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Brief Report

Is 2-person urinary catheter insertion effective in reducing CAUTI?

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This study focused on implementation of the 2-person urinary catheter insertion protocol as a way to decrease catheter-associated infection (CAUTI) rates. Whereas the CAUTI prevention bundle is important to implement, additional focus on specific parts of the bundle are imperative. The results of this study indicate implementation of the 2-person urinary catheter insertion protocol with a checklist decreased the risk of CAUTI for our patient population.

Health care–associated infections continue to be a concern in today's health care system and for our 330-bed community teaching hospital. According to the Centers for Disease Control and Prevention,[2] approximately 15%-25% of hospitalized patients will have an indwelling urinary catheter placed sometime during hospitalization. In addition, complications associated with catheter-associated infections (CAUTIs) can cause discomfort to the patient, prolonged hospital stays, and increased cost and mortality. It is estimated that each year, more than 13,000 deaths are associated with a urinary tract infection.[2]

CAUTI rates were above the national average at our hospital in 2015, and a multidisciplinary team was formed to investigate trends and determine next steps. The company that supplies our urinary catheters provided assessment and follow-up education regarding insertion, duration, appropriate indications, and removal protocols. Improvement in all areas was identified, and our facility changed to an advanced urinary insertion kit, which made it easier to comply with aseptic insertion and provide education to patients. Additionally, a nurse-driven protocol for removal of urinary catheters was in place but not well used, as there was no threshold for duration. Therefore, nurse unit coordinators were responsible for the monitoring of the duration of the catheterization and assisting in earlier removal. In 2016, there was significant improvement in rates, to one-half that of previous years; however, the first quarter of 2017 showed an increase in CAUTI rates again. Another assessment of our protocols by the company revealed that although the utilization had decreased, there were still issues with maintaining aseptic technique during insertion and duration of catheterization had increased slightly.

Based on findings from a literature search and outcomes from previous interventions, it was recommended that the 2-person urinary catheter insertion protocol (UCIP) strategy be implemented because it was the best available evidence that is not part of the CAUTI bundle. Several organizations recommend using a "2-person" or "buddy system" with insertion and use of a checklist to verify sterile technique, however, few studies were completed regarding the outcome of the intervention. Belizario[1] reported that CAUTIs were reduced by 39%, 6 months after initiation of the 2-person urinary catheter insertion procedure, and recommends additional research of this promising intervention to reduce CAUTI rates.

AIM

The purpose of this study was to decrease CAUTI rates by implementing a 2-person UCIP with a checklist on the pulmonary and progressive care pilot units. The 2-person UCIP with a checklist is completed by 2 registered nurses (RNs) or 1 RN and staff trained in sterile technique and urinary catheter insertion.

METHODS

The 4 "E's" of implementation science, adapted from Pronovost,[3] was the organizing framework for the 2-person UCIP as a CAUTI prevention strategy.

Engage: The education specialist proposed to the nursing leadership team and CAUTI committee the strategy of implementing a 2-person UCIP with a checklist. The recent increase in CAUTI rates helped engage the leadership team to consider this innovative approach.

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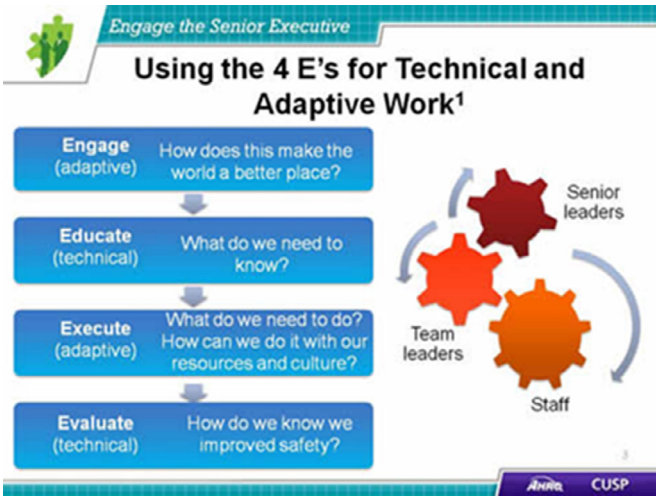
Educate: The RNs and staff, trained in sterile technique and urinary catheter insertion, were educated by the education specialist regarding the intervention with supporting evidence and recommendations.

Execute: Implementation of the 2-person UCIP intervention with a checklist was completed over 3 months on the pilot units. Each time a urinary catheter was inserted, the RN requested assistance from a second RN or staff trained in sterile technique and urinary catheter insertion. The second person was responsible for observing the procedure, halting the insertion if sterile technique was compromised, and completing the checklist.

Evaluate: Assess for CAUTI and determine if the implementation of the 2-person UCIP strategy decreased CAUTI rates on the pilot units. National Healthcare Safety Network definitions were used to determine if an infection met CAUTI criteria. Infection rates (number of CAUTIs per 1,000/Foley days) were calculated for the first quarter of 2017 (prior to implementation) and were compared with the second quarter (after implementation).



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RESULTS

To measure the effectiveness of 2-person UCIP, we compared CAUTI rates from the first quarter (Q1) with the second quarter (Q2). The CAUTI rate is calculated from the number of infections per 1,000 Foley days. The statistical comparison calculator in the National Healthcare Safety Network was used to calculate a *P* value and determine whether the difference in rates was statistically significant or just part of normal fluctuation. Table 1 shows the rates from the last quarter (Q4) of 2016 and Q1 and Q2 of 2017. The trial began March 13, 2017, for units A, B, and C. These units had higher rates in Q1 than in Q2. Units A and B had only 1 infection in Q1 and none in Q2, whereas unit C had 2 infections in Q1 and 1 in Q2. Although the CAUTI on unit C in Q2 occurred during the trial, the 2-person UCIP was not used on that patient. Other than this patient, the 2-person UCIP was used for each insertion on all 3 units. There were 53 completed checklists, and 98.1% overall compliance. Units A and B had 100% compliance rates, whereas unit C had 92.9%, as the checklist was not used for 1 insertion.

Table 1
Quarterly CAUTI rates from October 2016 to June 2017

CAUTI rates per Foley days x 1,000	2016 Q4	2017 Q1	2017 Q2	Q1 & Q2 *P* value
Unit A				
Pulmonary	0/645 (0)	1/666 (1.50)	0/659 (0)	.503
Unit B				
Progressive Care	0/524 (0)	1/732 (1.37)	0/692 (0)	.514
Unit C				
Progressive care	0/153 (0)	2/327 (6.12)	1/265 (3.77)	.747
Unit C				
CAUTI rate for patients using UCIP			0/265 (0)	.305

CAUTI, catheter-associated infection; Q, *quarter; UCIP*, urinary catheter insertion protocol.

Although the difference in the Q1 and Q2 rates were not statistically significant, it was worth noting that implementation of the 2-person UCIP with the checklist helped reduce risk of contamination during insertion. Engaging the RNs through training on the 2-person UCIP increased awareness of how insertion affects infection rates. Ultimately, the goal of our initiative was decreased harm in addition to decreased rates.

This study focused on implementation of the 2-person UCIP as a way to decrease CAUTI rates. Through evaluation of our process and rates, we ensured the CDC CAUTI prevention bundle was implemented: urinary catheters were placed for appropriate indications, using sterile technique, maintained properly, and removed when no longer necessary. The evaluation noted that additional emphasis on insertion was necessary and the 2-person UCIP was an effective strategy to provide this focus. Based on these results, the 2-person UCIP with checklist was implemented on all units. For future research, we recommend the study be replicated on more than 2 units for a longer duration.

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