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Program Evaluation of the VaPro Touch-Free Hydrophilic Intermittent Catheter in Hospitalized Patients Experiencing Urinary Retention

Dorothy Neufeld

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School of Nursing Duquesne University

Abstract

A 319-bed hospital on the Florida Gulf coast revised their Bladder Care Bundle policy in September 2020. The document provided an algorithm to be followed to determine if intermittent urinary catheterization is warranted rather than an indwelling catheter to relieve urinary retention. Concurrently, this change included the introduction of a new product, Hollister's VaPro Touch-Free Hydrophilic Intermittent Catheter which is considerably different from the traditional straight intermittent catheter previously utilized by the hospital. Its protective sheath and inducer tip are purported by the manufacturer to decrease the chance of contamination during insertion and thus reducing infection rates. A program evaluation was performed to determine if the new catheter meets expectations to reduce urinary tract infections (UTIs) and traumatic catheterizations. Through chart review, data was obtained to compare urinary catheterization outcomes prior to and after the VaPro catheter implementation. Prior to the introduction of the VaPro catheter, the data revealed two adverse events both of which were traumatic insertions, and no development of UTIs. In the data collected after the adoption of the VaPro catheter, no UTIs or traumatic insertions occurred. Recommendation for the continued surveillance for development of UTIs and traumatic insertions.

Key Words: straight catheterization, intermittent catheterization, in and out catheterization, VaPro Catheter, urinary retention, acute urinary retention, postoperative urinary retention

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Indwelling catheters are associated with catheter acquired urinary tract infections (CAUTIs). These infections can cause patient discomfort, lengthen hospital stays and in some instances contribute to a patient's mortality. Because of the consequence to patient's health and wellbeing the Centers for Medicare & Medicaid Services have made the decision to not reimburse hospitals for these nosocomial CAUTI infections (Agency for Healthcare Research and Quality, [AHRQ], 2015). Costs for CAUTI care add between $980 - $2,900 to each hospitalization (Mori, 2014). Every year nationally, 600,000 patients develop hospital acquired UTIs and 80% of those are attributed to urinary catheters (AHRQ,2015). As much as hospitals have a moral obligation to seek best practices for their patients, they have a fiscal responsibility to not incur avoidable expenses. For 2019 and 2020 the CAUTI rate for this facility has run at 0.6% each year (M.Lucas, personal communication, November 11, 2020).

Acute urinary retention is a known potential problem for patients who are admitted to hospital particularly if they have received anesthesia. A study by Serlin, Heidelbaugh, & Stoffel (2018) puts that rate between 2% and 14% (Serlin et al., 2018). In such circumstances, the use of the procedure known as intermittent or straight catheterization is an alternative to the insertion of an indwelling catheter. The hospital is implementing a new bladder bundle for urinary catheterization that guides the nurse's actions when working with a patient who is unable to void independently. It clearly defines the following: indications for indwelling catheterization, toileting and hydration protocols, usage of external urinary collections devices, bladder scanning protocols and criteria for initiation of intermittent catheterization. The parent company selected Hollister's VaPro Touch-Free Hydrophilic Intermittent Catheter to be utilized in the new bladder bundle. The program evaluation project will compare the

former catheterization practice using sterile technique with the VaPro catheter. The desired outcome for this new product will be a decrease in urinary tract infections and traumatic injury from catheterization.

Review of Literature

When performing the literature search on intermittent catheterization, the abundance of reports tended to discuss self-catheterization in individuals with chronic urinary retention. Likewise, when researching CAUTIs most articles referenced indwelling catheters rather than intermittent catheterizations. A computerized literature search was done using electronic data bases of Pub Med and CINHAHL yielded 11 articles from level 1 to level 4 with good to high ratings. Articles ranged from 2005 to 2020. Hollister provided findings from a study by Morris and Thompson (2018) which was not published in a peer-reviewed journal.

Urinary retention is defined as the inability to pass urine and can be chronic or acute in origin. Causes can be further categorized as being obstructive, iatrogenic, neurogenic, or infection and inflammation (Serlin et al., 2018). Obstruction would be any type of situation in which flow of urine is impeded. This could be from urinary calculi, fibroids, prostatic hypertrophy or any type of blockage where urinary flow is stopped. Iatrogenic causes are generally anesthetics and pharmacological agents both of which can be commonplace in the hospital setting. Neurogenic causes can be spinal cord injuries, certain strokes or spina bifida. Lastly, infection and inflammation that result in edema of the bladder or urethra can lead to retention (Serlin et al., 2018).

Schettini et al. (2019) noted that when patients are in the intensive care unit, the monitoring of urinary output can be a critical component of their care. Often indwelling urinary catheters are utilized at that time. The problem is that these indwelling catheters are associated with increased incidence of nosocomial urinary tract infections. In ICU patients, 70% of UTIs are attributed to the insertion of urinary

catheters; if a catheter has to be left in for greater than a week, the risk of acquiring an UTI increases two to three times. In light of these risks, evidence recommends the removal of these catheters as soon as it is reasonably possible. They also examined rates of acute urinary tract infections among patients who had had an indwelling urinary catheter and found that there was an increased incidence of acute urinary retention if the individual had had an indwelling catheter for more than a week, the individual was on bedrest, or if they had received hypnotic medications (Schettini et al., 2019).

Çakmak, Yıldız, Akarken, Karaman, & Çakmak (2020) looked at post-operative urinary retention (POUR) in an attempt to identify the patient population who were at risk of developing this complication. In this study 9.9% of the subjects developed urinary retention. They found that patients with diabetes mellitus had three times the rate of POURS compared to non-diabetics. They also found that among people who had surgery, those who had spinal anesthesia had 2.3 more times the likelihood of developing POURS than those who had nerve blocks or general anesthesia (Çakmak et al., 2020).

Hollister cites several studies for its VaPro Touch-Free Hydrophilic Intermittent Catheter that supports its claim of decreased urinary infections. One study looked at “no-touch” catheters and compared rates of contamination with standard catheters in individuals with chronic retention. The results of the study showed that growth from the “no-touch” catheters were significantly less than the standard catheters involved in the study. This provided evidence that the presence of a no-touch sleeve can prevent or reduce the potential contamination of the catheter (Hudson & Murahata, 2005).

A more recent study by Morris and Thompson (2018) was conducted to assess the ability of a protective tip to diminish the incidence of urinary tract infection. When inserting a catheter with a protective tip, the tip touches the distal portion of the urinary meatus which harbors microorganisms. The catheter then emerges from the protective tip and is not in physical contact with the distal meatus, eliminating the opportunity for transfer of pathogens. In a laboratory setting, agar plates were

contaminated with bacteria. They chose Escherichia coli and Enterococcus faecalis, two organisms that are typically found in that anatomical area (Whiteside, Razvi, Dave, Reid, & Burton, 2015). A tunnel was made in the agar to mimic the urethral opening and catheters with protective tips were passed through these openings. The catheters and the protective tips were then cultured. The tips, which had been in contact with the agar plates grew bacteria, but the catheters did not. This demonstrated the ability of the tip, which is a feature of the VaPro catheter, to shield the catheter from bacteria (Morris & Thompson, 2018).

Intermittent straight catheterization is being purported as a measure to reduce CAUTIs in hospitalized patients. By performing a metanalysis of nine randomized clinical trials a study looked at incidence of urinary tract infection and post-operative urinary retention (POURS) in orthopedic patients who have had lower limb arthroplasty. In total, there were 1771 patients included in the analysis. They concluded that patients who had an indwelling catheter removed within 24-48 hours of their surgeries had a decreased rate of POURS and had no significant increase in UTIs (Zhang et al., 2015).

Theoretical Frameworks Driving Improvement

The rationale for engaging in this practice change was initiated from the corporate office to improve outcomes for patients requiring urinary catheterization. The new catheterization algorithm has strict indications for appropriate use of indwelling urinary catheters along with nurse-driven daily re-evaluation to assess for readiness to discontinue if no longer clinically appropriate. These types of policies have shown to be effective in decreasing rates of CAUTIs (Mori, 2014). If a patient does not require an indwelling catheter but is experiencing retention, then the path of the bladder buddle algorithm is followed for bladder assessment, bladder scanning, non-invasive measures to aide in elimination and insertion of the VaPro Touch-Free Hydrophilic Intermittent Catheter if indicated.

Using the Johns Hopkins Nursing Evidence-based practice model (Dang & Dearholt, 2018) the question "How do hospitals perform intermittent catheterization for patients experiencing acute urinary retention with minimal adverse outcomes?" was developed. This model provided guidelines for review of literature and appraisal of evidence. (Dang & Dearholt, 2018).

In order to establish the guidelines for this program evaluation the W.K. Kellogg Foundation Evaluation Guide was utilized to determine the program evaluation type, approaches and methodology. The type of evaluation used in the Doctor of Nursing Practice (DNP) project was an outcome evaluation looking at whether the project had accomplished what it set out to do (W.K. Kellogg Foundation, 2017). In this project, the effectiveness of the VaPro catheter in preventing UTIs and traumatic insertions was the focus of the evaluation.

Next, it was determined that the empowerment approach would be the best fit with this organization. The evaluator acts as a coach and provides the organization with the tools, skills and knowledge to improve themselves and continue the data collection (W.K. Kellogg Foundation, 2017). Finally, the methodologies, define the data collection techniques that need to be identified. These can be qualitative, quantitative or a mixture of both. For this program evaluation, quantitative data was collected via electronic chart review documents involving specific outcome measurements and was used to compare pre-and post-VaPro data.

Actor Network Theory

The sociotechnical model of Actor-Network Theory (ANT) provides perspective on the intricacies of all the components engaging in this change in practice. In ANT, all entities that interact in a system are considered actors, capable of influencing outcomes including inanimate objects such as the novel catheter itself (Bride & Tietze, 2019). It is a means of looking at the grandiose factors and the minutia contained in the project. All actors, regardless of size, work in a network to determine outcomes (Bride

& Tietze, 2019). These participating factors can be people, ideas, things or concepts which form into networks of interaction (Cresswell, Worth, & Sheikh, 2010). Examination of the network will show the interconnectedness of its parts. Should an aspect of the network be changed, it has potential implications for all members. As changes are introduced, the network, being fluid, will respond (Cresswell et al., 2010).

When introducing a new product and policy, ANT is the most representative model, as it challenges individuals introducing the change to examine all factors. The people involved in this practice change would include the patients, nurses, infection control department, physicians, educators and administrators. Things in the process would include the new VaPro catheter, the old straight catheter, educational trainings, the computer charting system and complications of the procedure. Concepts and ideas would capture the patient's knowledge of the procedure, the nurse's attitude towards the innovation, the concept of sterile technique and the concept of risk reduction to name a few. The advantage of ANT is that as actors are identified, they can be added into the network and examined for relevance. This did occur when COVID, an unexpected player, lead to delays in project implementation.

Description of the Project

Aims and Objectives

This program evaluation will compare the VaPro Touch-Free Hydrophilic Intermittent Catheter with the traditional straight catheterization using sterile technique. The hospital stakeholders agreed with the aims of this program which included: 1) Evaluate the effectiveness of the new straight catheter policy to determine if there has been a decrease in catheter related adverse effects (UTI and/or traumatic insertion); 2) Establish baseline data on incidence of UTI and traumatic insertion prior to the introduction of the VaPro Touch-Free Hydrophilic Intermittent Catheter and after its adoption; and 3)

Identify risk factors that can be associated with urinary retention in this hospitals medical-surgical-obstetrical population who require intermittent catheterization.

Additionally, the hospital stakeholders wanted to address the following questions as part of this program evaluation:

1. What are basic demographics of these patients?
2. How many times are they being catheterized? Retention vs urine sample?
3. Was documentation of scan completed prior to catheterization as per bladder bundle or intermittent catheterization policy?

Initial discussions with the Infection Prevention Department identified this DNP project as a program evaluation of the VaPro catheter. A logic model identifying the inputs, activities, and outcomes was constructed for this project and agreed upon by the Infection Prevention Department. See Figure 1 below. Due to the time frame of this DNP project, the Intermediate and Long-term outcomes would need to be assessed by the Infection Prevention Department after the VaPro catheter had been implemented within three and six months.

Figure 1

Logic Model of VaPro Catheter Program Evaluation

					Outcomes
Inputs	Activities	Outputs	Initial	Intermediate	Long-term
➢ Members Infection prevention team ➢ Staff nurse and medical providers ➢ Cerner computer system data access ➢ CAUTI and UTI reporting tools used by IP ➢ QI building tools to be used ongoing by infection prevention to monitor charting compliance with program	➢ Infection prevention will provide leadership and direction ➢ Education department will provide training on new policy and equipment ➢ Retrospective chart review will be done to obtain baseline data on patient's requiring intermittent or straight catheterization ➢ Ongoing chart review of patients being catheterized using new catherization policy and bladder bundle ➢ and with the new equipment or Valpro catheter	➢ Compile data on number of patients being straight catheterized pre and post new catheterization policy and new equipment ➢ Separate patients into category as to reason for catheterization: acute retention, sample collection, continuation of home catheterization for chronic retention or unknown from charting ➢ Compliance by nursing staff with the new catherization policy and bladder bundle ➢ Compliance by nursing staff with documentation requirements for new policy	➢ Cheerleaders and early adaptors of new procedure are identified on each unit to act as resource during transition to new product ➢ 100% of nurses are educated on new equipment and protocol by education department ➢ Increased awareness of staff as to patient's likely to experience retention	➢ Within 3 months of new catheterization policy and bladder bundle, 85 % of nurses will document completely in the required Cerner bands for intermittent catheterization ➢ Within 3 months of new catheterization policy and bladder bundle, initial data will be obtained on new protocol to document if it does decrease traumatic insertions or UTIs. ➢ Feedback to nursing units of charting compliance ➢ Within 3 months of new catheterization policy and bladder bundle, 100% percent of nurses are compliant with policy and use of new equipment or Valpro catheter	➢ Within 6 months, 100 % of nurses will document completely in the required Cerner bands for intermittent catheterization ➢ Continued data collection on the new product by Infection Prevention Department ➢ Hospital acts upon the content of the collected data to support continuation of the new product or its discontinuation for specimen collection and or acute urinary retention ➢ Feedback to nursing units of compliance with new catheterization policy, new equipment and charting

A shortcoming of the initial outcomes is that education was provided on short notice over a two-day period. It was provided to members of both day and night shift. The number of staff reached by this initiative would have been less than the 100% goal set out in the logic model.

Methods

Data Management Plan

The Kellogg model emphasizes the need for program evaluations to ensure accuracy, validity and reliability when designing methods for data collection (W.K. Kellogg Foundation, 2017). In this program evaluation, descriptive statistics have been obtained. Medical, surgical and obstetrical patients in a Florida tertiary care hospital identified as requiring straight urinary catheterization while hospitalized were included in data collection. Only patients who had been catheterized for retention were included in the program evaluation. Patients were excluded If they: had been catheterized solely for the purpose of obtaining a sample, were individuals who self-catheterized or if exploration of the chart revealed ambiguous documentation which left it unclear if they had been a recipient of intermittent catheterization or not.

Data was collected from the Cerner electric medical record on straight urinary catheterizations that were performed prior to the introduction of the VaPro Touch-Free Hydrophilic Intermittent Catheter and after the new product was introduced in September of 2020. A chart search for the prior catheterization practice over a four-month period, December 2019 – March 2020, was conducted in Cerner utilized the search phrase “urinary straight catheter insertion site”. This search pulled up lists of patients who had been recipients of at least one incidence of straight catheterization during their hospital care. Charts were reviewed to distinguish if the straight catheterization was done to relieve retention or had been done to obtain a urine sample in order to categorize patients properly. The same

process was used to review patient charts after the implementation of the VaPro catheter. Data collection for the new catheter was conducted from October 6, 2020 – November 9,2020.

The infection prevention department uses the CDC's 2020 NHSN Urinary Tract Infection (UTI) Checklist to determine if a patient has met criteria for diagnosis of a symptomatic urinary tract infection (SUTI) or asymptomatic bacteremic UTI (ABUTI). The designation of a catheter acquired urinary tract infection, CAUTI, is reserved for indwelling catheters only and does not apply to intermittent catheters (CDC, 2020). There is no specific classification in the NHSH UTI check list for patients who have been recipients of intermittent catheterization. The check list's non-catheterized criteria for diagnosing UTI will be utilized in these patients. In agreement with the stakeholders in the infection prevention department, traumatic insertion was defined as documentation in a urology consult that a traumatic insertion had taken place.

Types of data collected

On both the retention and sample patient basic demographics were obtained including age and sex which are located in table A2 and charts A1 to A4.

For the individuals catheterized for retention the following additional information was obtained: 1) Bladder scan completed prior to the procedure since this is a step in the bladder bundle; 2) The amount of urine removed; 3)Total number of intermittent catheterizations; 4) Documentation of prior catheterization; and 5) Documentation of a subsequent indwelling catheter.

To document a profile on the types of patients that may be at risk for intermittent catheterization in this hospital, the following information was collected: any pharmacologic agents for urinary retention, exposure to anesthetic agents, history of prostate disease or other obstructive conditions, acute genitourinary infection, acute neurological condition and restrictions on patient activity.

Hollister's local representative provided in-house education to the nursing units on proper usage of the VaPro catheter.

Results

Basics demographics of age and sex were obtained on patients who were catheterized due to urinary retention or to obtain a sample. The pre-and post-VaPro data in relation to the gender of the patient is documented in Table 1. Males were the predominant sex for catheterization for retention in the pre-VaPro data and the opposite was found in the post-VaPro data. In the pre-VaPro data approximately double the number of females were catheterized for sample collection than males. In the post-VaPro data, sample collection was largely performed on males rather than females.

Table 1

Gender Distribution: Pre-and Post-VaPro Catheter Implementation

	Pre-Vapro		Post-Vapro	
	Retention	Sample	Retention	Sample
Male	57%	34%	44%	72%
Female	43%	66%	56%	28%

Note: Pre-VaPro Catheter Retention N=204 December 1, 2019 – March 31, 2020. Post-VaPro Catheter Retention N=34 October 6, 2020 – November 9, 2020 Pre-VaPro Catheter Sample N=131 December 1, 2019 – March 31, 2020. Post-VaPro Catheter Sample N=18 October 6, 2020 – November 9, 2020

The age distribution of the patients pre-VaPro and with the post-VaPro catheter utilization is shown in Appendix A and B. In the Pre-VaPro sample and retention groups, 68% and 75% of the patients, respectively, fell between 60 – 89 years of age. In the Post-VaPro sample group 83% of the patients were between 60-89 years old. The post-VaPro retention group had 53% of their patients

between 70-89 years of age and 21% between 40-49 years of age. It could be speculated that these results could be due to comorbidities and polypharmacy, but further study would need to be undertaken to explore those connections.

As previously noted, the number of times that a patient was catheterized for retention was counted during the chart review. These are noted below in Table 2.

Table 2

Number of Times Catheterized For Retention: Pre and Post VaPro Catheter Implementation

	Pre-VaPro Catheter	Post-VaPro Catheter
Total Catheterizations	798	130
Minimum	1	1
Maximum	32	15
Mean	3.91	3.85
Mode	1	1
Median	2	2

Note: Pre-VaPro Catheter N=204 December 1, 2019 – March 31, 2020. Post-VaPro Catheter N=34 October 6, 2020 – November 9, 2020

The majority of patients had intermittent catheterization performed once or twice as evidenced by a mode of one and a median of two for both the pre-VaPro and post-VaPro groups. For others it was a higher amount with the highest individual in the pre-VaPro group being catheterized the most at 32 times and the highest individual in the post-VaPro group was catheterized 15 times.

As requested by the stakeholders, information was collected on whether a bladder scan was done prior to the catheterization. This is important because the bladder bundle directs the nurse to perform and document a bladder scan prior to performing straight catheterization. The patient should

be catheterized if the scanned volume is greater than 400 milliliters. In accordance with the algorithm, if the scan reads less than 400 the nurse is instructed to consider the hydration status of their patient and reevaluate later. In 57% of the patients in the pre-VaPro data collection and 84% of the patients in the post-VaPro data collection a bladder scan documented prior to performing a straight catheterization was not documented.

Information on the risk factors of the retention patient population pre-and post-VaPro catheter utilization was collected as requested by the Infection Prevention Department and is noted below in Table 3.

Table 3

Retention Risk Factors Pre-and Post-VaPro Catheter Implementation

	Pre-VaPro Catheter	Post-VaPro Catheter
Obstruction History	21%	6%
Inflammation or Infection	12%	18%
On Medication for BPH	10%	6%
Recent Anesthesia	22%	16%
Acute Neurological Event	13%	12%
Cardiac Procedure	9%	18%

Note: Pre-VaPro Catheter N=204 December 1, 2019 – March 31, 2020. Post-VaPro Catheter N=34 October 6, 2020 – November 9, 2020

Use of anesthesia and medications prescribed for benign prostatic hypertrophy including tamsulosin, alfuzosin, terazosin, doxazosin and finasteride was recorded. Data was obtained on patients who had undergone cardiac catheterization procedures requiring bedrest with activity restrictions potentially interfering with their ability to empty their bladder. Acute neurological events included strokes and brain bleeds. By identifying these factors, it reminds healthcare providers which patients

may present with urinary retention. These individuals are the population who could benefit from the VaPro catheter.

There were no recorded UTIs in both the Pre-VaPro and post-VaPro groups catheterized for retention. There were 2 traumatic insertions noted in the Pre-VaPro group and there were none in the post-VaPro group. From the initial data collected, the VaPro catheter has shown a decrease in adverse events. This is the initial data collection to check in to examine if the policy was obtaining the desired results. As positive as this outcome is, it is only the beginning and requires ongoing evaluation.

During chart reviews it was evident that charting deficiencies existed in the electronic health record. When catheters are inserted, the documentation is to be completed in the Cerner I-view band for genitourinary assessment. There are prompts present, with drop down boxes, for the nurse to chart details of the catheterization. These include pre-catheterization bladder scan volume, the amount of urine obtained from the catheterizations, the patient's tolerance of the procedure, maintenance of sterile technique, difficulties encountered, color and qualities of the urine obtained. When collecting data, it was observed that all fields were not completed in the chart consistently.

In the pre-VaPro data collection 131 individuals were catheterized to obtain a urine sample. In the post-VaPro group 18 patients were catheterized to obtain a sample. Eleven charts in the pre-VaPro group and four in the post-VaPro group were excluded due to ambiguities in documentation.

Cost

The prior straight catheter made by Medline costs $2.58/kit while the new VaPro catheter is actually less expensive at $2.38/kit (P. McDonald,personal communication, July 22, 2020) . Based on the number of catheters used from December 1, 2020 – March 31, 2020 one could extrapolate that 2,394 catheters are used annually for retention alone. When calculations are completed the VaPro catheter saves $479/year for patients catheterized for retention. Based on the number of patients catheterized

during that time frame for sample collection, one could estimate the use of 852 catheters a year yielding an additional $170/ year savings. This brings the total cost savings per year to $649. These savings may be minuscule, however, there are other financial considerations.

When individuals experience adverse events from urinary catheterization these incidents may lead to the courtroom. When patients enter lawsuits regarding urinary catheter events, 48% are related to traumatic insertions and 24% are related to UTI. When litigation is completed, 34% of the cases are found in favor of the plaintiff with the average award being $112,991 (Awad et al., 2016). Employing a new product to decrease the chance of harm and subsequent litigation is important to both patients and organizations. There are intangible benefits of health and life for patients if catheterizations can be completed without injury or infection. For hospitals, there is monetary value for avoiding litigation in the court system. Additionally, each episode that is made public erodes confidence in the facility as a center of excellence. Healthcare consumers may choose to go to other hospitals resulting in further losses in a for-profit hospital.

Limitations

Each patient chart needed to be examined manually for data extraction. This was a tedious process which could lead to inadvertent omissions. Data was double checked by the evaluator to improve accuracy. Incomplete charting by nursing, leaving gaps in data collection. Some patients received urinary catheterization close to the time of discharge. Should they have developed a UTI over the next few days, they would have been lost to follow-up because they were no longer in the hospital.

To diagnosis a UTI the CDC's 2020 NHSN Urinary Tract Infection guidelines were used since it is a standard tool used by our nation's top health agency to make this clinical determination. CDC clearly defines what is included and exclude in the diagnosis of a urinary tract infection in those guidelines. The criteria to define traumatic insertion did not have such a national standard to reference. The decision

was made to include those who had a urology referral in which the consulted provider stated that there had indeed been trauma with the catheter insertion. This seemed an acceptable measure deferring to a clinician's judgement who specializes in this branch of medicine, but it would have been better if a standard definition that is nationally recognized could have been located.

Definition of urinary tract infection in accordance with the NHSN Urinary Tract Infection guidelines involves verification of symptoms present in addition to a positive urine culture (CDC, 2020). A medical provider must document that the patient has one of the following for a UTI diagnosis under this criterion: suprapubic tenderness, costovertebral angle pain, fever greater than 38 degrees Celsius, urgency, frequency or dysuria. Without this, the individual cannot be diagnosed a UTI. It is possible that for patients with positive urine cultures, incomplete documentation could theoretically lead to underrepresentation of UTs in this population.

A malware attack was experienced by this organization within two weeks of implementing the VaPro catheter. This caused a significant disruption in the electronic charting and necessitated the use of paper charting until the computer system could be restored. Originally, the plan was to start data collection two weeks after the initiation of the new catheter and bladder bundle. That was delayed as the paper charts were not able to be extracted for the search criteria. Additional time would have provided more information on the use of the VaPro catheter had there not been a malware event. Data collection for the new catheterization policy had to be commenced after the computer charting was resumed ten days later. Additionally, 4 charts were excluded from data collection as they were a hybrid of paper and computer documentation.

Due to the delay in starting the program evaluation related to COVID restrictions, the intermediate and long-term goals that were outlined in the logic model have not yet been obtained. These goals focused upon compliance with the bladder bundle and required documentation be at 85%

by 3 months and 100% by 6 months. Evaluation of these outcomes should commence in 2021 by the Infection Prevention Department in conjunction with the Nursing Education Department.

Summary, Conclusions and Recommendations

From initial data, the VaPro catheter has not shown any adverse outcomes with its use in the development of UTIs or incidence of traumatic insertions. These outcomes are supported by the evidence provided on catheters using a protective sleeve and tip, such as the VaPro catheter (Hudson & Murahata, 2005; Morris & Thompson, 2018). With delays in starting the program evaluation due to COVID-19, there has been limited time to obtain data on the implementation of the VaPro catheter. It is recommended that data collection and analysis continue for a total of six months as noted in the logic model.

Risk factors as identified by Serlin et al (2018), were found in this local population for urinary retention with the majority due to anesthesia, obstruction histories, infection or inflammation and acute neurological injuries.

Consultation with quality improvement (QI) team or information technology (IT) is recommended so that shortened pathways are created to obtain relevant data in a way that can be sustained by the Infection Prevention Department. The hospital's Cerner computer system was able to create a list of patients who have received straight catheterizations. The hospital currently keeps a record of individuals who acquire a urinary tract infection while in hospital in accordance with CDC's NHSN Urinary Tract Infection criteria. If these two lists were cross-referenced, this should provide a shorter list to investigate for straight catheter associated UTIs.

QI or IT could also be consulted to create a patient list that cross references patients who had a urology consult and straight catheterization. Urology notes could be reviewed to see if the consultation was strictly for the retention or if the notation mentioned trauma associated with the catheterization.

This would still involve a time commitment to look up the referral note but the more automated this process could be the greater likelihood continued surveillance will occur.

It would be beneficial to obtain feedback from nurses, physicians and patients regarding the new catheter. When performing a program evaluation, feedback is needed from stakeholders on the program (W.K. Kellogg Foundation, 2017). Major stakeholders for this catheter initiative are the nurses, the physicians and the patients utilizing the new product. It would be beneficial to solicit their feedback on the VaPro catheter and bladder bundle so that the facility could strive for further improvement. A survey could be instituted or focus groups with nurses and physicians could be conducted. Individual interviews or surveys could be conducted with patients who have been catheterized with the VaPro. It would be insightful to get feedback from patients who have had prior experience with straight catheterization using the traditional catheter with sterile technique and who have now experienced catheterization with the VaPro.

Initiatives should be considered to improve charting deficiencies that were noted during the collection of data with the logic model goals of 85% compliance by 3 months and 100% compliance by 6 months. The charting could be addressed as a quality improvement initiative with instruction provided by nursing education, and audits conducted to monitor compliance with all of the steps and required charting in the bladder bundle.

Nurses need to be asked why they are not following charting guidelines. Posing questions such as “Do you have access to bladder scanning equipment?” might be the reason that bladder scans are not being documented. Until feedback is solicited from nursing, the answer will not be known.

More surveillance is needed on the VaPro catheter and its success in decreasing adverse events related to patients who required intermittent catheterization for urinary retention. However, looking at the initial data that has been collected it appears that patient outcomes are favorable and continued use

and evaluation of the VaPro catheter for intermittent catheterizations is warranted. This program evaluation has outlined recommendations that will support the continued improvement in patient care for urinary retention patients in this organization and its goals of further reducing UTIs and traumatic insertions in their medical, surgical, and obstetrical patient populations.

Approved: Faculty Mentor: Mary C. Loughran, DNP, RN, MHA December 16, 2020

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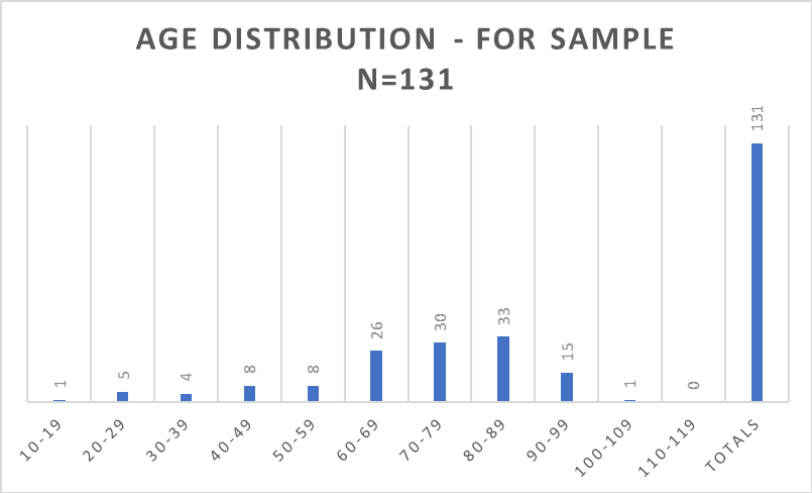
Appendix A

Figure A1

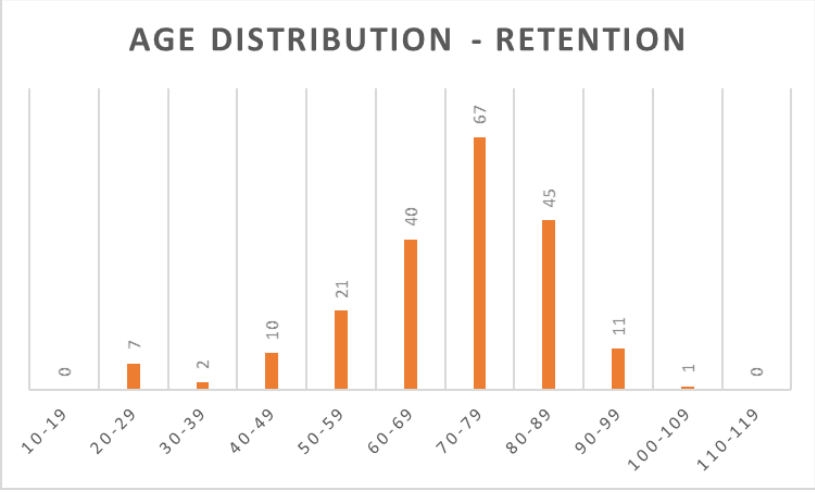
Age Distribution: Pre-VaPro Catheterizations to Obtain Urine Samples



Note: Pre-VaPro Catheter Sample N=131 December 1, 2019 – March 31, 2020.

Figure A2

Age Distribution: Pre-VaPro Catheterizations for Urinary Retention

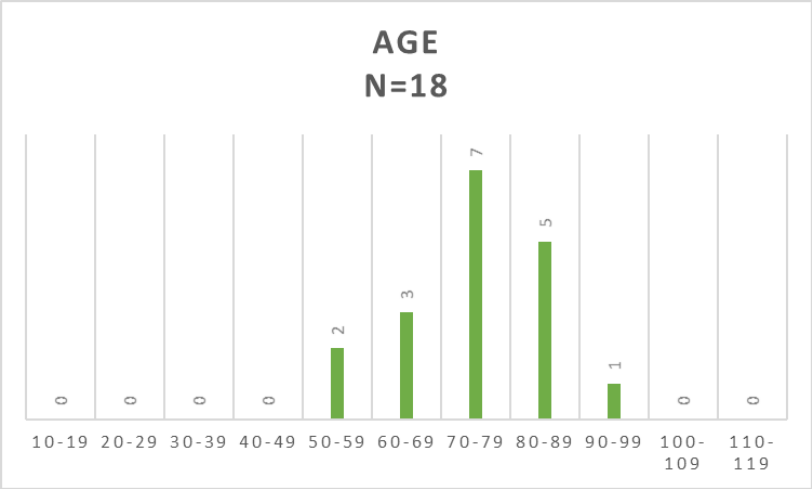


Note: Pre-VaPro Catheter Retention N=204 December 1, 2019 – March 31, 2020.

Appendix B

Figure B1

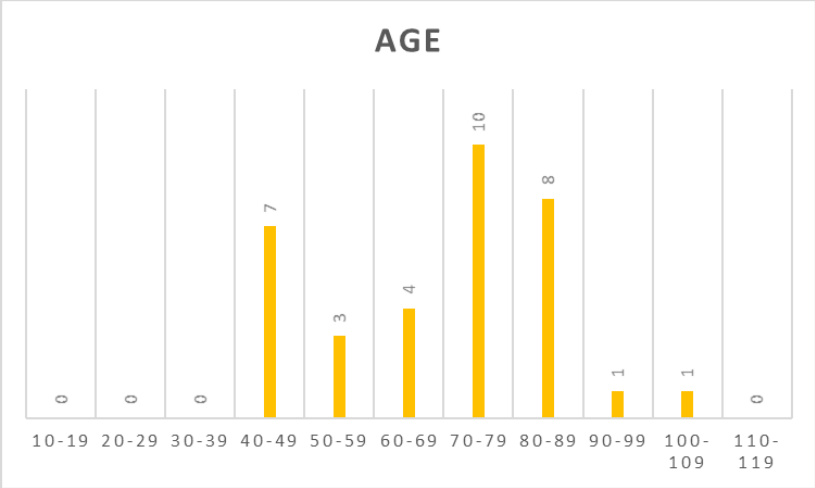
Age Distribution: Post-VaPro Catheterizations to Obtain Urine Samples



Note: Post-VaPro Catheter Sample N=18 October 6, 2020 – November 9, 2020

Figure B2

Age Distribution: Post-VaPro Catheterizations for Retention



Note: Post-VaPro Catheter Retention N=34 October 6, 2020 – November 9, 2020

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