Improving Nursing Knowledge to Prevent Catheter-Associated Urinary Tract Infections

Ashley Mangum, MSN, RN, CNL, CCRN-K

sentara nurse

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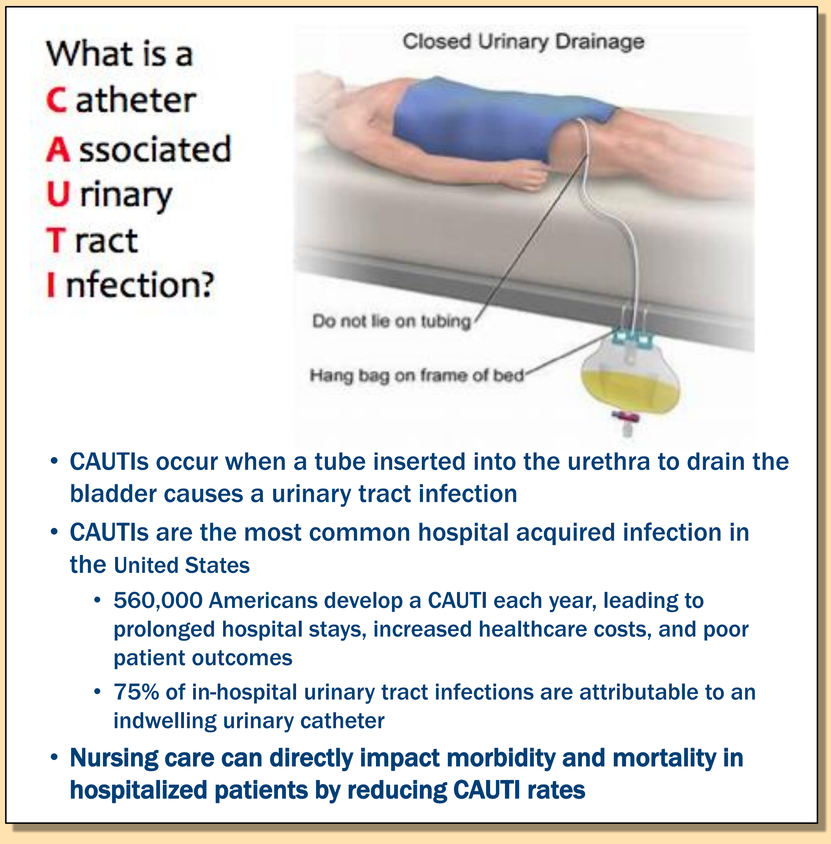
BACKGROUND

- In 2017, four catheter acquired urinary tract infections (CAUTIs) occurred at Sentara Martha Jefferson Hospital
  - Two were in the intensive care unit (ICU)
  - Research has shown that the rate of ICU CAUTI's should be approximately 25% of the overall hospital rate.
- A literature review was completed to find guidance on what educational nursing interventions demonstrated improved patient outcomes.
  - Databases searched: Ovid Medline
  - Keywords: educational intervention, nursing education, and hospitals.
  - Limited articles to the last five years
  - Three articles described educational interventions that directly impacted patient outcomes



- CAUTIs occur when a tube inserted into the urethra to drain the bladder causes a urinary tract infection
- CAUTIs are the most common hospital acquired infection in the United States
  - 560,000 Americans develop a CAUTI each year, leading to prolonged hospital stays, increased healthcare costs, and poor patient outcomes
  - 75% of in-hospital urinary tract infections are attributable to an indwelling urinary catheter
- **Nursing care can directly impact morbidity and mortality in hospitalized patients by reducing CAUTI rates**

PRIOR RESEARCH STUDIES

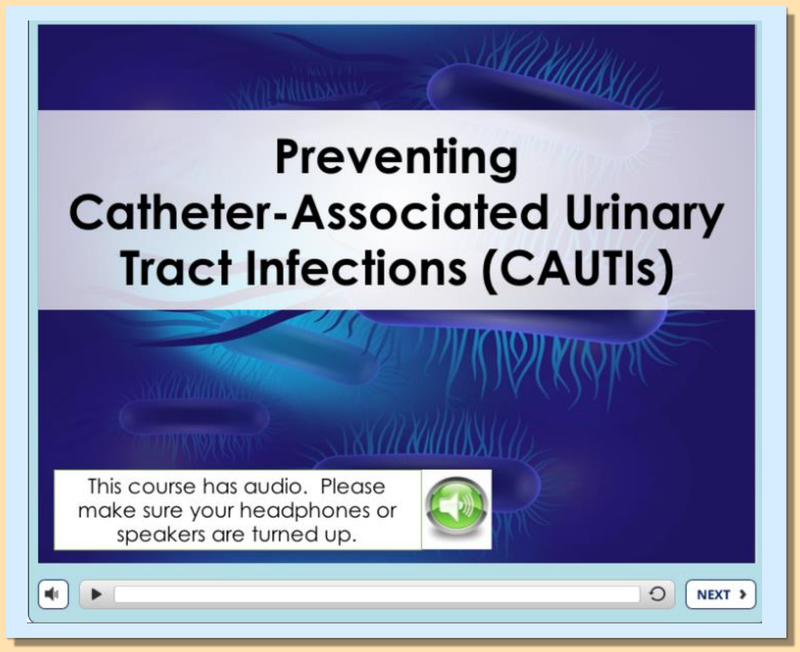
- A retrospective cohort study found improved compliance rates of nurses completing adequate alcohol withdrawal protocol using an educational ***visual slide presentation***.
- A case control study found that ***case-based learning*** sessions and flow chart handouts improved correct intravenous fluid selection
- A systematic review and meta-analysis found a ***visual slide presentation and an e-learning course*** improved rates of safe medication administration

PURPOSE

Based on the research found, a quality improvement project was conducted to to determine if ***an evidence-based educational intervention*** during the March 2018 quarterly updates in clinical knowledge (QUICK) session would improve nursing knowledge about CAUTI and decrease CAUTI rates in the ICU.

IMPLEMENTATION OF THE EDUCATIONAL SESSION

- A case-based visual slide presentation of the CAUTI cases that occurred at Sentara Martha Jefferson Hospital in 2017 was shared with 31 ICU nurses and nursing care partners
- Staff were educated on CAUTI-related content
  - Preventive methods that could have affected the CAUTIs in question
  - CAUTI statistics for the United States
  - Hospital policies and procedures
- Staff completed e-learning prior to the QUICK session.



DATA COLLECTION AND ANALYSIS

- Participants took a test prior to and following the session.
  - General CAUTI-specific information
  - CAUTI statistics
  - Case-based information
- Test scores were compared between pre- and post tests using a two-tailed t-test.
- ICU CAUTI rates were re-analyzed after the intervention.

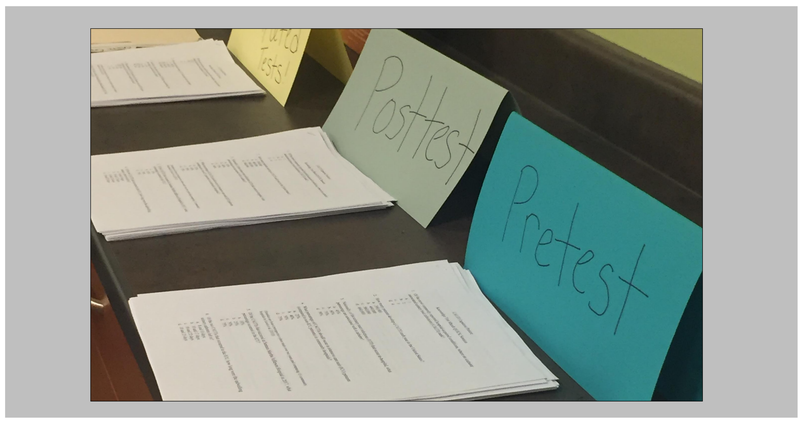
RESULTS

- Thirty-one staff members took the pre-test and 30 took the post test.
  - The groups were not independent, as the same individuals who took the pre-test took the post-test.
- ***There was a significant difference in knowledge between pre- and post-test scores (p=0.002)***
- Although there were a small number of cases, as of October 2018, ***the ICU CAUTI rate has decreased from 50% in 2017 to 33% in 2018***

Test Scores Before and After Educational Intervention

	Test	N	Mean	Std. Deviation	Std. Error Mean
Score	Pre-test	21	20.24	7.622	1.663
	Post-test	21	26.62	3.814	.832

		t	df	Sig. (2-tailed)
Score	Equal variances assumed	-3.431	40	.001
	Equal variances not assumed	-3.431	29.426	.002



CONCLUSION

- The data indicates an improvement in staff knowledge, as well as a decrease in CAUTI rates
- This is the first study to evaluate the impact an educational intervention has on the rates of CAUTI in a hospital.

IMPLICATIONS FOR NURSING

- Evidence-based educational interventions should be evaluated by nurses in the clinical setting.
- Research is needed evaluating educational interventions with large groups of nurses and a longitudinal design to determine the affect on CAUTIs and other hospital-acquired infections.

References available upon request. *Contact: axmangum@sentara.com*