DEVELOPMENT AND IMPLEMENTATION

OF A POLICY TO REDUCE URINARY CATHETER DAYS

by

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DEDICATION

Dedicated to the memory of my brothers, Smith Christianson & Cody Van Voast.

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ABSTRACT

Urinary catheters are useful medical tools for draining urine. These devices are often used for patients whose medical conditions make urination difficult or may limit their mobility, making toileting challenging. The use of urinary catheters is associated with risks such as trauma or infection. Therefore, medical research aims to limit the usage of urinary catheters only for patients who need intervention and also to reduce the duration of catheter usage. A hospital in central Montana had noted an increase in their overall urinary catheter use. To address this, increase *a project* was started with the goal of revising an existing catheter policy and adding in the authorization for registered nurses to remove catheters when appropriate. To help guide the project, a literature review was undertaken. Research was sought out in the areas of urinary catheter guidelines, utilization of policies, implementation of policies, and sustaining change. Once the literature review was completed, an existing policy was checked against existing guidelines and a point was added to this policy to permit registered nurses to remove urinary catheters when deemed appropriate. Further, this policy was adopted by the facility. Training presentations were then developed and recorded to familiarize nurses with the new policy and the new nurse-driven urinary catheter removal process. An algorithm was developed to aid nurses' decision-making process for the removal of catheters. As there was considerable delay in the project implementation due to various factors, the end goal of achieving a reduction in urinary catheter days was not determined. Despite not achieving the ultimate goal within the specified time, this project is still of value to future quality improvement initiatives. The project identifies a number of potential pitfalls and recommends ways to overcome these obstacles. It also highlights the value of persevering the implementation process despite the associated difficulties and delays.

CHAPTER ONE

INTRODUCTION

Urinary catheters are a valuable tool in the care of hospitalized patients; however, several risks are associated with their use. Complications related to urinary catheters include retained balloon fragments, bladder perforation, epididymitis, bladder stones, and infections (Schaeffer, 2021a). According to the Centers for Disease Control and Prevention (CDC, 2017), catheter-associated urinary tract infections (CAUTIs) account for more than 30% of nosocomial infections, making them the most common type of healthcare-associated infections. In 2017, there were 5.4 CAUTIs per 1,000 hospital discharges (Agency for Healthcare Research and Quality [AHRQ], 2020). Despite the generally manageable nature of these infections, approximately 36 deaths per 1,000 CAUTI cases have been reported (Bysshe et al., 2017). The financial burden on hospitals has been estimated to be between $5,019 and $22,568 per incident of CAUTI (Bysshe et al., 2017). Hospitals have limited options for recuperating this cost as Medicare and Medicaid does not reimburse for certain nosocomial infections (Centers for Medicare and Medicaid Services [CMS], 2008; Deficit Reduction Act, 2005). It is evident that CAUTIs are detrimental for patients and healthcare facilities. Moreover, infection and injury are not the only issues associated with catheters.

Schaeffer (2021b) estimated that possibly up to half of the catheters that are placed in hospitalized patients are unnecessary. The management of urinary incontinence has been noted as a common reason for unnecessary catheter placement (Schaeffer, 2021b, Wound, Ostomy, and Continence Nurses Society [WOCN], 2015). Women are more likely than men to have a catheter placed when they are hospitalized (WOCN, 2015). An additional risk factor for urinary catheter

placement is advanced age (WOCN, 2015). The CDC (2017) stated that both old age and being a woman are associated with an increased frequency of CAUTIs. Unfortunately, both these risk factors are not modifiable. However, there are several ways to address these problems.

The CDC describes several interventions that can be implemented in the healthcare setting to reduce incidents of CAUTIs (CDC, 2017). One such intervention is to develop guidelines that can identify when to initiate urinary catheterization, how to care for a catheter that has been placed, and when to discontinue catheterization (CDC, 2017). This intervention seeks to reduce the inappropriate use of urinary catheters as well as their prolonged use after they are no longer beneficial. Flodgren et al. (2013) suggested that interventions, such as educational sessions and materials for healthcare providers, can further support the appropriate use of medical devices such as urinary catheters. Ultimately, the goal of these interventions is to reduce unnecessary catheter insertions in patients and to reduce the number of days the catheter remains in situ during their hospitalization. This Doctor of Nursing Practice (DNP) project has designed a clinical policy, process, and educational session aimed at reducing the number of urinary catheter days.

Background

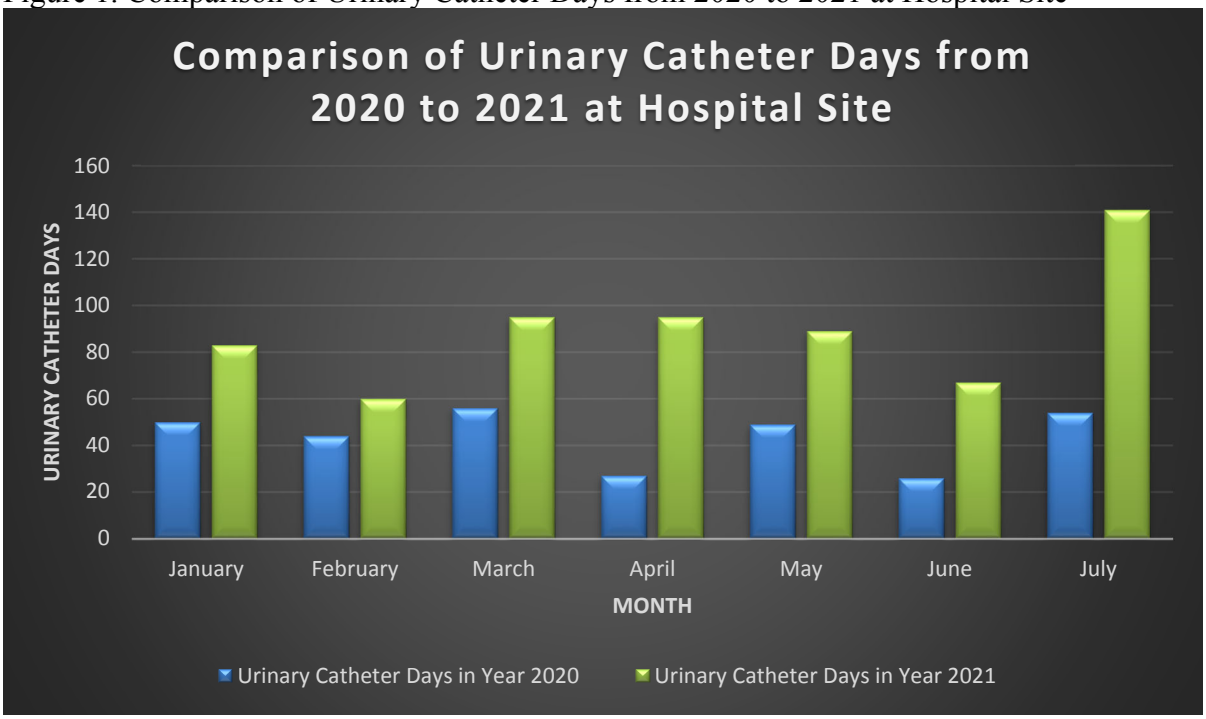
The site for this project is a small 26-bed hospital located in an urban area in Montana. The hospital has an emergency department (ED) and is attached to a clinic, which offers primary care services to patients of any age. These services include various specialties, such as cardiology, pulmonology, and thoracic and vascular surgery. The hospital and clinic are also connected to a surgical center where outpatient surgeries are performed. Additionally, the

hospital has an onsite laboratory and a pharmacy. To continue to meet the needs of patients, the hospital has expanded to offer additional specialty services.

In the past year, this facility expanded its services to offer cardiac surgeries, including open heart surgery. These new patients with cardiac diseases are allowed to recover in the hospital after surgery. Such patients are of higher acuity than the previously admitted ones and most of them arrive on the floor with a urinary catheter in situ. This change has contributed to an increase in the duration of urinary catheter days (H. LePard, personal communication, September 23, 2021). An additional factor contributing to an increase urinary catheter use is the ongoing struggle with SARS-CoV-2. The hospital staff reported that some patients with COVID-19 infection can experience oxygen desaturation while attempting to move from their bed to the bathroom (H. LePard, personal communication, September 23, 2021). In an attempt to reduce the risk of falls and other complications related to deoxygenation in such patients, a urinary catheter is used to limit the need for ambulation (H. LePard, personal communication, September 23, 2021). Female patients with concern for oxygen desaturation are more likely to undergo urethral catheterization (H. LePard, personal communication, September 23, 2021). Although this may be an acceptable intervention, it is possible that these catheters are left in situ for a longer duration than that required by the patients. These issues have contributed to a substantial increase in the duration of urinary catheter use in this hospital. The duration of urinary catheter use is calculated by recording the number of days a catheter has remained in situ in a patient per day and dividing it by the total number of patient days. Patient days refer to the number of patients admitted to the hospital per day. Figure 1 shows a comparison of urinary catheter days from 2020 to 2021. This information identified a greater than 50% increase in urinary catheter days in the hospital during

the past year. Unfortunately, CAUTI data pertaining to this site is unavailable. Because of the risks associated with urinary catheters, it is desirable to design an intervention aimed at reducing the number of urinary catheter days.

Figure 1. Comparison of Urinary Catheter Days from 2020 to 2021 at Hospital Site



This project proposed the development of a policy based on current evidenced-based practice guidelines from organizations, including the CDC, to address the increase in the duration of urinary catheter use. The project used this document to assist healthcare provider and nurse decision-making on when a catheter is needed in patients admitted to the hospital. The policy can also assist nurses in determining when to discontinue the use of a urinary catheter. Currently, this facility has a restrictive policy that only allows the removal of a catheter after obtaining instruction by a medical provider such as a medical doctor or nurse practitioner. The revised policy will allow registered nurses (RN) to remove urinary catheters when they are no

longer medically beneficial to the patients, with some specific exceptions. PowerPoint presentations were prepared to educate healthcare providers on the updated policy. The purpose of this education was to increase awareness and understanding of the new policy. The facility used to provide education that was specific to urinary catheters; however, this is no longer continued in part because of the pandemic. The lack of awareness of the appropriate use and indications of urinary catheter discontinuation was a potential contributing factor to the increase in the duration of urinary catheter use. Further, the limited understanding of evidence-based recommendations led to a gap in the knowledge on best practices among nurses and other healthcare providers. Due to the risks and costs associated with the increased duration of catheter use, it was pertinent that clinical changes should be immediately implemented to improve patient care. A literature review was conducted to identify the strongest evidence to support this clinical change.

CHAPTER TWO

LITERATURE REVIEW

A literature review was conducted to identify, review, and evaluate existing evidence related to the project's interventions of utilizing guidelines, strategies for implementing protocols, and strategies for maintaining practice change regarding the reduction in the duration of urinary catheter use. The databases searched included the Cumulative Index to Nursing and Allied Health Literature Complete, the Joanna Briggs Institute Evidence Based Practice (JBI EBP) Database, Google Scholar, Ovid, and the Cochrane Library. The keywords used in the search included guidelines, policy, protocols, practice guideline, clinical practice guideline, evidence-based practice, EBP, evidence-based, hospital, acute setting, inpatient, ward, translation, implementation, change, practice change, sustain, maintain, education, training, nurse, urinary catheter, indwelling catheter, and Foley catheter. The results of these searches were narrowed down by filtering the English language articles published from 2016 to 2021. This was done to ensure the literature was current and relevant. The search results were further refined to identify articles that were conducted in the United States of America. This was done to ensure the relevance and translatability of the identified articles as this proposed project was performed in the United States. Some exceptions were allowed to this rule, particularly if the identified article was a review that examined research that took place in multiple countries. After the completion of the database searches using the abovementioned search terms, a descendancy search was conducted for each relevant article identified, which yielded additional articles relevant to the project. This literature review focused on four key areas pertaining to the proposed intervention. These areas included existing evidence-based guidelines; utilization of

policies, protocols, and guidelines; implementation of policies and protocols; and sustaining change.

Evidence-Based Guidelines

Various guidelines and resources exist to disseminate information on the use, maintenance, and discontinuation of urinary catheters. The CDC drafted guidelines in 2009 and regularly updates them to reflect current research findings (CDC, 2009). UpToDate is a database that provides relevant evidence-based medical information, including catheter recommendations. The WOCN has also supplied guidelines for the use of urinary catheters in a medical setting. However, these guidelines have not been updated since 2015 but are congruent with the UpToDate and CDC guidelines. They provide evidence-based recommendations for nurses and other healthcare providers on when a urinary catheter is needed, how to insert and maintain it, and when to discontinue catheterization.

Catheter placement is indicated under several circumstances, including acute urinary retention, during certain surgical procedures, in immobilized patients, for aid in healing of perineal or sacral wounds in incontinent patients, and in end-of-life care (CDC, 2017; Schaeffer, 2021b, WOCN, 2015). The guidelines also highlight some inappropriate uses of catheters which can include using a catheter to reduce the need for staff to assist a patient to the toilet, as well as general incontinence that could be addressed using more conservative means (CDC, 2017; Schaeffer, 2021b, WOCN, 2015).

Once the decision is made to insert a urinary catheter, the CDC (2017), Schaeffer (2021b), and the WOCH (2015) support that only trained individuals should place a urinary catheter. The guidelines and authors state that trained individuals can select the appropriate type

of catheter to be used and observe proper aseptic technique using sterile equipment for the placement of the urinary catheter. The authors also discuss the importance of monitoring the urinary catheter after it has been placed to ensure that urine is flowing and that the catheter and urine are free from the signs of infection. Schaeffer (2021b), the CDC (2017), and the WOCH (2015) agree that the use of urinary catheters should be discontinued as early as possible to reduce the risk of complications associated with the use of the device.

Utilization of Policies, Protocols, and Guidelines

The next area examined was the utilization of policies, protocols, and guidelines to inform practice. Beauchemin et al. (2019) and Peters et al. (2020) discussed the importance and value of healthcare facilities adopting guidelines and policies. Peters et al. stated that failing to adopt clinical practice guidelines can result in a reduction in the quality of care provided to patients. Beauchemin et al. (2019) pointed out that practice guidelines have been thoroughly researched and designed to assist healthcare professionals in making informed decisions regarding the care of patients. These thoroughly researched guidelines have been made easier to understand with the help of systems provided to illustrate the strength of each recommendation. According to the authors, the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) group developed a system that is widely used by guideline publishers and provides a quick understanding of the strength of recommendations within the guidelines. In relation to this project, urinary catheter guidelines exist that assist healthcare professionals in deciding when to insert a urinary catheter, how to insert and maintain it, and when to discontinue catheterization. Notably, Colbeck et al. (2016) found mixed results while evaluating the impact of clinical practice guidelines on improving patient care. They noted that despite the availability

of an evaluation system, some of these guidelines use low-quality evidence in support of the recommendation. Notwithstanding the limitation, they concluded that well developed guidelines can contribute to quality healthcare. Beauchemin et al. (2019) and Peters et al. (2020) explained that implementing guidelines in a healthcare setting can face challenges.

Fortunately, there are several recommendations that assist in the implementation and adoption of guidelines. Peters et al. (2020) laid out a five-step process designed to facilitate the adoption of clinical practice guidelines. The authors' five steps include identification, context analysis, development of an implementation plan, evaluation, and sustainability. For the first step, identification, the authors recommended identifying key stakeholders within an organization, who also have the capacity to implement change, and forming a team with this group. Peters et al. stated that once this group is assembled it is important to assess the practice gap and identify which guidelines should be incorporated. Beauchemin et al. (2019) similarly noted that it is important to take stock of what current practices and policies are in a facility when looking to implement practice guidelines. Further, the authors highlighted the importance of evaluating the new guideline to ensure that it is supported by quality evidence.

Implementation of Policies and Protocols

Step three in the recommendations by Peters et al. (2020) is the development of an implementation plan. As with any quality improvement project, Peters et al. recognized the need to identify factors that will assist or hinder the implementation of the new guideline. They further noted that once these factors have been identified, planning can begin with the goal of capitalizing on the beneficial factors and minimizing the hindering factors. They pointed out that most guideline implementation plans will require multiple interventions to be successful;

moreover, they added that this is largely because no single intervention is likely to overcome all obstacles that oppose the new change. Beauchemin et al. (2019) identified that the healthcare facility as a whole and its stakeholders pose a potential barrier to the adoption of new guidelines. By having stakeholders and key team members already on the policy team, this barrier is less challenging. Further, they pointed out that individual healthcare professionals must also review and agree with the guidelines, or else they will pose as a challenge to implementation. Once the implementation has been initiated, it is important to follow up on the new process.

Beauchemin et al. (2019) and Peters et al. (2020) recognized the importance of having a plan for evaluating and adjusting the implementation plan over time. According to Beauchemin et al., this allows for fine-tuning of the plan and provides the opportunity to respond to challenges that may arise. To conclude the implementation process, they believed it is important to have a plan for de-implementation of previous practices that may be detrimental to patient care. Peters et al. (2020) emphasized the importance of ensuring that the new practice change informed by the guideline is sustainable. The literature provides strong foundational support, although the implementation of guidelines and protocols may be challenging.

Blodgett and Sheets (2021) deployed an intervention aimed at empowering nurses to discontinue the use of urinary catheters when they were no longer needed. The authors asked the nurses to use a flow chart to determine if using a urinary catheter was appropriate and if not, they were asked to discontinue the intervention. They reported that overall, the nurses in the study found the protocol useful and valuable. However, the authors stated that some nurses felt the protocol would not apply to the patient they were caring for because they did not perceive the patient as being at high risk for developing complications related to urinary catheter use. This

finding reaffirms the point by Beauchemin et al. (2019) that individual healthcare providers can pose as a barrier to the adoption of new guidelines. Other concerns that Blodgett and Sheets (2021) encountered were a lack of awareness of the protocol and nurses feeling too busy to address urinary catheters during their shift.

The literature states that a well-evidenced guideline can be useful while trying to improve the quality care for patients. Furthermore, it offers strategies for the implementation of guidelines in a practice setting. This guidance includes information on the potential pitfalls to be avoided as well as where to seek facilitating factors. The literature also indicates that implementation of guidelines can be a challenging task.

Strategies for Implementing Practice Change in a Health Care Setting

The literature proposes a variety of interventions to support the implementation of guidelines and protocols related to urinary catheters. A common technique for reducing urinary catheter use is to assess the need for catheter for every patient every day the catheter is in situ (Gauron & Bigand, 2021; Potugari et al., 2020; Russell et al., 2019; Thomas, 2016; Yu et al., 2020). There are multiple ways in which this can be accomplished. Russel et al. (2019) used a chart audit system, where a lead nurse would check on each patient with a catheter in situ to determine if it was appropriate. Potugari et al. (2020) utilized a system where each nurse was responsible for determining if the catheter placement was still appropriate for their patient. Thomas (2016) and Gauron and Bigand (2021) used a rounding system, where either during report off to the oncoming nurse or as part of rounds on patients, the nurses discussed the use of urinary catheters in each patient. Gauron and Bigand also incorporated electronic reports of catheter use that lead nurses referred to determine if there were any uses that were incongruent

with the new policy. Further, Yu et al. (2020) noted that some form of an auditing system was often used to improve adherence to new catheter protocols.

Another common intervention was some form of education (Yu et al., 2020). Ferguson (2018) utilized small in-person trainings with visual presentations to facilitate education. Additionally, the authors stated that participants in the project completed a skills course for placing a urinary catheter. Similar forms of education were used in other projects (Thomas, 2016). Gauron and Bigand (2021) had developed a sheet that provided nurses with insightful tips on the new policy regarding urinary catheters. Another study used a slight variation to this approach by using pocket cards that helped nurses identify when to consider use of a urinary catheter (Potugari et al., 2020). Russel et al. (2019) provided education on the urinary catheter removal algorithm and system they developed to facilitate the project.

The third common feature of the projects on urinary catheter improvement was the utilization of a multidisciplinary team (Yu et al., 2020). However, only two of the articles identified in this review made specific mention of including a multidisciplinary team (Fauron & Bigand, 2021; Potugari et al., 2020). Some unique interventions included the utilization of magnets and other visual reminders that alerted nurses to a patient with a urinary catheter in situ (Bindu et al., 2020; Russell et al., 2019). Yu et al. (2020) made two recommendations that were not reflected in the other articles: the first was to tailor guidelines to fit the setting that they were used in; the second was to recruit influential team members to help lead the intervention. To assess the efficacy of these various strategies, specific goals were targeted and measured.

Most of the included studies focused on reducing CAUTIs. Russel et al. (2019), Thomas (2016), Potugari et al. (2020), and Gauron and Bigand (2021) reported reductions in CAUTIs

overall. Potugari et al. and Russell et al. identified a reduction in overall urinary catheter days. However, Thomas did not find a significant reduction in urinary catheter days.

Sustaining Change

This evidence helps to support interventions aimed at assisting the implementation of new guidelines. All the reviewed literature suggests that multiple methods are important in an implementation plan; however, no project or study was identified that utilized only a single modality for the implementation of a new guideline, protocol, or procedure. Further, the reviewed literature focused on interventions that only occurred over a discrete timeframe. As stated by Peters et al. (2020), it is important for the implementation of guidelines to be a sustainable change. To that end, literature that examined creating lasting change in healthcare environments was reviewed.

Change can be a difficult process with several challenges, and to implement lasting change, it is important to consider some common points of resistance to change. O'Donoghue et al. (2021) provided a 14-point list of regularly identified causes of failure when implementing change. They stated that these causes include human resistance to change, failure to consider what current operations are, and failure to create an appropriate timeline for implementation. Fortunately, these areas of concern can be anticipated to some extent, and strategies can be implemented during project development to overcome these barriers at an early stage. O'Donoghue et al. (2020), Scoville et al. (2016), and Donnelly (2017) universally discussed the importance of involving the staff who will help in implementing the change as early as possible. According to O'Donoghue et al., doing so can help in the development of the project while also creating understanding of the project. Further, Scoville et al. stated that this can aid in the

development of trust between staff and those initiating the project. Carefully selecting the unit to first trial the change can also have a significant impact on the success of a project.

Scoville et al. (2016) suggested identifying a floor that has stable staffing, quality management, and if possible, a change leader. Donnelly (2017) and O'Donoghue (2021) have warned that the project goals can become wayward during the planning and implementation process; thus, it is important to keep the goal clear and simple. To ensure successful and lasting change, the abovementioned authors suggested that the involved parties should communicate the importance of having a standardized process for the proposed change. Scoville et al. (2016) stated that a significant factor in creating sustaining change is having a workplace culture that promotes quality improvement.

The insights obtained from the literature were valuable in guiding this project, and key components of the literature review were utilized in the project. These included review and incorporation of clinical guidelines for policy development, recruitment of key stakeholders and nurse champions to facilitate the project, and identification of barriers that may impede the project. Additionally, education designed to enhance knowledge and skills related to catheter placement and management was a vital component of the project. However, some recommendations were beyond the scope of the project. The importance of developing a culture of improvement cannot be understated. Unfortunately, cultivating such a culture, if it is not already in place, is a long-term and time-intensive endeavor. If perceived positively and executed in an appropriate manner, the project could contribute to the development of such a culture. However, the project did not create this outcome on its own. This project sought to create a long-term positive change around the utilization of urinary catheters.

CHAPTER THREE

MEDTHODOLOGY

Project Design

The project sought to reduce the number of days patients have a urinary catheter in place, and this was attempted by developing a policy during the initial planning phases that incorporated current evidence-based guidelines. The policy was to be implemented by the hospital floor medical team with assistance from the DNP student. The project had specific goals that were identified to evaluate that it moved toward the ultimate desired outcome. The first goal was the development and adoption of a revised urinary catheter policy. The second goal focused on the implementation of the new policy, whereas the final goal focused on the utilization of the policy.

Framework

The overarching aim of the project was to reduce the number of urinary catheter days, and the Plan-Do-Study-Act (PDSA) model for improvement framework was used to facilitate that aim. The Institute for Healthcare Improvement (IHI, 2021) promotes the PDSA framework as an approach to incite quality improvement in healthcare. The IHI states that the "Plan" phase of this framework focuses on identifying goals, strategies for achieving the goals, and ways of measuring these goals. They further state that the "Do" phase involves the implementation of the strategy. As implementation occurs, immediate outcomes are observed and compared with the set goals, and this constitutes the study phase. According to the IHI, the "Act" phase of the cycle

correlates with the action taken based on how the outcomes correlate with the goals and if changes are needed to correct problems or move to a new phase. This framework uses multiple cycles to drive the change needed to achieve goals (IHI, 2021). PDSA was selected because of its adaptability and capacity to facilitate multiple improvement cycles. The initial PDSA cycle for the project involved the development of a urinary catheter policy. The subsequent cycles focused on implementing the policy on the hospital floor. Challenges arose during the project implementation, and PDSA cycles allowed for adaptation to these challenges. The flexibility of the framework allowed this project to be tailored toward the facility and specific project outcomes.

Agency Description

The setting for this project was a 26-bed acute care floor within a larger hospital located in central Montana. The floor admitted patients for illness or surgical recovery, including cardiac surgery, but did not accept high acuity patients that would warrant treatment in intensive care units. The unit has daytime and nighttime shifts, each lasting for 12 h. The unit comprised 19 RNs, two licensed practice nurses (LPN), three nurse practitioners, and two medical doctors (H. LePard, personal communication, November 16, 2021). The floor admitted patients from the hospital ED, surgery center, cardiac lab, and from other medical specialties within the organization. This created a diverse patient mix. According to LePard, the average length of stay of patients in 2021 was 3.6 days and the average patient census in 2021 was 13.8. The small hospital size coupled with the wide availability of services made the hospital a popular choice for patients in the area.

Target Population

The hospital serves both urban and rural populations. This was due to the unique geographical location of the facility that made it more accessible to the surrounding rural communities. There was no pediatric healthcare provider among the hospital staff and this limited its services to pediatric patients. Therefore, pediatric patients were excluded from the project. Although the associated clinic offered obstetric and gynecologic (OB/GYN) services, the hospital did not perform deliveries. The overarching goal of this project focused on adult and geriatric, male and female patients that were admitted to the hospital floor for at least 1 day. The main focus of this study was on patients who were either admitted with a urinary catheter in situ or had one placed during their admission.

Stakeholders

The key stakeholders for this project grew as it was implemented. This was due to the cycles of the project that brought in more people as it progressed. The initial two cycles of the project focused on planning for the implementation of the project. The goal of the first cycle was the development and approval of a new policy. The stakeholders for this cycle included an infection control nurse, ED manager, inpatient manager, a urologist, and an OB/GYN healthcare provider. After this cycle, the stakeholders expanded to include the hospital administration, training department, research department, and floor RNs. The hospital administration was required to formally adopt the new policy; the training department facilitated the uploading of training materials to the facility's training portal; the research department reviewed and approved the project; the RNs were required to implement the policy. Table A.1 identifies the stakeholders

in each major PDSA cycle. The stakeholders were required to facilitate the project and address the barriers.

Table A.1. Plan-Do-Study-Act Cycles in Detail

Plan-Do-Study-Act	Goal	Essential Stakeholders	Measures	Analysis
1st Cycle	development and approval of a new policy	• infection control nurse • emergency department manager • inpatient manager • a urologist • an OB/GYN healthcare provider	Policy adopted or not adopted	Descriptive statistics (adopted vs. not adopted)
2nd Cycle	100% of hospital floor RNs will complete the policy education by January 17, 2022	• hospital administration • floor RNs • floor medical providers • inpatient manager	number of RNs completing the training	Descriptive statistics (x/19, x = number of RNs reporting that they have completed the training) Qualitative data for provider input
3rd -To Be Determined	Implementation of the policy will reduce urinary catheter days on the hospital floor by 10% within 8 weeks from the start of the project. Completion is anticipated by February 22, 2022	• hospital administration • floor RNs • floor medical providers • inpatient manager • infection control nurse • patients	Total number of urinary catheter days	Descriptive statistics (calculation of total number of urinary catheter days) Graphical analysis (Excel graph comparing current month to the same month of the previous year) Qualitative data for provider and RN input

Table A.1. Continued

4th - To Be Determined	Implementation of the protocol will decrease urinary catheter days by 20% within 1 year of project implementation	• hospital administration • floor RNs • floor medical providers • inpatient manager • infection control nurse • patients	Total number of urinary catheter days	Descriptive statistics (calculation of total number of urinary catheter days) Graphical analysis (Excel graph comparing current month to the same month of the previous year) Qualitative data for provider and RN input

Facilitators and Barriers to Implementation

The stakeholders were largely in support of this project and none of them presented a barrier. The primary stakeholder for this project was the infection control nurse. This individual initially facilitated communication in the project. They helped the DNP student contact the training division, research division, and departmental head of the hospital floor. The research division provided additional approval and guidance to the DNP student relating to the implementation of the project. The training division uploaded the recorded PowerPoint presentations and algorithm to the training portal used by the hospital, and this support was pivotal in moving the project forward. However, there were significant barriers to the implementation of this project.

One barrier to this project was the prevailing COVID-19 pandemic. Early in the project, key members of the stakeholder team contracted the virus, which delayed the project implementation. Following this event, the Omicron variant of SARS-CoV-2 led to a rapid rise in

SARS-CoV-2 infections. This wave had a significant impact on the population of Montana and had overloaded the health systems. The facility where this project was to be executed was no exception. The hospital was frequently at or over capacity for the majority of the month of January and February 2022. This created a burden on the staffing ratios. Additionally, the Omicron wave severely impacted staffing at the facility as many employees became infected around the same time. This event delayed the implementation of the project until February 2022.

Unfortunately, these delays highlighted an additional barrier to the project: the time. The timeframe of the project was set using parameters necessary to present the project defense in time for graduation, and this allowed for some delay in the project implementation. However, it was not designed to allow a delay of over a month. Due to the unexpected and rapid rise in Omicron infections and the timeframe barriers, some aspects of the project had to be modified and achieving the intended goal of the project became unlikely. However, throughout these challenges, the infection control nurse remained in regular contact with the DNP student, providing facility updates. This facilitating factor allowed for the implementation of the project at the earliest possible time following these events.

An additional unexpected barrier was a mandate from Center for Medicare & Medicaid Services (CMS), which required healthcare facilities of certain sizes to have all healthcare workers vaccinated with the COVID-19 vaccine. Much of the burden of implementing this change fell on the infection control nurse, and this issue took priority over the project and created additional delays in project implementation.

An unforeseen facilitator of the project was the hiring of an additional part-time infection control nurse. This individual helped in relieving some of the burden from the primary infection

control nurse, allowing for swifter responses to the continued Omicron surge as well as the COVID-19 vaccination requirement. These barriers and facilitators had a significant impact on the project. The PDSA framework was appropriately selected, which allowed for rapid adaptation to the near-constant state of change that occurred throughout the project implementation.

Project Methods

The first PDSA cycle involved obtaining approval from a team of key stakeholders to accept the new urinary catheter policy that was revised by the DNP student. The policy was submitted for review by late December 2021. Due to the aforementioned barriers, the final policy (as shown in Appendix A) was not adopted until February 2022. It was then forwarded to the appropriate departmental heads within the organization. This provided a framework that the team then built upon. This policy did not need any revision. Initial communication between the DNP student and the facility stakeholders was conducted via e-mail, telephone, and in-person meetings.

Once the policy was accepted, the second PDSA cycle began, focusing on introducing the new policy to the RNs on the hospital floor. PowerPoint slides (shown in Appendix E) were prepared by the DNP student to educate nurses regarding catheter essentials as well as changes to the policy, including the nurse-driven removal of urinary catheters. Narration was added to these slides by the DNP student so that they can be used for training. Four different presentations were prepared; the explanation for each of them was covered within 15 min. This was designed to make the presentation more accessible for the nurses to view during their busy routines. Additionally, it would allow them to refer to a specific presentation on urinary catheters in the

future to find the specific information that they are looking for. The first presentation addressed when urinary catheter use is appropriate and the basic information for catheterization, whereas the second discussed the maintenance of urinary catheters.

An algorithm (shown in Appendix D) was also developed by the DNP student to aid nurses' decision-making when implementing the new nurse-driven catheter removal policy. The algorithm was discussed in the third presentation and a copy was made available on the training portal. An additional fourth presentation was prepared to inform nurses about the details of the project. This presentation also discussed the consent form developed for this project (found in Appendix B) and the safety measures taken to protect the participants. The fourth presentation further provided contact information of the DNP student. Finally, this presentation provided the link to a survey that would give nurses the opportunity to rate various aspects of the presentation.

The presentations were delivered by the DNP student in-person on a USB drive to be reviewed by the infection control nurse. They were then submitted to the training department such that they could be uploaded on the training portal, where they can be accessed by the hospital staff. The presentations, along with the algorithm, were hosted on the training portal with other training materials utilized at the facility. This provided the nurses with access to the presentations at times that were convenient for them. During the entirety of this project, the DNP student was available for communication with all parties through emails and phone calls. The primary intention was to be reachable at all times and to promptly address questions if they arose.

Measures and Instruments

A survey was developed to provide nurses an opportunity to rate each presentation individually and all presentations as a whole. The survey utilized a simple Likert scale that ranged from 1 to 5, 1 being "Strongly disagree" and 5 being "Strongly agree." The survey and its responses are available in Appendix C. The survey was hosted on the SurveyMonkey website. One reason for the selection of this website was that it provided a means of keeping respondents completely anonymous, which included not recording the internet protocol address of the system from which they took the survey.

Data Collection Plan

Data for the surveys was to be preliminarily collected from the SurveyMonkey website. The website recorded the total number of respondents to the quiz. This would have allowed for inference of the number of nurses who took the quiz, and therefore it could have been reasonably assumed to have correlated with the number of nurses who completed the trainings. Responses to each of the survey's five questions would have also been recorded on SurveyMonkey. This would have provided insight into how the overall presentations were perceived by the hospital staff who completed the trainings. It was entirely possible that a random individual could have completed the survey. However, the web address for the specific survey was only provided on the training portal and this made it reasonable to assume that anyone completing the survey was in the target audience. None of the information collected on SurveyMonkey contained any personal identifying information. The site for accessing the survey data was only accessible using the DNP student's password. Unfortunately, no surveys were completed. Although the

focus of the project was healthcare personnel, the definitive goal was patient care. Both groups were assured of protection during their participation in the project.

Human Subjects Protection

The initial step to protect the patients and staff was obtaining the review and approval of the policy by the policy team. This ensured that a multidisciplinary team, and not just a single person, reviewed the policy for potential concerns and safety issues. An additional safety measure was the DNP student's availability using various communication methods to ensure that there was always an avenue to begin the process of addressing a problem. The DNP student acted as a facilitator as he had the contact information of other key stakeholders within the agency who could also help address difficulties. Patient safety was addressed by having RNs or other healthcare providers perform the insertion, maintenance, and removal of urinary catheters. This was already a standard of care and did not change with the project. An additional concern for protection revolved around the handling of personal information.

To address information protection, the staff was asked to volunteer to provide feedback and those who chose to do so filled out a consent form. Consent to provide feedback could be revoked at any time. Staff were informed that their information would be kept confidential and would be deidentified for the purposes of the project. Additionally, access to the protected health information (PHI) for patients was restricted. For the purposes of the project, the electronic health records (EHR) with PHI were not accessed by the DNP student. This significantly limited the amount of PHI that was disclosed to individuals outside the hospital. In addition to these measures, the project was reviewed by the Montana State University (MSU) Institutional Review Board (IRB) and approved by the MSU IRB on December 21, 2021. It was also reviewed by and

received approval from the hospital's research team. The project underwent some revisions during its implementation, which required an amendment for modification to be submitted to the MSU IRB. The amendment was to include the online survey data to the project.

CHAPTER FOUR

RESULTS

The primary purpose of the project was to implement a revised urinary catheter removal policy that adheres to best practices and permits nurse-driven catheter removal. The overarching measurable goal for this improvement was to reduce the number of urinary catheter days at the chosen facility.

The first goal of this project was the development and implementation of the revised policy, and the success of the initial goal was measured by whether the policy was adopted. There were a few positions within the hospital that were key to the implementation of the project, including that of the infection control nurse who had worked in this position at this facility for over a decade. After obtaining assistance from this individual, the policy was adopted by the facility. With the achievement of this goal, the project could progress to its second cycle.

The second goal was to implement the revised policy, and the next position that was vital to the success of the project was that of the training coordinator. This individual had several years of experience in this position at the facility. Further, there were 19 RNs involved in the implementation of the project. The duration of experience for these nurses ranged from 1 to over 10 years. The measure for the second goal was the total number of nurses who completed the trainings. Due to complications in the project implementation that will be addressed in the lessons learned section of this paper, the project was unsuccessful in recording data pertaining to this measure. Additionally, as this cycle did not achieve completion in the allotted time for the

project, the subsequent planned cycles could not be completed. Thus, data pertaining to the total urinary catheter days in relation to the project implementation could not be recorded.

Discussion

Unfortunately, the delays as described in the subsection "Facilitators and Barriers to Implementation" above impacted the project execution. As a result, limited results could be recorded for the overall project. The only relevant result was that the policy was approved and adopted at the facility. Although the project encountered significant issues with implementation, these delays were largely due to external factors and not due to internal resistance, which could be attributed to several factors. One significant factor was that the change was desired by the facility. This meant that the key stakeholders, such as the infection control nurse, were already in support of the project. This was an essential element in the achievements of this project. The need for key stake holder support was well illustrated in the literature by Beauchemin et al. (2019).

Training tools were also developed in support of this project, and these were important for the project implementation. Unique educational PowerPoint presentations on the urinary catheter policy were recorded for this facility. Additionally, an algorithm was developed to aid nurses with the new nurse-driven catheter removal policy. Support for both interventions was also found in the literature. Peters et al. (2019) noted the need to assess all barriers to project implementation so that plans can be developed to address them. Some unexpected barriers emerged in addition to some of those identified prior to the project implementation; thus, these issues contributed to the lessons learned for this project.

Lessons Learned

Although this project did not reach the data collection phase, the DNP student learned substantial lessons from the planning process. To better understand the lessons learned, it is useful to know the context of the challenges that the project encountered. Once the IRB approval was granted in mid-December, project implementation began. At that time, the Delta wave of the ongoing COVID-19 pandemic had crested, and the number of cases was falling. It was expected that this COVID-19 wave would follow the pattern of the previous waves in which the virus activity remained low for a few months following a wave. However, the next mutated form of the virus, designated Omicron, did not follow this pattern. Cases explosively rose by the end of December, causing significant delays in the project implementation. The COVID-19 spike created two significant issues. The first was an increase in patient utilization of healthcare services. Every healthcare facility within the county of the project facility was inundated with patients and reported extraordinarily long patient waiting times. The two hospitals in the area reported being over capacity throughout January and February. The second problem caused by the Omicron wave was the impact on the workload of the medical staff. Once again, all healthcare facilities in the area reported significant numbers of staff infected with COVID-19, and the facility where this project was executed faced similar challenges.

Closely following the Omicron wave, a CMS requirement that all healthcare facilities needed to mandate COVID-19 vaccination for employees or else they would not be able to receive CMS reimbursement for services provided. The hospital staff, including the infection control nurse, was tasked with ensuring compliance to this new mandate, which reduced the resources available for this project. Finally, the fact that the project facility was planning for

facility expansion was unknown to the DNP student before starting this project. This development had the least impact on the timeframe of the project; however, it still created an obstacle to the completion of the project. Planning for such barriers can be challenging for any project. Several important lessons were learned from these challenges.

One important lesson learned from this project was flexibility. The Omicron wave resulted in significant delays in the project. Therefore, to adjust for this complication, the project had to remain flexible. Although the delay in starting the project resulted in failure to capture the data required for the project's overall goal, flexibility at least allowed the project to be started, and this was more desirable than abandoning the project entirely. This project was initiated under real-world conditions; therefore, the lessons in remaining flexible are valuable. It can be reasonably anticipated that other quality improvement projects will encounter obstacles that lead to significant delays. Nevertheless, by maintaining flexibility, these projects can be implemented, although flexibility alone is not enough to overcome significant obstacles.

The second valuable lesson learned was communication. Communication was ultimately what led to the implementation of the project. During the Omicron wave, the infection control nurse and DNP student communicated at least once a week. This communication facilitated an understanding of the burden of the facility, and the frequency of this communication allowed for regular reassessment of the situation at the facility. Situational awareness facilitated the planning for the launch of the project. This meant that the project started at the earliest date when it would be well received and not be perceived as overwhelming or ill-timed by the staff. Had the project been launched at any time when there were significant staff shortages or overwhelming patient demand, the medical staff would likely have resisted the project. O'Donoghue et al. (2021)

highlighted several factors that can impede change, including timelines that are overly ambitious, insufficient time allotted for implementing change, and the human factor. Any or all of these factors could have resulted in the failure of the project. However, flexibility and communication created an opportunity for the project to be implemented. Future quality improvement projects would benefit from understanding the importance of communication in project implementation and execution. The events of the pandemic were unexpected; however, strategies such as communication and flexibility allowed to overcome these events. Throughout the project implementation, additional strategies for success that could have been identified in the planning phases became apparent.

The third lesson learned was related to access to the project site. The implementation of this project was highly dependent on an individual within the facility—the infection control nurse. Under normal circumstances, this may not have been such an impactful issue. However, the Omicron wave generated an overwhelming amount of work for the infection control nurse. To adequately control the infection within the hospital, the nurse had to ensure that personal protective equipment was available, the infected staff was tracked, their return-to-work dates were identified, and staff followed appropriate contact precautions. Due to the nature of the pandemic, these responsibilities took priority over the start of the project. Additionally, early on in this project, the infection control nurse became ill, and at the time, this was considered unfortunate but not detrimental to the project. However, in retrospect, her absence turned out to constitute a more significant loss to the project than originally assessed. This was because shortly after her illness, the Omicron wave began to rise. If another facilitator for the project had been identified, these delays could have been averted. The lessons learned can be of value for other

quality improvement projects. However, it is important to note the characteristics that may limit the transferability of this project.

Limitations

It is important to consider the size of the facility while considering the transferability of the results. The relatively small size of this hospital was a likely factor that aided the overall project. Being a small-sized hospital there were limited stakeholders and departments to push the project through, and the reduced number of barriers likely helped this project achieve implementation despite the significant setbacks that occurred during the project's timeframe.

Another limitation to transferability was the type of patients admitted to the hospital. The hospital primarily admitted patients aged ≥18 years who did not require intensive care. Although the hospital admitted some patients who did not meet these criteria, it was uncommon to do so. Thus, it is difficult to generalize this project to hospitals that admit more critically ill patients or to those that care for unique populations, such as women giving birth.

Finally, the staffing matrix of the facility also had an impact on the transferability of the results. The hospital primarily employed RNs on the floor. Some hospitals utilize a wider mix of RNs, LPNs, and certified nursing assistants to care for patients. Thus, a nurse-driven catheter removal policy may not prove to be beneficial or worthwhile in such locations because a facility may not employ enough RNs to effectively utilize such a policy. With these limitations in mind, the project presents some insightful recommendations for future practice.

Implications for Future Practice

With the stakeholders' support, the project facility plans to immediately roll out the training modules developed for this project to the operating room and ED nurses, and this plan validates the quality of the training resources developed in this project. Although these nurses may be less likely to have the opportunity to exercise the nurse-driven catheter removal policy, they can play an important role in advocating against catheter placement when it is not needed. They can also play a pivotal role in appropriately inserting and maintaining urinary catheters to reduce the risk of associated infection.

The project facility intends to continue with this project, and as such, the DNP student offers recommendations to aid in successful implementation. Moving forward, the manager for each practice area should oversee the implementation in their areas; which implies that the hospital floor manager should oversee the implementation on the hospital floor, the ED manager should oversee that in the ED, and so on. Each of these managers can identify nurse champions to help facilitate the utilization of the new policy. This intervention was well supported in the literature as a way to help support change.

To ensure that the new policy has the desired effect, it will be important to identify data points that correlate with the project and can be measured. It is recommended that the facility utilizes the urinary catheter days as their data point. As discussed earlier, this data is already being monitored by the infection control nurse. Initially, the urinary catheter days of the current month can be compared with that of the same month of the previous year. This comparison will allow the facility to identify if the catheter days are reducing, remaining the same, or increasing. For the cases in which catheter days remain the same or increase, a survey should be conducted

to determine if nurses are utilizing the new policy or if they have identified barriers to implementing the new policy that need to be addressed. This approach fits the PDSA model that was used to initiate the project.

The timeframe of this project was limited, and this reduced the capacity to capture meaningful data pertaining to the total urinary catheter days. However, this is a metric that is regularly collected by the project facility. It is recommended that data moving forward be compared with that from previous years to determine the effect of the change on the facility. Additionally, as the present intervention has shown a reduction in the urinary catheter days and CAUTIs in the literature, it is recommended that similar nurse-driven catheter removal policies should be developed and implemented at other hospitals.

This project also supports the importance of continuing with a quality improvement effort even if the initial target dates are not met. Although this project did achieve some goals, the lessons learned from its shortcomings are just as valuable. Thus, uncovering these pitfalls can help future quality improvement projects plan for such events and improve the probability of successful implementation of future efforts.

CHAPTER FIVE

REFLECTION

The MSU DNP program has been the primary factor responsible for my personal and professional development for the past 4 years. Each course contributed to my knowledge and skill set and through the coursework, I have successfully achieved the DNP essentials outlined by the American Association of Colleges of Nursing, which has been reflected in my academic and professional career.

Much of the early course work for the DNP program contributed to the achievement of the essential I, the scientific underpinnings for practice. Courses including advanced pathophysiology, advanced pharmacology, and advanced health assessment laid the foundation for advanced practice nursing. Other courses such as evidence-based practice; ethics, law, and policy; and healthcare informatics contributed to my understanding of how the healthcare system operates. This knowledge has made it possible to effectively enact changes in the healthcare setting.

With these underpinnings, I was able to take an assignment from my finance and budget course and implement it in a practical setting. For this assignment, I drafted a proposal to hire a nurse practitioner for the local health department where I work. The proposal included an overview of the fiscal burden and benefits of onboarding a healthcare provider. It also highlighted the impact that a nurse practitioner would have on individual and community health. The information presented in the project was supported by research and evidence-based practice. This aligns with DNP essential III, clinical scholarship and analytical methods for evidence-

based practice. The initial proposal was written in July 2020. By November 2021, the health officer at the time and I began discussing the possibility of creating a nurse practitioner position in the health department.

The proposal for the healthcare provider position that I developed in satisfaction of the DNP course work was adapted to be more accessible. It was then sent to the county commissioners with a request for consideration to open a nurse practitioner position. This proposal highlighted the benefits that a nurse practitioner would bring to the health department and the county. These included expanded sexually transmitted infection screenings and treatment, HIV prophylaxis, chronic disease management, and provision of expert education to patients at group meetings. Each of these interventions can improve the overall health of the community and help address health disparities in minority sections of the community. These interventions spoke to DNP essential V, healthcare policy for advocacy in healthcare, as well as DNP essential VII, clinic prevention and population health for improving the nation's health.

The proposal also highlighted how bringing in a nurse practitioner could be accomplished in a fiscally responsible way. This could be achieved by a combination of recapturing lost revenue-related changes in insurance reimbursement that occurred in 2020 and billing for direct patient-care services. Additionally, the existing staff would initially be used to support the nurse practitioner position. This was discussed with the staff before hiring the healthcare provider, and they supported the change. The commissioners were receptive to the proposal and asked clarifying questions, seeking to understand the full scope of care that would be offered at the health department. In early December, the commissioners approved the creation of a full-time nurse practitioner position for the county health department. After working with the county

commissioners and human resources department, a job description and pay rate were developed. My understanding of DNP essential VIII, advanced nursing practice was vital to the development of the job description and creation of the position's responsibilities. The county legal department and accounting department assisted in securing a malpractice insurance policy and all of these efforts were coordinated by me. This collaboration effectively demonstrates DNP essential VI, interprofessional collaboration for improving patient and population health outcomes.

The nurse practitioner was hired in March 2022, and coordination with the county information technology department, EHR vendor, and billing service was undertaken to support the new healthcare provider in providing high-quality care. This speaks to DNP essential IV, information systems/technology and patient-care technology for the improvement and transformation of health. The evolution of this event, from a proposal drafted for an assignment to a fully realized county position, was because of the knowledge of quality improvement and leadership skills that I acquired during the MSU DNP program. My understanding of quality improvement helped me set short-term, achievable, and measurable goals. It was known that obstacles would arise and would need to be addressed; therefore, I was also aware of the importance of remaining flexible. Finally, because of my knowledge of quality improvement, I set attainable and measurable goals that would help identify if any progress was being made in this endeavor. This fits well with DNP essential II, organizational and systems leadership for quality improvement and systems thinking.

My DNP education was indispensable in the conceptualization and execution of this project. The project to onboard a healthcare provider at the health department was simultaneously conducted with the project described in this paper, which identified key lessons

that were used in the onboarding of the healthcare provider. Key among these lessons was the importance of remaining flexible and pursuing a project even if the project encounters delays. This project will have a lasting impact on my career as a doctoral prepared nurse practitioner.

The project described in this paper was informative in the way that it started. I had an informal and impromptu conversation with the infection control nurse regarding the possibility of executing a project at her facility. She immediately described three projects that she had been trying to implement but struggled to find time to do so. This experience will shape my career as it has created awareness that many individuals seek to improve the healthcare system and I can aid them by being a collaborator. Similarly, I will seek additional supporters to help improve the probability of success in the future quality improvement projects that I initiate. This is a lesson that was born out of the DNP project.

The implementation of this project has already informed my practice and has provided lessons that will remain with me throughout my future. A significant lesson that I learned is to remain flexible. Although it is possible to plan for many possibilities, it is ultimately the possibilities that one cannot imagine that pose the most significant threat to quality improvement. Flexibility is one of the few ways to address unforeseen obstacles when they arise. The importance of communication cannot be overstated as well. Effective communication is vital to the success of any project. Communication is also vital to patient and coworker relationships.

Most of the lessons learned throughout the DNP program will remain with me throughout my career as a nurse practitioner. The most obvious and immediate applicable lessons revolve around patient care. In this field, each semester has built upon the knowledge and experience that

I gained from the previous semester. The initial foundational classes, such as advanced pathophysiology, were key to my understanding of disease progression, which provides guidance in diagnostic reasoning and interventions. These skills were fed into the clinical courses. The information covered in the program was incredibly vast; perhaps, two of the most invaluable skills acquired through the program were a mindset and a way of thinking.

The mindset that I acquired is one of curiosity and the desire to understand. In the clinical setting, this mindset drives me to identify the pathophysiology behind every medical condition I encounter, and this knowledge helps me hone my assessment and history taking for future patients. It also helps me understand how medications treat these conditions. This mindset is something that I will take forward with me in practice. The way of thinking is another vital skill, and for me, this means the way of approaching each patient. I know the first questions to ask to initiate the evaluation process. Once I collect the relevant information, I may not have a diagnosis. However, I know where to start while considering possible differential diagnoses and how to manage the patient in the interim until a definitive diagnosis can be made. Further, I know what resources to look at when working to identify a diagnosis. This process will evolve and be refined over time; however, its basic structure will remain with me throughout my career.

The DNP program has also instilled in me the desire to continuously improve healthcare. During the last 4 years, I have identified a number of areas that I would like to bring about a change in, and some of these areas are specific to my region, whereas others will be part of national efforts. In most of these areas, I have already identified collaborators who may support these improvements. The focus on improving the landscape of healthcare will remain with me throughout my career. The MSU DNP program has been instrumental in my development as a

doctoral prepared nurse practitioner. I have already had the opportunity to effectively put many of the skills I have learned into practice, and I am excited to see where this preparation takes my career.

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APPENDICES

APPENDIX A

ACCEPTED POLICY

Policy Title: Prevention of Catheter Associated (CAUTI) Urinary Tract Infections

Effective Date: **Policy #:**

CMS/Regulatory Reference: IPC.C.2.c.04

Form Reference(s):

Policy:
_____ has a policy for the prevention of Catheter Associated Urinary Tract Infections (CAUTI). Not all catheter associated urinary infections are preventable, however the healthcare employees at _____ will focus on practicing skills to decrease the likelihood that patients will acquire CAUTIs. This will be accomplished in a safe and cost effective manner.

Responsibility:
It is the responsibility of all healthcare employees to follow the requirements of our Prevention of CAUTI.

Objective:
To provide a safe environment for our patients by decreasing the likelihood of acquiring CAUTIs.

Procedure:
Definition: A Urinary Tract Infection (UTI) is an invasion of all or part of the urinary tract (kidneys,bladder, and urethra) by pathogens. UTIs are usually caused by bacteria, most typically Escherichia coli, although viral and fungal organisms may also cause UTIs. UTIs are common Healthcare Acquired Infections (HAI). Infections often result following instrumentation (catheterization, diagnostic procedures of the genitourinary tract). UTIs, can be chronic and recurring and can lead tosystemic infection and be life threatening. The focus of this policy is to reduce the incidence of catheter related UTIs. The urinary tract is the most common site of HAI infection and accounts for more than 40% of the total number of infections, affecting an estimated 600,000 patients per year.
The risk of acquiring a urinary tract infection depends on the method and duration of catheterization,the quality of catheter care, and host susceptibility.

1. **Reasons for catheterization:**
    A. To relieve urinary tract obstruction
    B. To permit urinary drainage in patients with neurogenic bladder dysfunction andurinary retention.
    C. To aid in urologic surgery or other surgery on contiguous structures.
    D. To obtain accurate measurements of urinary output in critically ill patients.
2. **Mode of transmission of infection:**
    A. During insertion of the catheter.

B. Microorganisms can migrate to the bladder along the outside of the catheter.
C. Along the internal lumen of the catheter after the collection bag or drainage tubehas been contaminated.

3. Control methods:

A. Limit the use of catheters to carefully selected patients (see reason forcatheterization).
B. Discourage use of catheters as a means of obtaining urine for cultures or diagnostictests if the patient can voluntarily void.
C. Discourage use of catheters as a substitute for nursing care in the incontinentpatient.

4. Prevention:

A. Personal:
   1. Only persons (hospital personnel, family members, or patients themselves) who know the correct technique of aseptic insertion and maintenance of the catheter should handle catheters.
   2. Hospital personnel and others who take care of catheters should be informed of the correct techniques and potential complications or urinary catheterization.

B. Catheter Use:
   1. Urinary catheters should be inserted only when necessary and left in place only for as long as necessary. They should not be used solely for the convenience of patient-care personnel.
   2. For selected patients, other methods of urinary drainage such as condomcatheters, suprapubic catheters, and intermittent catheterization can be useful alternatives to indwelling catheters.

C. Hand Washing:
   1. SHOULD BE DONE IMMEDIATELY BEFORE AND AFTER ANYMANIPULATION OF THE CATHETER SITE OR EQUIPMENT.

D. Catheter Insertion:
   1. Catheters should be inserted using aseptic technique and sterileequipment. (See also B.1.)
   2. Gloves, drape, sponges, appropriate antiseptic solution for periurethralcleaning, and a single-use packet of lubricant jelly should be used for insertion.
   3. As small a catheter as possible, consistent with good drainage, should beused to minimize urethral trauma.
   4. Indwelling catheters should be properly secured with a device such as a Stat Loc after insertion to prevent movement and urethral traction.

E. Closed Sterile Drainage:
   1. A sterile, continuously closed drainage system should be maintained.

2. The catheter and drainage tube should not be disconnected unless thecatheter must be irrigated.
3. If there is a break in aseptic technique, disconnection, or leakage occurs,the collecting system should be replaced using aseptic technique after disinfecting the catheter-tubing junction.

Irrigation:

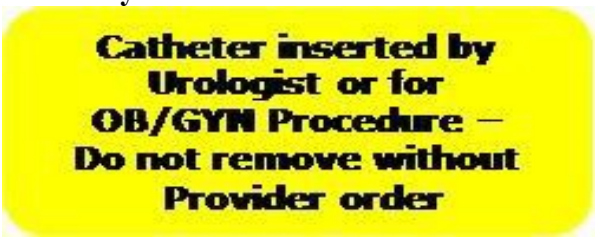
4. Irrigation should be avoided unless obstruction is anticipated. Closed continuous irrigation may be used to prevent obstruction. To relieve obstruction due to clots, mucus, or other causes, an intermittent methodof irrigation may be used.
5. Following aseptic technique, the catheter-tubing junction should be disinfected before disconnection. A large volume syringe irrigant should be used and then discarded.
6. If the catheter becomes obstructed and can be kept open only by frequentirrigation, the catheter should be changed.

F. Specimen Collection:
   1. If small volumes of fresh urine are needed for examination, the distal endof the catheter should be cleansed with a disinfectant and the urine is then aspirated with a sterile needle and syringe.

G. Urinary Flow:
   To achieve free flow of urine:
   1. The catheter and collecting tube should be kept from kinking.
   2. The collecting bag should be emptied regularly using a separatecollecting container for each patient.
   3. Poorly functioning or obstructed catheters should be irrigated, and ifnecessary, replaced.
   4. **COLLECTING BAGS SHOULD ALWAYS BE KEPT BELOWTHE LEVEL OF THE BLADDER.**
   5. **Foley** catheter removal

A. PHYSICIAN PLACED URINARY CATHETERS: no catheter placed by a provider (Urologist, OB/GYN, etc.) shall be removed without specific instructions and orders by that provider.

B. A yellow sticker shall be placed on the catheter to alert staff that catheter is not to be removed without an order from the provider who placed the urinarycatheter.



C. All other catheters shall have their necessity evaluated by an RN daily
D. If a catheter is determined to be no longer necessary by the RN, the RN will

use the appropriate procedure and remove the catheter including proper documentation.

6. **Recommendations:**

A. Category I. Strongly Recommended:
   1. Educate personnel in correct techniques of catheter insertion and care.
   2. Catheterize only when necessary.
   3. Emphasize hand washing.
   4. Insert catheter using aseptic technique and sterile equipment.
   5. Secure catheter properly.
   6. Maintain closed sterile drainage.
   7. Obtain urine samples aseptically.
   8. Maintain unobstructed urine flow.

Category II. Moderately recommended.

   9. Periodically re-educate personnel in catheter use.
   10. Use smallest suitable bore catheter.
   11. Avoid irrigation unless needed to prevent or relieve obstruction.
   12. Refrain from daily meatal care. Recent studies have shown that dailycleansing of the meatus does not reduce catheter related urinary tract infections.
   13. Do not change catheters at scheduled intervals.

B. Catheter III. Weakly Recommended:
   1. Consider alternative techniques for urinary drainage before using an indwelling urinary catheter.
   2. Replace the collecting system when sterile closed drainage has been violated.
   3. Avoid routine bacteriologic monitoring; this method has not been proven to reduce catheter related urinary tract infections.

_____ _____

DON Date Physician

Date

_____

Infection Preventionist Date

Date of Origin: January 2008

Date(s) of Revision: 5/2015,

4.2017Policy Reviewed:

Date _____ _____ _____ _____ _____ _____ _____ _____

Initial _____ ____ _____ _____ _____ _____ _____ _____

APPENDIX B

SUBJECT CONSENT FORM FOR PARTICIPATION IN PROVIDING FEEDBACK FOR A SCHOLARLY PROJECT AT MONTANA STATE UNIVERSITY

I am asking you to participate in providing feedback relating to a project being implemented at your hospital. This form is designed to give you information about this project. I will describe this project to you and answer any of your questions.

Project Title: *Development and Implementation of a Policy to Reduce Urinary Catheter Days*

Principal Investigator: *Bowen Trystianson*
College of Nursing
Phone: (406)-836-0362
E-Mail: bowentrystianson@gmail.com

Faculty Advisor: *Dr. Yoshiko Colclough*

College of Nursing

Phone: (406)-994-6048

E-Mail: yoshikoc@montana.edu

What the project is about
This is a quality improvement project. This project will not generate new research but instead seeks to implement existing research. *This* project's goal is to implement a revised *evidenced* based urinary catheter policy in a hospital floor. The long-term goal is to reduce urinary catheter *days* on this unit. The revised policy will allow *Registered Nurses* to take a more active role in the discontinuation of urinary catheters.

What we will ask you to do
Take a survey on SurveyMonkey. *Provide* feedback relating to your experience with the new policy and its implementation. This feedback will be sought during in person meetings. However, feedback can be provided anytime by a call, text, or e-mail to Bowen Trystianson.

Risks and discomforts

- ***I do not anticipate any risks from participating in this project***

Benefits
Providing feedback will allow you to have input in the project. It will allow for the project to be tailored to your practice setting.
Your feedback may also help guide similar projects at other facilities in the future.

If you are injured by this research

In the event that any project-related activities result in an injury, treatment will be made available including first aid, emergency treatment, and follow-up care as needed. Cost for such care will be billed in the ordinary manner to you or your insurance company. No reimbursement, compensation, or free medical care is offered by Montana State University. If you think that you have suffered a project-related injury, contact *Bowen Trystianson* right away at *(406)-836-0362*.

Privacy/Confidentiality

- *The survey is completely anonymous and will not record any identifying information including IP address*
- *Feedback will be deidentified and will only include your role at the hospital (RN or provider) if necessary, for the context of the paper*
- *Feedback will be kept on a password protected computer in a password protected file until the completion of the final paper*
- *After the final paper is completed the feedback information will be moved to a secured USB drive where it will be stored for a minimum of 5 years*

We anticipate that your participation in this survey presents no greater risk than everyday use of the Internet.

Please note that email communication is neither private nor secure. Though I am taking precautions to protect your privacy, you should be aware that information sent through e-mail could be read by a third party.

Data Sharing

De-identified data from this project may be shared with the research community at large to advance science and health. We will remove or code any personal information that could identify you before files are shared with other researchers to ensure that, by current scientific standards and known methods, no one will be able to identify you from the information we share. Despite these measures, we cannot guarantee anonymity of your personal data.

Taking part is voluntary

Participation in providing feedback is completely voluntary. If you agree to participate now, you can always change your mind later. There are no negative consequences, whatever you decide. If you choose to participate you are not obligated to provide feedback at every opportunity. There is no minimum amount of feedback needed for participation in this survey.

Withdrawal by investigator, physician, or sponsor
The investigators, physicians or sponsors may stop the project or take you out of the project at any time should they judge that it is in your best interest to do so, if you experience a project-related injury, if you need additional or different medication/treatment, or if you do not comply with the project plan. They may remove you from the project for various other administrative and medical reasons. They can do this without your consent.

If you have questions
The student conducting this project is *Bowen Trystianson*, a *graduate student* at Montana State University. Please ask any questions you have now. If you have questions later, you may contact *Bowen Trystianson* at *bowentrystianson@gmail.com* or at *(406)-836-0362*. If you have any questions or concerns regarding your rights as a participant in this project, you may contact the Institutional Review Board (IRB) for Human Participants at 406-994-4706 or access their website at http://www.montana.edu/orc/irb/index.html.

You will be given a copy of this form to keep for your records.

Statement of Consent
I have read the above information and have received answers to any questions I asked. I consent to provide feedback.

Your Signature_____ Date_____

Your Name (printed)_____

Signature of person obtaining consent_____ Date_____

Printed name of person obtaining consent_____

This consent form will be kept by the researcher for at least five years beyond the end of the study.

Participation Option (Select One):

_____ I will provide feedback and/or take the survey that can be published in the final paper and you can identify my role at the hospital (RN or Provider)

_____ I will provide feedback and/or take the survey that can be published in the final paper. Do not identify my role at the hospital.

_____ I will provide feedback this feedback cannot be published in the final paper

APPENDIX C

SURVEY

The trainings were useful

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

The trainings improved my overall knowledge of urinary catheters

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

After completing the trainings, I feel I have the necessary knowledge to determine when a urinary catheter is medically appropriate

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

After completing the trainings, I feel I have the necessary knowledge to maintain a urinary catheter

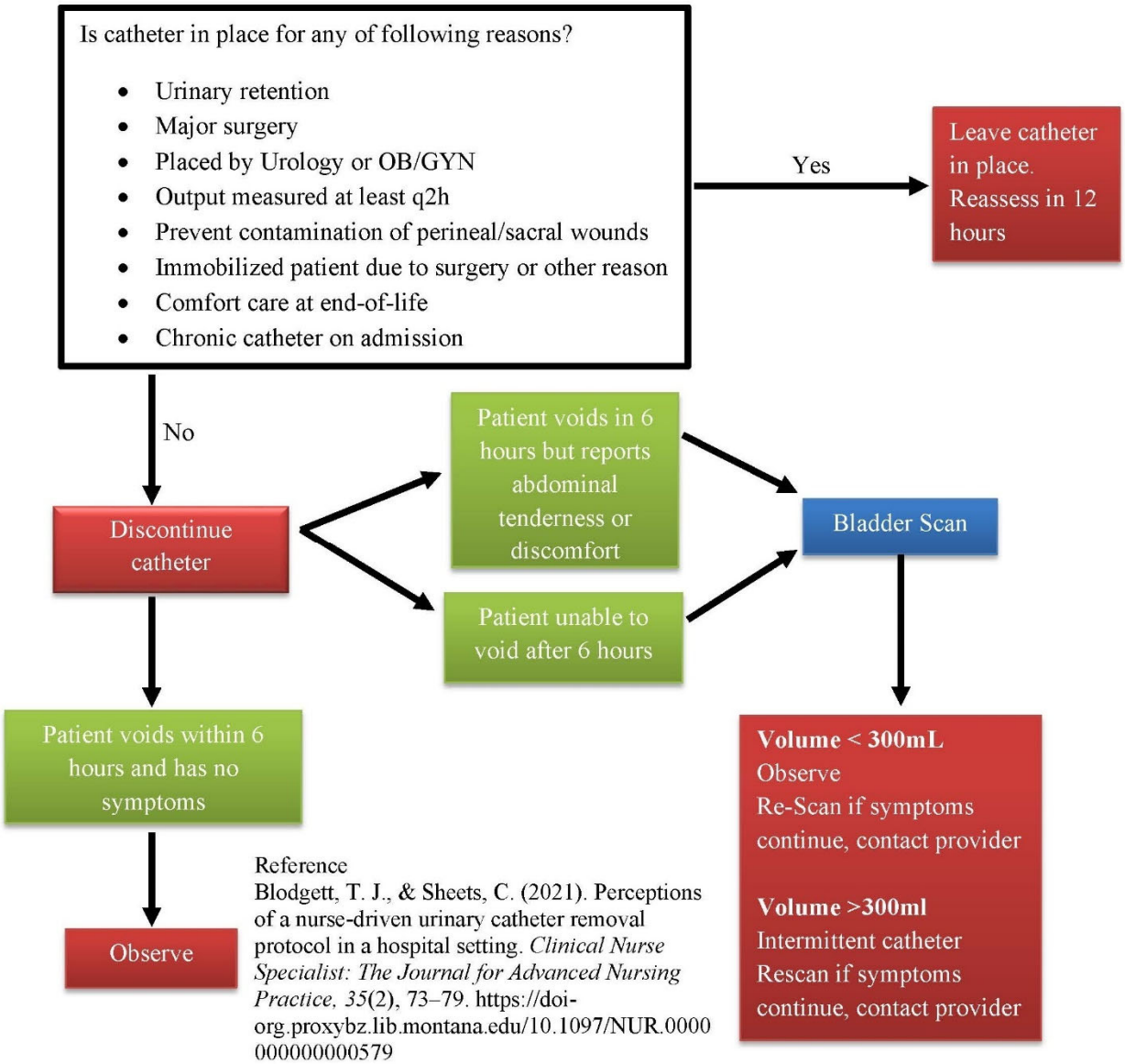
1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

After completing the trainings, I feel I have the necessary knowledge to determine when a urinary catheter should be removed

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

APPENDIX D

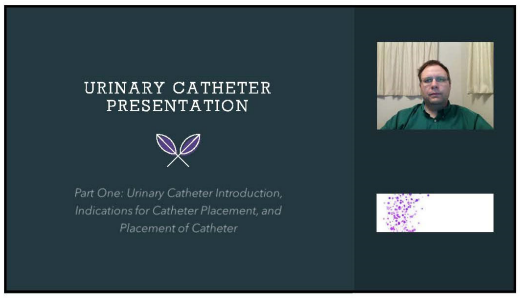
URINARY CATHETER REMOVAL ALOGORITHM



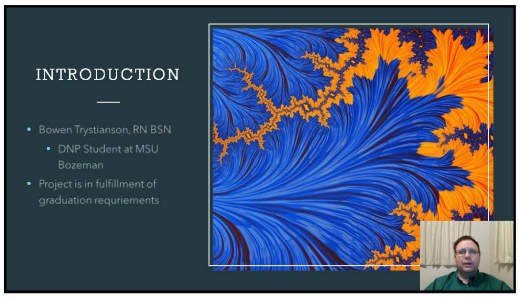
Reference
Blodgett, T. J., & Sheets, C. (2021). Perceptions of a nurse-driven urinary catheter removal protocol in a hospital setting. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice, 35*(2), 73–79. https://doi-org.proxybz.lib.montana.edu/10.1097/NUR.0000000000000579

APPENDIX D

POWERPOINT PRESENTATION SLIDES


URINARY CATHETER PRESENTATION
Part One: Urinary Catheter Introduction, Indications for Catheter Placement, and Placement of Catheter

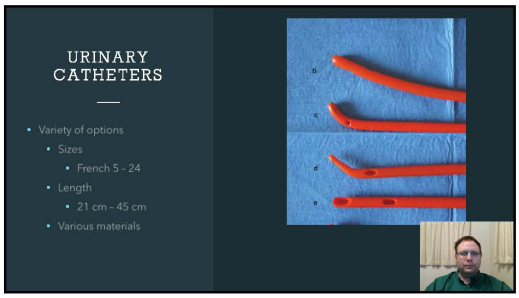
1


INTRODUCTION
Bowen Trystianson, RN BSN
DNP Student at MSU Bozeman
Project is in fulfillment of graduation requriements

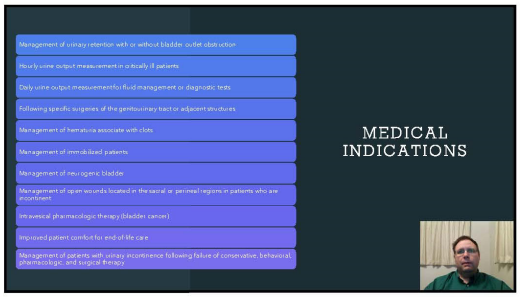
2


PROJECT INFORMATION
Quality Improvement
Moving research into practice
Urinary Catheter Policy Update
Nurse Lead Catheter Removal

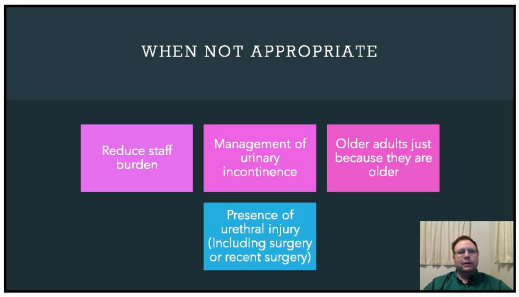
3


URINARY CATHETERS
Variety of options
Sizes
French 5 - 24
Length
21 cm - 45 cm
Various materials

4


MEDICAL INDICATIONS
Management of urinary retention with or without bladder outlet obstruction
Hourly urine output measurement in critically ill patients
Daily urine output measurement for fluid management or diagnostic tests
Following specific surgeries of the genitourinary tract or adjacent structures
Management of hematuria associate with clots
Management of immobilized patients
Management of neurogenic bladder
Management of open wounds located in the sacral or perineal regions in patients who are incontinent
Intravesical pharmacologic therapy (bladder cancer)
Improved patient comfort for end-of-life care
Management of patients with urinary incontinence following failure of conservative, behavioral, pharmacologic, and surgical therapy

5


WHEN NOT APPROPRIATE
Reduce staff burden
Management of urinary incontinence
Older adults just because they are older
Presence of urethral injury (Including surgery or recent surgery)

6

CONSIDERATIONS

Is catheterization appropriate for this patient

Is there an alternative to catheterization

- Urinal
- Bedside Commode
- Toileting schedule

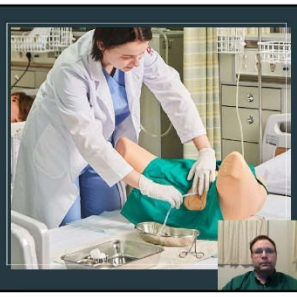
Less invasive option

- Condom catheter
- Use of straight cathing

7

PROCEDURE

- Discuss with patient and/or family
- Gather supplies
- Prep patient and workspace
- Preform procedure



8

TROUBLESHOOTING AND TIPS

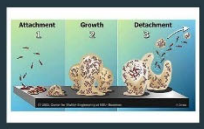
- Be sure you have identified the meatus
- Can apply pressure to suprapubic area to push urine out
- Can irrigate with 10 - 20 ml saline
- If encountering resistance stop
  - Pushing harder will generally not solve the problem

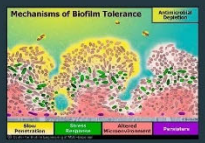
9

URINARY CATHETER PRESENTATION

Part Two: Catheter Maintenance

10





COMPLICATIONS RELATED TO CATHETERS

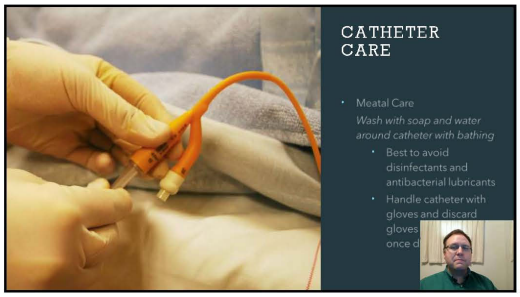
- Infections
  CAUTI (Catheter Associated Urinary Tract Infection)

11

OTHER COMPLICATIONS

- Bladder Stones
- Epididymitis
- Bladder Fistula
- Bladder Perforation
- Patient Discomfort

12



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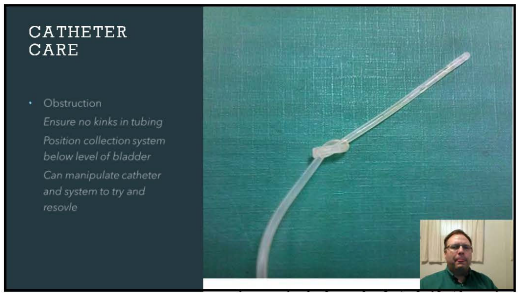

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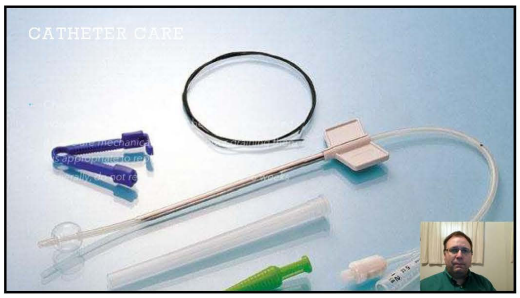

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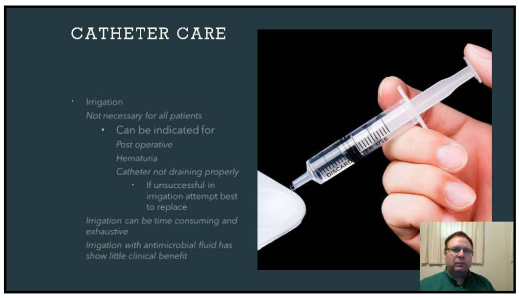

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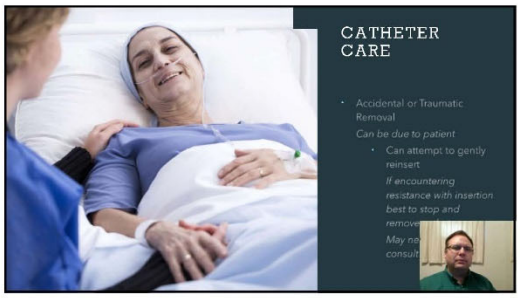

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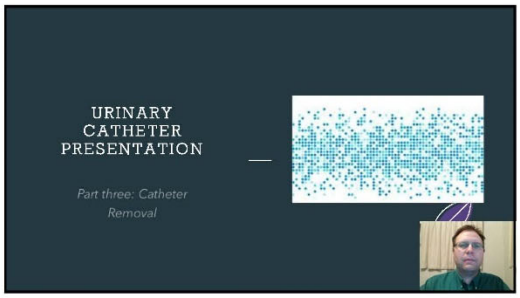

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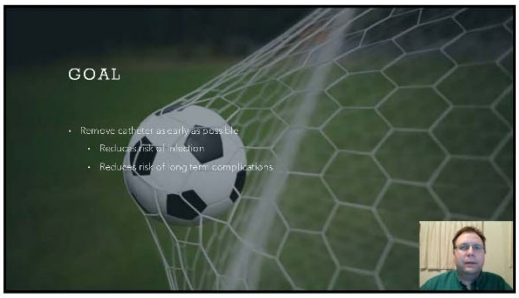

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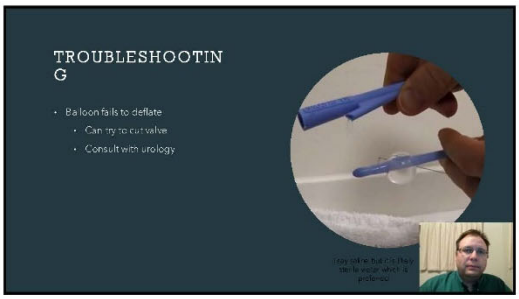

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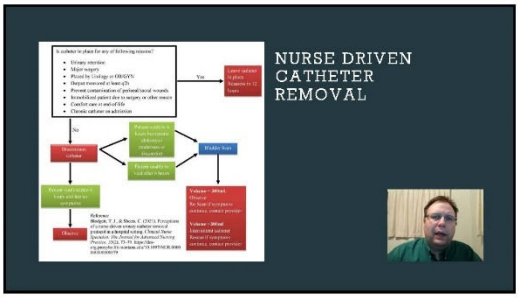
CONCERNS POST CATHETER REMOVAL
Failure to void within 6 hours
Incomplete voiding with symptoms such as abdominal pain
Patient may experience residual problems
Sense of urgency
Bladder spasms
Blood in urine
Leakage
Difficulty starting or stopping stream
Incontinence

25


NURSE DRIVEN
CATHETER
REMOVAL

26