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Foley Catheter Algorithm

Chary Mathew

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Chary Mathew

Southern Illinois University Edwardsville

NURS 695 P

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Introduction of the problem:

The insertion of a Foley catheter is a routine nursing procedure that is frequently ordered by doctors and other healthcare professionals with unspecific instructions. Most urinary catheterization orders do not specify the size or reason for catheterization. Urinary catheterization and catheter-associated urinary tract infection (CAUTI) have received a lot of attention in the last few decades because CAUTIs are metric trackers of hospital performance.

Healthcare institutions are reimbursed by government and commercial health insurance payers based on their performance and measurable healthcare outcomes (Laborde et al., 2021). In 2008, the Centers for Medicare and Medicaid Services terminated reimbursement for nosocomial CAUTI and labeled it a "never event" (Centers for Medicare & Medicaid Services, 2008). Iatrogenic genito urinary injuries contribute to a significant morbidity and financial burden for patients and healthcare systems. Healthcare institutions, including the one this research was conducted, had implemented educational and quality assurance programs to reduce catheter-associated urinary tract infections; however, less academic emphasis and protocols were made to educate staff on reducing iatrogenic injuries associated with urethral catheterization. Despite the policies and protocols, this research highlighted the significant gap in knowledge among healthcare providers, evidenced by the statistically significant difference in pre- and post-survey results after a 20- 25 minutes PowerPoint presentation.

Literature Review

According to Wagner et al. (2016), approximately 80% of healthcare-associated urinary tract complications are because of indwelling catheters (Wagner et al., 2016). Trauma to the urethra often occurs during catheter insertion. Many urethral injuries are undocumented by

health professionals due to a lack of knowledge to identify and acknowledge these injuries. According to Wagner et al. (2016), an average surgical urethral reconstruction costs between $8000 to $17,000. As reported by Schuur et al. (2014), the emergency department accounted for 91% of urinary catheters placed within 24 hours of hospital admission. The study also mentions that one-third and one-half of catheters placed in the emergency department lacked appropriate documentation or physician's order, and nearly half were placed without an appropriate indication (Schuur et al., 2014). The financial cost per CAUTI episode with and without bacteremia, according to Topal et al (2019) is $676 and/or up to $2876 respectively, which could add up to a total of $131 million in excess costs to healthcare due to CAUTI alone (Topal et al., 2019).

Despite these data on complications and financial implications because of urinary catheterizations, most healthcare institutions provide minimal training on the practical aspects and challenges faced during Foley catheter management, further increasing the possibilities of iatrogenic catheter-related complications and injuries due to a lack of knowledge and experience. Though a nursing procedure, resident physicians also insert Foley catheters as part of their training. According to Mossanen et al. (2017), 38 out of 50 internal medicine residents never rotated in urology during medical school and therefore lacked knowledge on the absolute indication of urinary catheter placement, clot retention, proper catheter techniques, and did not have confidence in catheter troubleshooting (Mossanen et al., 2017). Another prospective analysis study by Bascu et al (2013), showed that 41% of urology consultation cases referred for difficult Foley catheterization did not require actual urologist expertise (Bascu et al., 2013).

Project Method

This quality improvement project targeted knowledge improvement intervention by examining the level of understanding of evidenced-based best practices for Foley catheter insertion. The project aimed and successfully developed a Foley catheter algorithm that will be readily available on the hospital's intranet and laminated charts at the nurse's station. The algorithm will provide emergency room staff at a level one trauma center in Chicago, Illinois with Foley catheter indications, type, size, pertinent patient history, and when to consult the urology team. Stakeholders for this project include nurses, advanced practice providers, and physicians at a large metropolitan hospital in Chicago, Illinois

This DNP project had IRB-exempt status with Southern Illinois University at Edwardsville since the project utilized anonymous voluntary data obtained from emergency room staff at a level one trauma center in Chicago, Illinois. No patient interaction or collection of patient information occurred during the study.

A 20–25-minute educational PowerPoint presentation was provided to nurses, advanced practice providers, and physicians. The presentation focused on key elements to prevent complications from Foley catheter insertion, such as catheter-associated urinary tract infections (CAUTI). Before the educational presentation, a 10-question multiple choice pre-test with demographic information, the type of health care provider, and years of practice were given in the paper to all emergency room staff for voluntarily anonymous participation.

Evaluation

Though there were shreds of evidence of education on genito urinary conditions and foley catheter placement, this research study demonstrated a need for more knowledge among

healthcare workers in the emergency department regarding some of the foley catheter-related complications and sizes. Wilcoxon signed-rank test showed that a 30-minute presentation on Foley Catheter elicited a statistically significant change in knowledge of participants on catheter type for hematuria with blood clots ($Z = -3.742$, $p = 0.000$), best catheter to place in a 65-year-old male with Benign Prostatic Hyperplasia and Acute Urinary Retention ($Z = -2.972$, $p = 0.003$), and type of catheter used for mid-urethra resistance with a 16-inch foley ($Z = -5.292$, $p = 0.000$). One of the most significant knowledge deficit areas noted was on a question which was choosing the correct size of catheter on a 28-year-old male patient with 500 ML of urine in the bladder, unable to urinate after feeling a 16 French Foley catheter which was the next appropriate catheter to use almost all the participants answer the question incorrectly in pre-test and were able to correct and acknowledge the benefit of the PowerPoint presentation.

One of the study's limitations was a small sample size due to the various shifts emergency room staff work. Due to difficulty scheduling meeting times with hospital administration, the algorithm is not yet uploaded onto the hospital intranet.

Impact on Practice

Despite the initial hurdles to getting permission for data collection and the hesitation from staff to come in for the presentation and do the pre and post-test survey, most staff who participated reported that the information provided was beneficial for them and said it would help them in their practice. All the team members who participated in the data collection process received the proposed Foley catheter algorithm for a quick referral during tough urology decision-making.

Conclusion

Throughout this research study, it was evident that despite the educational skills and quality assurance programs, foley catheter-related issues remained a challenge for most Frontline healthcare workers who needed to make prompt decisions during patient care. Easy access to the Foley catheter algorithm/flow chart enables healthcare workers to make decisions during challenging urological Foley catheter-related situations. Future meetings with upper-level management discussing the findings of the research study, the financial implications, and the benefits of having the Foley catheter algorithm uploaded into the institution's intranet could be the end goal.