired infections (HAI), specifically catheter-associated urinary tract infections (CAUTI)**.**

Education on evidence-based interventions and supportive measures to decrease urinary catheter insertions, and re-insertions, in the hopes of reducing CAUTI rates. Reinforcing and re-educating on evidence-based practices are essential to improving patient outcomes. The plan is to refine change and execute a plan for the bedside nursing staff to be educated. Data will be analyzed, and adjustments made in educational techniques as needed.

Research Instrument/Tool Used

The nursing staff plays an integral part in the care, maintenance, and reduction of catheter-associated urinary tract infections (CAUTIs). Therefore, educating and reinforcing evidence-based practices are essential. A shared approach, also known as a train-the-trainer curriculum, supports the training of healthcare professionals (Agency for Healthcare Research and Quality [AHQR], 2020). The nursing staff includes registered nurses (RN), licensed practical nurses (LPN), and certified nursing assistants (CNAs).

To measure the outcomes of this project and measure the bedside staff knowledge base of urinary catheters, educational information is created and dispersed to the unit nursing staff. A 10-item pretest developed by the project leader is hand-delivered prior to the educational intervention. After the educational session is complete, a posttest will be given immediately to team members to measure if knowledge was gained (Appendix F)**.** Thought-provoking fliers will be posted throughout the unit to remind staff to consider alternative external urinary devices and avoid inserting an indwelling urinary catheter (Appendix G).

Implementation

Research Procedure

Important topics to be discussed in this section are the research procedures, the population of participants, research methodology, the project's results, barriers/threats, and implementation monitoring. Team member education on interventions and supportive measures to decrease indwelling urinary catheter utilization was provided in this DNP project. Attendees were asked to fill out informed consent and complete a pretest. The Project Manager provided education on best practices and supportive measures to avoid urinary catheter insertions and re-insertions to bedside nursing staff in one specific medical-surgical unit in the hopes of reducing CAUTI rates. The Project Manager delivered evidence-based education verbally via a poster presentation board. Following the education, participants were asked to complete the posttest.

Fliers containing photos of alternative external urinary devices and interventions were posted in specific locations on the units (i.e., bathrooms, break rooms). The poster board educational sessions were taught on the day shift, three sessions on the night shift, and one weekend split shift (at shift change) were taught over 2 weeks. (Appendix H).

Population of Participants

This project includes registered nurses, licensed practical nurses, and nursing assistants caring for patients requiring urinary catheter insertions or re-insertions in an acute care facility on a medical-surgical unit. The educational session will be taught to 12-14 team members in this nursing unit per session. A total of seven optional educational sessions were held over 2 weeks. Three education sessions on the day shift,

three sessions on the night shift, and one weekend split shift (at shift change) for a total of 84-98 participants.

Research Methodology

The type of research methodology used is quantitative data. The data collection method and plan used to analyze data and measure the bedside staff knowledge base of urinary catheter utilization is a pretest and posttest. A 10-item pretest developed by the Project Manager was hand-delivered before the nurse-led evidence-based education session. The optional education sessions have the same information offered multiple times over 2 weeks. Three education sessions on the day shift, three sessions on the night shift, and one weekend split shift (at shift change) for a total of 84-98 participants. The reliability of the tests cannot be measured at this time, as the project leader developed the tests. The project chair provided face validity.

After the educational session was complete, the posttest (same information as the pretest) was hand-delivered immediately to the nursing staff who attended the educational session to measure if knowledge was gained. Fliers containing photos of nurse-driven interventions to decrease urinary catheter use to consider (instead of inserting a urinary catheter) were laminated and posted (facility policy to laminate all flyers) throughout the nursing station and common areas on the unit (i.e., bathrooms, break rooms). The need for education in various formats is essential to nurses' success in the ever-changing health care environment (Mangold et al., 2018).

Barriers/Threats

Staffing constraints were faced on this specific unit, making it challenging for team members to leave their assignments to attend the education sessions. Staff burnout

was witnessed due to increased workloads/ higher patient acuity and team members working extra shifts to earn extra pay incentives (double time), and to help the unit's needs. Clinical support staff (CSS) help to fill the gaps on this unit and facility-wide; however, it is a challenge for them to be fully invested in each unit's individual quality goals.

The clinical education department operates in a global/system-wide approach, not unit specific. Therefore, learning gaps and support were identified, in many domains of nursing, especially with new nurses and temporary nursing staff. Leader buy-in was pivotal in delivering the education to the team members, with inconsistencies sometimes, especially for the night shift and weekend education sessions. Communication between the unit, unit leaders, and the Project Manager was vital in informing the staff of education session dates, times, and locations.

Monitoring of Implementation

At the closure of the project, results were shared with the unit nurse leaders and the unit nursing staff via video chat during the monthly staff meeting. The unit staff meetings were virtual due to COVID restrictions. During the meeting, nursing staff was reminded to consider ‘back to basics’ practices instead of inserting an indwelling urinary catheter. Optimistically, this project will decrease the use of urinary catheters and therefore decrease CAUTIs and other harmful sequelae.

Interpretation of Data

Qualitative Data

Qualitative data was gathered indirectly by observing the studied unit during the intervention period. The nursing staff on this specific unit were generally engaged with

learning the information presented to them. However, patient needs, staffing issues, and staffing ratios all made it challenging for team members to leave their assignments for an extended period to attend the education sessions. Staff burnout was witnessed due to increased workloads/ higher patient acuity and team members working extra shifts to earn extra pay incentives.

Quantitative Data

The type of research methodology used for this project was quantitative data. The data collection method and plan used to analyze data and measure the bedside staff knowledge base of urinary catheter utilization is a pretest and posttest**.** A 10-item pretest developed by the Project Manager was hand-delivered before the nurse-led evidence-based education session. The optional education sessions offered the same information multiple times over 2 weeks. Three education sessions on the day shift, three sessions on the night shift, and one weekend split shift (at shift change) for a total of 84-98 participants. An education session was interrupted due to a code blue on this specific unit; this disrupted the unit's workflow for the remainder of the day and into the night shift.

Process Improvement Data

What Were the Outcomes of Your Project?

Twenty-two pre-test and 13 post-test questionnaires were completed by the nursing staff and returned to the Project Manager at the end of each education session. The pretest questionnaire revealed some learning opportunities that the staff needed to identify and address. For example, question number four on the pretest questionnaire asked: Do you use supportive measures (i.e., frequent assessment, running water) to

encourage voiding after the indwelling urinary catheter has been removed? Some team members answered yes, and others answered no. (Appendix I).

The post-test questionnaire answers reflected the education provided to team members during the education session was well-received. Improvements were noted in clarifying the expectations for the use of alternate methods (i.e., bedside commodes, urinal, condom catheters, and the female external catheter Pure Wick). Also, the reinforcement of the use of nurse-driven supportive measures (assist to void, hydration, ambulation, etc.) improved upon the posttest (Appendix J).

What Changed Because Of Your Project?

The Nurse Manager Dashboard in the electronic medical record captures catheter-insertion rates in real-time. According to the unit nurse leader, this unit has not had a catheter-associated urinary tract infection (CAUTI) in greater than 30 days. The nurse leader indicated she observes team members collaborating and nurses delegating to the nursing assistants to provide supportive measures (assist to void, hydration, ambulation, etc.) prior to reaching out to the provider for an order to insert an indwelling urinary catheter.

What Was the Impact, and How Was It Measured?

Q3: Which interventions should be attempted to avoid indwelling catheter insertions and re-insertions? The combined pre-test and post-test questionnaire reveal learning occurred, as evidenced by the widening learning gap between the pretest and post-test results (Appendix K). The most impactful learning occurred in questions three, nine, and 10. The pretest results were 34% correct versus incorrect. The post-test results increased to 88% correct answers versus incorrect ones.

Q9: Whose responsibility is it to ensure supportive measures are implemented prior to insertion and post urinary catheter removal? The pretest results were 34% correct versus incorrect. The post-test results improved to 55%. Q10: What are the negative effects of CAUTIs? The pretest results were 0.83% correct versus incorrect. The post-test results were 23% correct versus incorrect. Question nine responses varied among participants.

From the responses received, it seems as if the participants did not read the question and answers in detail prior to answering this question. The correct answer was that everyone is responsible for ensuring that supportive measures are implemented before insertion and post urinary catheter removal.

Question 10 responses also varied among participants. The question type was selected all that apply, and all answers were correct. Participants selected one or two of the correct answers, but not all. The verbiage of question 10 may need to be worded differently for future use or increase education regarding the negative impacts of CAUTIs.

How Will Your Project Be Sustained?

Communication is key. Leadership buy-in is pivotal to getting this education delivered to the team members. The success of this project will be sustained if the unit leaders and executive nurse leaders reinforce the education. Without a sustained commitment to change, the initiative will quickly fail due to the involvement of complex opponent forces and psychological processes (Bakari et al., 2017).

What Measurements Can Be Collected In The Future?

The facility will continue to monitor catheter-insertion rate data from the Nurse Manager Dashboard in the electronic medical record. Another way measurement can be collected is to observe the processes of the units with historically high indwelling urinary catheter insertions and catheter-associated urinary tract infections (CAUTIs). The successful implementation of these interventions will serve as a benchmark for other healthcare systems in the region and potentially globally.

Conclusion

An uptick of catheter-associated urinary tract infections (CAUTIs) globally has played a significant role in raising the priority of this issue. This health problem has gained a prominent place in acute care facilities. Bedside nursing units must rely on nurse-led evidence-based interventions to avoid urinary catheter insertions and re-insertions. Keeping our patients safe by decreasing CAUTIs, and the prohibitive cost associated when a CAUTI is identified is vital. Providing nurse-led evidence-based interventions delivered via poster board presentation on a specific medical-surgical unit will help decrease urinary catheter insertions and re-insertions.

The conceptual, theoretical framework of Lewin's Change Model proves suitable for this DNP project. It supports the idea that change is challenging to achieve and is a process that occurs over time. The three stages of unfreezing, movement, and refreezing implemented in this project will be beneficial in this project's successful implementation.

The results of this project were measured by the data from the Nurse Manager Dashboard, located in the electronic medical record, which captured catheter-insertion rates in real-time. According to the unit nurse leader, this unit has not had a catheter-

associated urinary tract infection (CAUTI) is greater than 30 days. The nurse leader also indicated she observes team members collaborating and nurses delegating to the nursing assistants to provide supportive measures (assist to void, hydration, and ambulation) before reaching out to the provider for an order to insert an indwelling urinary catheter.

Reinforcing and re-educating on evidence-based practices will continue to be essential interventions to improve patient outcomes. Clinician education and reinforcement are needed for adherence to the recommended practice interventions to address catheter use, care and reduce CAUTIs (Parker et al., 2017).

References

Agency for Healthcare Research and Quality (AHRQ). (2021, September 1). *Health literacy professional education and training*. http://www.ahrq.gov/health-literacy/professiona training/index.html

Bakari, H., Hunjra, A. I., & Muhammad, T. M. (2017). Managing organizational change in Pakistan: Insights from the work of Kurt Lewin. *UW Journal of Management Sciences*, 53-64. https://uwjms.org.pk/downloads/v1/issue1/010105.

Centers for Disease Control and Prevention. (2015, November 5). *Catheter-associated urinary tract infections.* https://www.cdc.gov/infectioncontrol/guidelines/cauti/index.html

Health Quality Ontario. (2019). Intermittent catheters for chronic urinary retention: A health technology assessment. *Ontario Health Technology Assessment Series, 19*(1), 1–153. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6395058/pdf/ohtas-19-1.pdf

IotaComm. (2020, July 23). What is the average utility cost per square foot for commercial property? https://www.iotacommunications.com/blog/average-utility-cost-per-square-foot-commercial-property/#:~:text=The%20answer%3A%20The%20average%20cost,is%20%242.10%20per%20square%20foot

Mangold, K., Kunze, K. L., Quinonez, M. M., Taylor, L. M., & Tenison, A. J. (2018). Learning style preferences of practicing nurses. *Journal for Nurses in Professional Development*, *34*(4), 212–218. https://doi.org/10.1097/NND.0000000000000462\

Memon, F. A., Shah, S., & Khoso, I. U. (2021). Improving employee's engagement in change: Reassessing Kurt Lewin's model. *City University Research Journal, 11*(1), 144-164. https://www.proquest.com/docview/2542758465/fulltextPDF/FCF4FA2FC6494DF4PQ/1?accountid=11041

Novant Health. (2020). Urinary catheter insertions and reinsertions. [Data set]. http://novanthealth.org.

Parker, V., Giles, M., Graham, L., Suthers, B., Watts, W., O'Brien, T., & Searles, A. (2017). Avoiding inappropriate urinary catheter use and (CAUTI) catheter-associated urinary tract infection: A pre-post control intervention study. *BMC, Health Services Research*, 17, 314. https://doi.org/10.1186/s12913-017-2268-2

Price It Here. (2021, November 14). *How much does it cost to rent office space?* https://priceithere.com/business-tips/how-much-does-it-cost-to-rent-office-space/

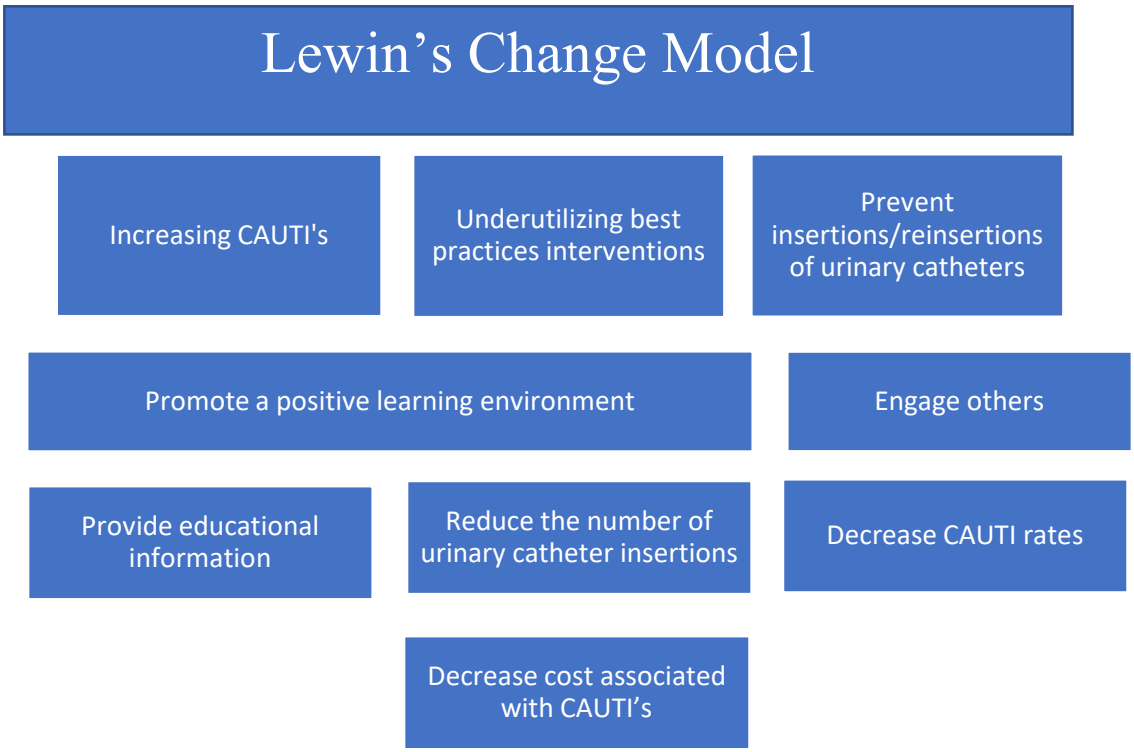
Simsek, Z. Y., & Sureyya, K. (2017). Effects of nursing interventions on prevention and management of postoperative urinary retention for patients with orthopedic surgery under spinal anasthesia. *International Journal of Caring Sciences, 10*(1), 552. www.internationaljournalofcaringsciences.org

Singh, H. (2017, August 19). *Direct cost vs indirect cost in project management.* https://www.deepfriedbrainproject.com

Zaccagnini, M., & Pechacek, J. M. (2021). *The Doctor of Nursing Practice Essentials: A new model for advanced practice nursing* (4th ed.). Jones and Bartlett Publishing. https://www.hqontario.ca/Portals/0/documents/evidence/reports/hta-intermittent-catheters-for- chronic-urinary-retention.pdf

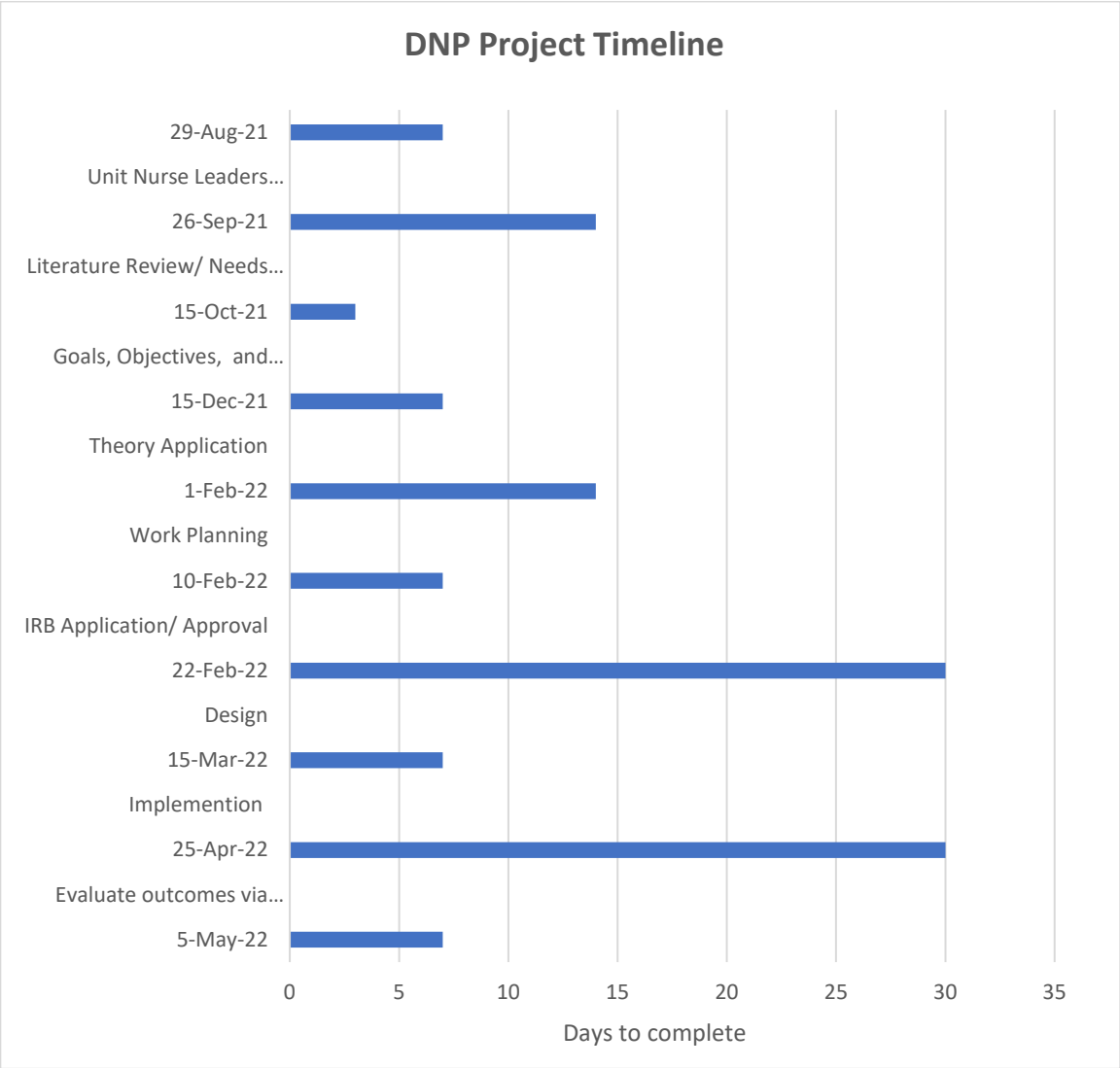
Appendix A

Lewin's Change Model



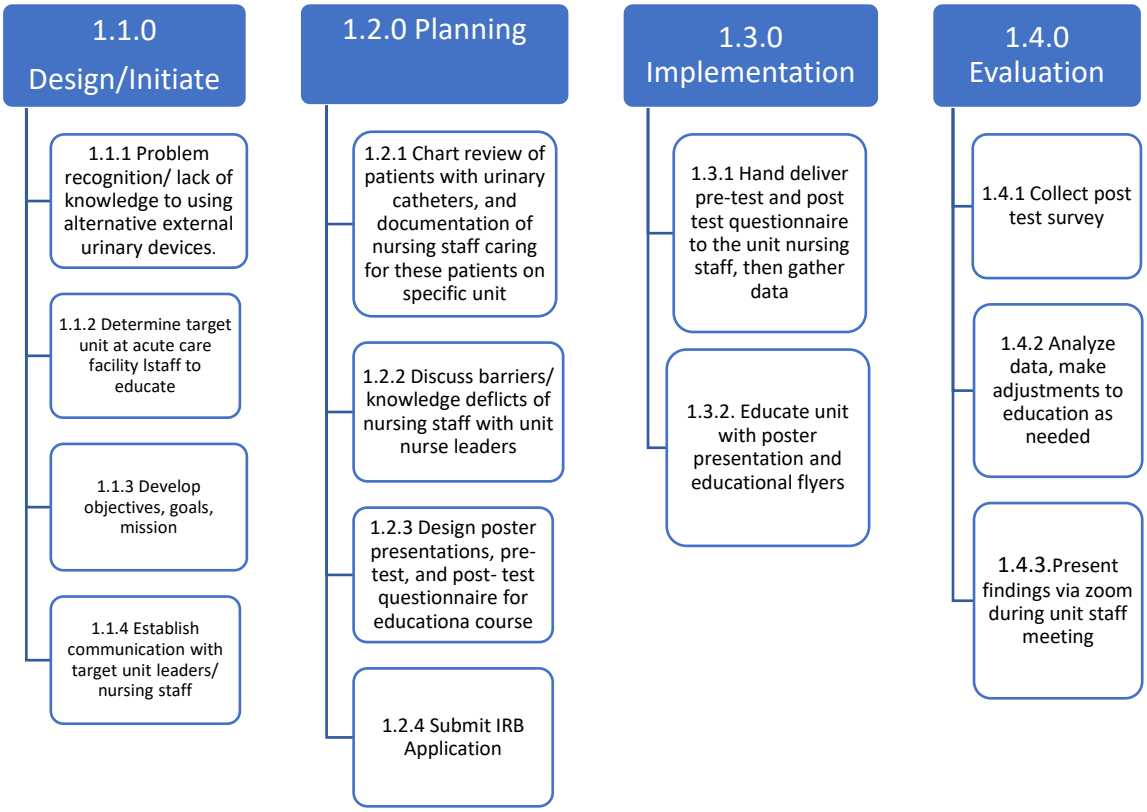
Appendix B

Timeline



Appendix C

Work Breakdown Structure (WBS)



Appendix D

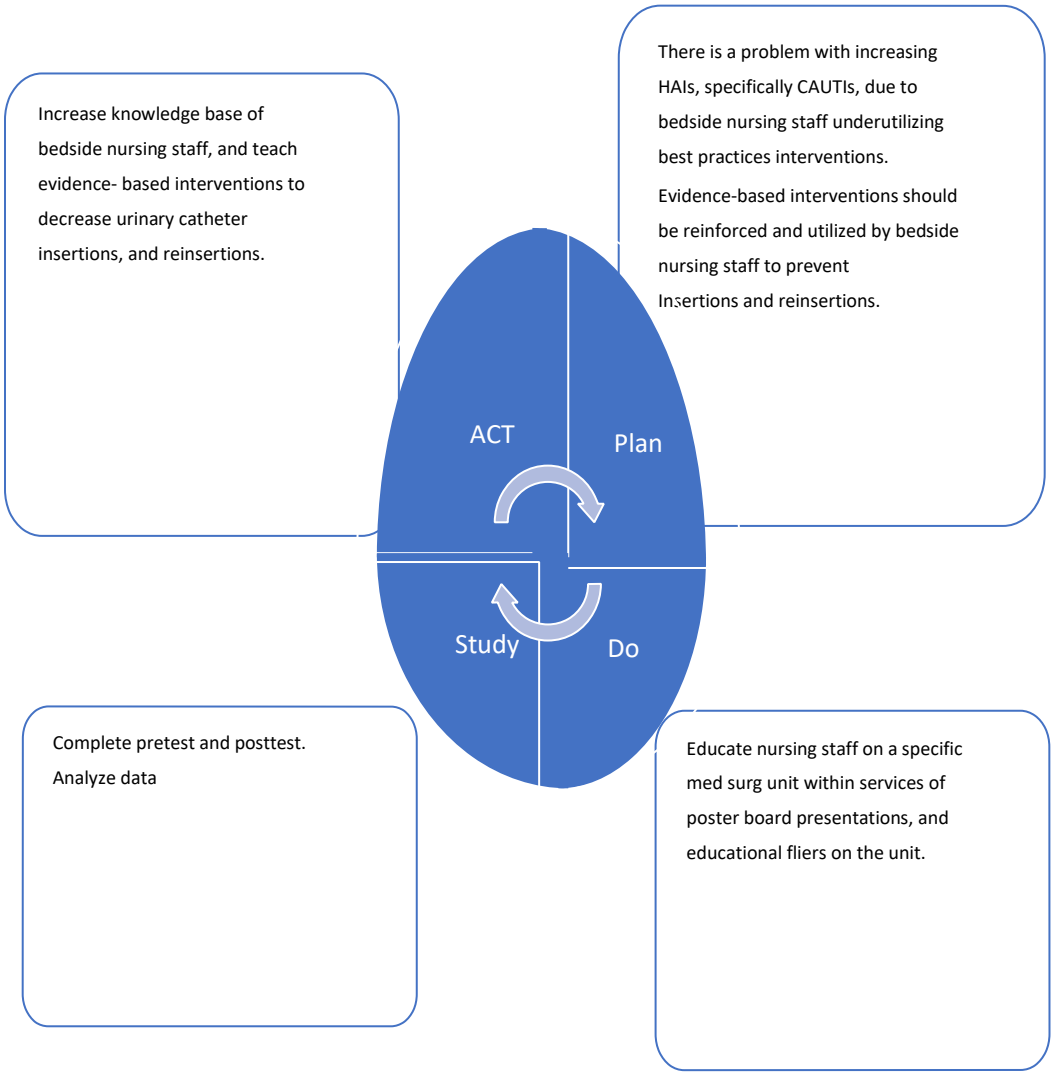
Direct and Indirect Cost of Project Implementation

Budget Item	Description	Estimated Total	Currently Integrated into Facility Operation Budget (yes/no)
Direct Costs			
Salary- Medical surgical registered nurses	Thirty-two registered nurses Average salary $30.00/hour Estimated time of training= 1.5 hours	$1,440 (Nurses Salary, 2022)	Yes
Salary- Medical surgical license practical nurses	Three nurses Average salary $20.00/hour Estimated time of training = 1.5 hours	$90 (Nurses Salary, 2022)	Yes
Salary- Certified nursing assistants	Ten certified nursing assistants Average salary $15.00/hour Estimated time of training = 1.5 hours	$225 (Nurses Salary, 2022)	Yes
Salary- Assistant nurse manager	(2) ANM Average salary $40.00/hour Estimated time= 2 hour	$160 (Nurses Salary, 2022)	Yes
Salary-Nurse manager Pre/post training briefing	(1) NM Average salary $50.00/hour Estimated time= 2 hour	$100 (Nurses Salary, 2022)	Yes
Printing/Ink/paper products	For signage/information	$150 (Nurses Salary, 2022)	Yes
Materials/Handouts	Poster presentations (2) Flyers to post on the unit (12)	$100 (Nurses Salary, 2022)	Yes

Budget Item	Description	Estimated Total	Currently Integrated into Facility Operation Budget (yes/no)
Indirect Costs			
Office Space Rental	Two- hundred square foot office	$500-$750 per month (Price it here, 2021)	Yes
Internet usage	Average monthly cost	$50- $250 per month (Iota Communications, 2020)	Yes
Utility cost	Average monthly cost	$200-$400 per month (Iota Communications, 2020)	Yes
Total		**$3,135-$3,785**	

Appendix E

PDSA Cycle



Appendix F

Pre and Post-Test Questionnaire

1.) A bladder scanner can quickly provide measurements of urinary bladder volumes.
True False

2.) Do you have bladder scanners readily available on your unit?
Yes No

3.) Which interventions should be attempted to avoid indwelling catheter insertions and re-insertions? (Select all that apply)

a.) increase fluid intake b.) early ambulation
c.) assist with toileting d.) bedrest

4.) Do you use supportive measures (i.e., frequent assessment, running water, water over the perineum area etc.) to encourage voiding after indwelling urinary catheter has been removed?
Yes No

5.) Voiding trials should be attempted prior to urinary catheter re-insertions?
True False

6.) On a scale of 1-5, how comfortable are you using alternative external female urinary devices? (1= less comfortable, 2= somewhat comfortable, 3= moderately comfortable, 4= comfortable, 5=very comfortable) ____

7.) On a scale of 1-15, how comfortable are you using alternative external male urinary devices? (1= less comfortable, 2= somewhat comfortable, 3= moderately comfortable, 4= comfortable 5=very comfortable) _____

8.) What are some barriers to performing the interventions of avoid inserting a urinary catheter? (Select all that apply)

a.) time b.) knowledge deficit
c.) not a priority d.) someone else will do it

9.) Whose responsibility is it to ensure supportive measures are implemented prior to insertion and post urinary catheter removal?

a.) Nurse b.) Nurse Manager
c.) CNA d.) everyone

10.) What are negative effects of CAUTI's? (Select all that apply)

a.) patient safety compromised b.) increase length of hospitalization
c.) increase cost d.) negative facility reputation

Appendix G

Flyer

Appendix H

Poster Board Presentation

NURSING INTERVENTIONS: TO DECREASE URINARY CATHETER INSERTION/RE-INSERTIONS

In this quality improvement project, bedside nursing staff will receive education on evidence- based intervention, and supportive measures to decrease urinary catheter insertions, and reinsertions. Evidence- based practices such as, using a bladder scanner to assess for bladder volumes, encouraging fluids by mouth, or intravenous (if applicable), and mobilizing the patient as soon as possible (Simsek & Sureyya, 2017), in the hopes of reducing CAUTI rates.

Reference
Simsek, Z.Y., Sureyya, K. (2017). Effects of nursing Interventions on Prevention and management of postoperative urinary retention for patients with orthopedic surgery under spinal anasthesia. *International Journal of Caring Sciences. Vol 10(1). 552.* www.internationaljournalofcaringsciences.org

1

BLADDER SCAN DEVICE

Patients with urine retention, neurogenic bladder or elderly patients in the long-term care setting may need placement of a catheter to remove the urine remaining in the bladder after urination, to decrease the build-up of urine in the bladder, or to measure the extent of postvoid residual (PVR) urine volume. Intermittent catheterization remains the gold standard for precise measurement of PVR volumes. The technology of a bladder scan was adopted to assess the PVR urine volume by bladder ultrasound scan, which has been demonstrated to be quick, reliable, noninvasive, easy to use and cost-effective (Chen, 2008).

Reference
Chen S., Farrah K. (2008). *Bladder scanner use prior to catheterization: A clinical review*. Health Technology Inquiry Services. https://www.cadth.ca/media/pdf/htis/Bladder%20Scanner%20Use%20Prior%20to%20Catheterization%20A%20Clinical%20Review.pdf

2

Why bladder scan?

- Determine the need for catheterization.
- Reduce the unnecessary placement of a urinary catheter.
- Provide quick measurements for postvoid residual (PVR) and/or bladder capacity.

Acute urinary retention is the inability to empty the bladder notwithstanding it being full and is frequent in the postoperative period. Using the ultrasound bladder scanner for the measurement of urinary residue, nurses are able to evaluate the presence of urinary retention, monitor the volume and the excessive relaxation of the bladder and avoid unnecessary catheterizations (Palese et al., 2010).

Reference

Palese, A., Buchini, S., Deroma, L., & Barbone, F. (2010). The effectiveness of the ultrasound bladder scanner in reducing urinary tract infections: a meta-analysis. *Journal of clinical nursing*, *19*(21-22), 2970–2979. https://doi.org/10.1111/j.1365-2702.2010.03281

3

For your information:

- A bladder scan is used to assess for postvoid residual (PVR)
- If the PVR is greater than 300-500 cc, the patient should be straight catheterized, avoiding urinary catheterization (Foley) placement if at all possible.
- If straight catheterization is performed after the scan, the amount of urine obtained should be documented.

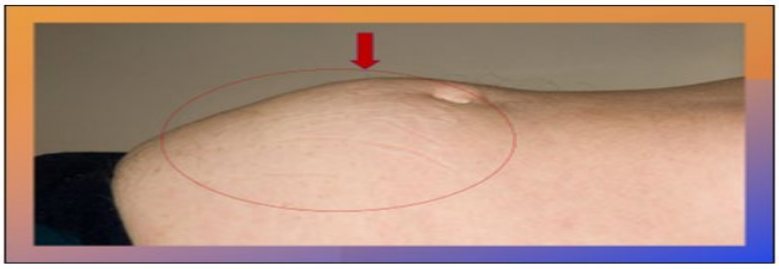
According to the standing orders protocol for the Novant Health System:

- A patient should be assessed and monitored for voiding every (2) hours to determine if the patient is able to void greater than or equal to 200 ml x1 within 6 hours without sign/symptoms of urinary retention.
- If the patient has voided greater than or equal to 200ml x1 voiding within (6) hours without sign and symptoms of urinary retention, discontinue the standing orders
- If patient has not voided or exhibits signs/symptoms of urinary retention including experiencing abdominal/pelvic discomfort, perform bladder scan.
- If the bladder scan volumes of is less than or equal to 300ml, continue to assess and monitor patients
- If the bladder scan is 301-599ml straight catheter x1.
- If the bladder scan volume is greater than 600ml, insert indwelling urinary catheter and notify the provider (Novant Health, 2020).

- Reference

Novant Health (2020). Urinary Retention Management- Adult. Standing orders. http://novanthealth.org.

4



Assess and monitor patients for signs and symptoms of urinary retention, such as abdominal distention.

5

Assess bladder scan volumes using the bladder scanner. Probe should be placed below the navel, above the pelvic bone (see photo above). Information for use is attached to the side of the bladder scan device.

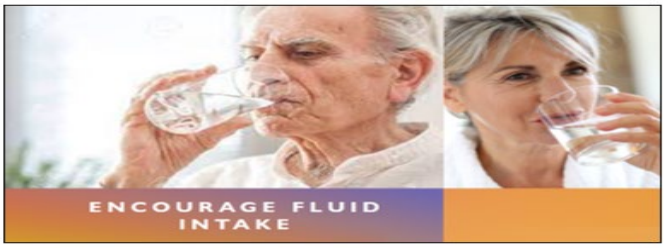
6

Assess bladder scan volumes using the bladder scanner. Probe should be placed below the navel, above the pelvic bone (see photo above). Information for use is attached to the bladder scan device.

7

Click to add text

8



Consider supportive measures:
- Encourage fluid intake (as applicable, unless otherwise contradicted)

9

Consider supportive measures:
- Intravenous fluids (as applicable, unless otherwise contradicted)

10

ASSIST WITH EARLY AMBULATION

Consider supportive measures:
- Early ambulation is a key factor in reducing the incidence of urinary retention and constipation.

11

ASSIST WITH TOILETING

Consider supportive measures:
- Frequent assisting to void (i.e. includes sitting or standing to toilet/bathroom)
- Run water
- Get patient in shower (if applicable)
- Warm water over the perineal area

12

References

Chen S., Farrah K. (2008). *Bladder scanner use prior to catheterization: A clinical review*. Health Technology Inquiry Services. https://www.cadth.ca/media/pdf/htis/Bladder%20Scanner%20Use%20Prior%20to%20Catheterization%20A%20Clinical%20Review.pdf

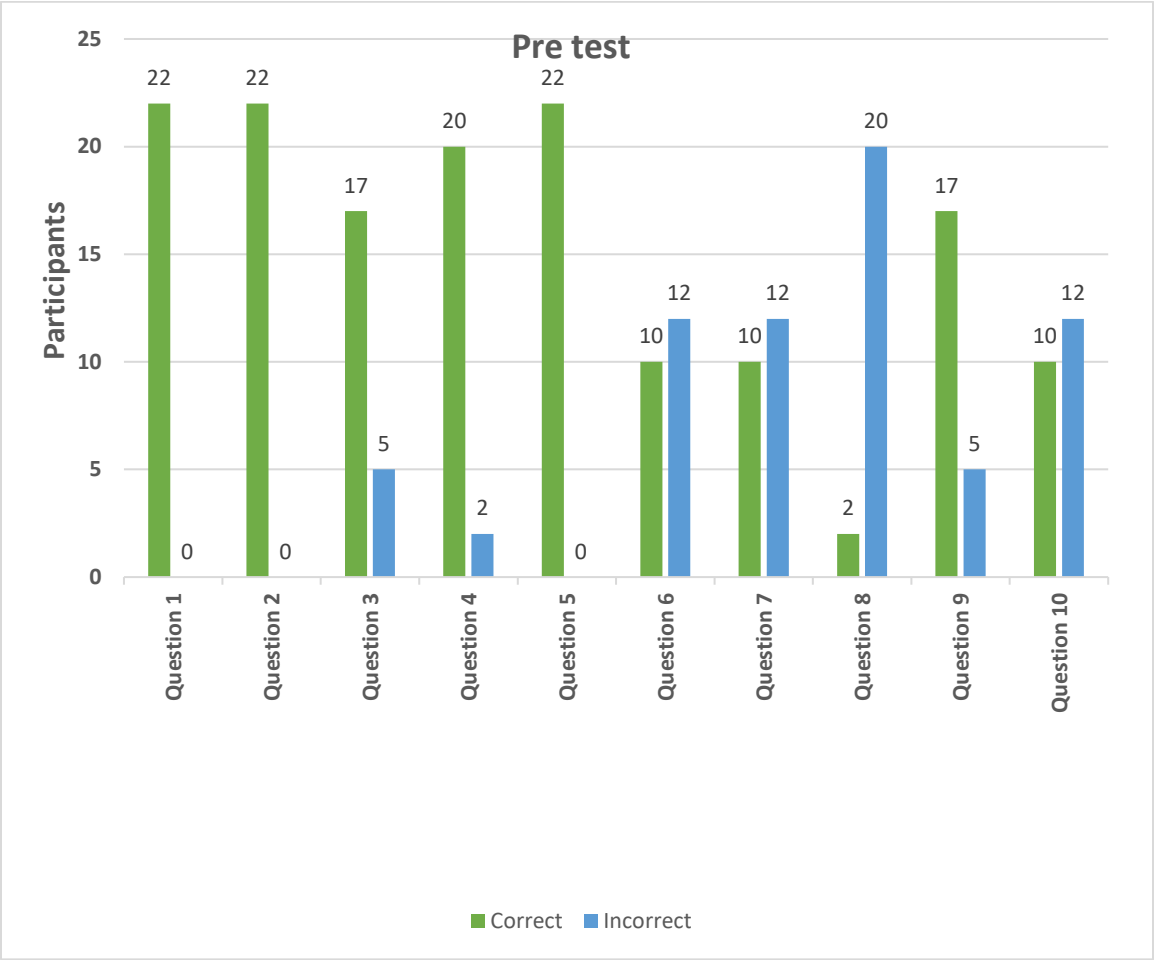
Novant Health (2020). Urinary Retention Management- Adult. Standing orders. http://novanthealth.org

Palese, A., Buchini, S., Deroma, L., & Barbone, F. (2010). The effectiveness of the ultrasound bladder scanner in reducing urinary tract infections: a meta-analysis. *Journal of clinicalnursing*, *19*(21-22), 2970–2979. https://doi.org/10.1111/j.1365-2702.2010.03281

Simsek, Z.Y., Sureyya, K. (2017). Effects of nursing Interventions on Prevention and management of postoperative urinary retention for patients with orthopedic surgery under spinal anasthesia. *International Journal of Caring Sciences. Vol 10(1). 552.* www.internationaljournalofcaringsciences.org

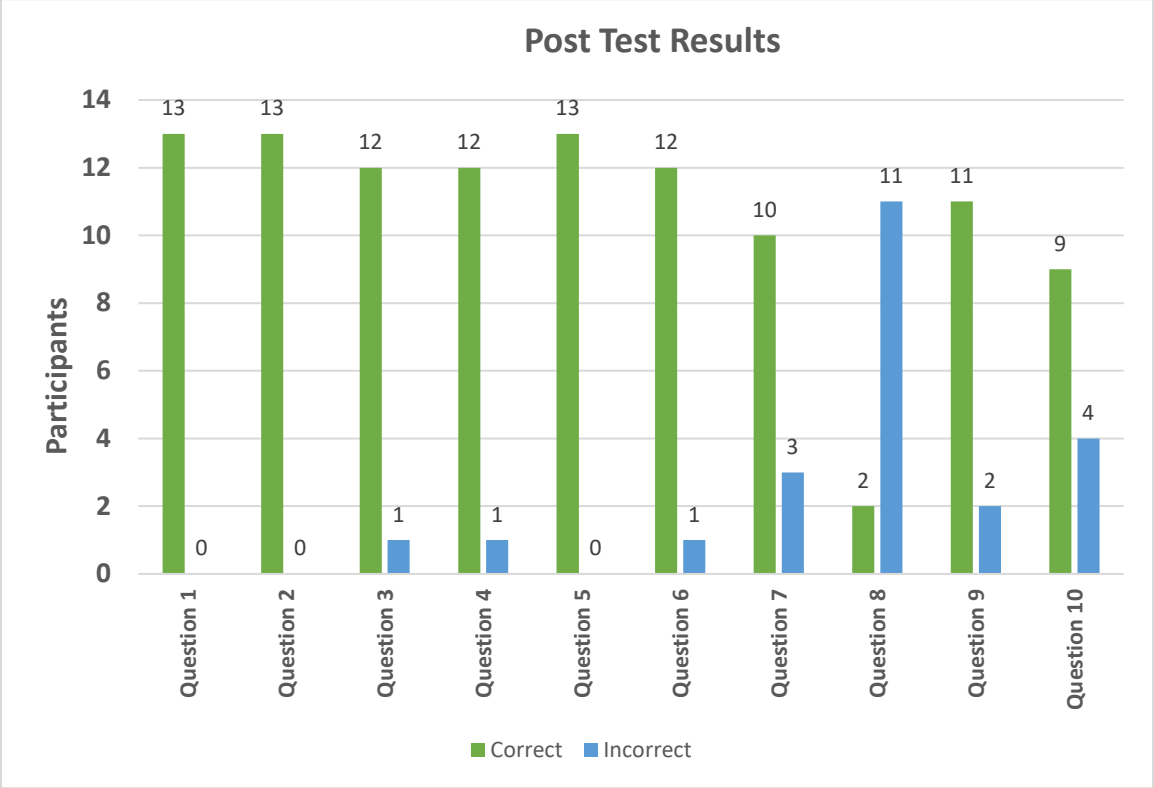
Appendix I

Pre-Test Results



Appendix J

Post-Test Results



Appendix K

Pre and Post-Test Results