

We “CAUTI” A Problem! Improving Outcomes in Heart Failure Patients

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Received: 25 August 2018; Accepted: 19 September 2018

Citation: Monette Mabolo. We “CAUTI” A Problem! Improving Outcomes in Heart Failure Patients. Nur Primary Care. 2018; 2(5): 1-3.

Keywords

Urinary catheter, Heart failure, Antibiotics, Iowa model.

Project Selection

Indwelling urinary catheter are commonly used for heart failure in-patient to support strict intake and output monitoring, related to IV diuretic administration. The Center for Disease Control and Prevention (CDC) estimates that greater than 450,000 hospital patients develop catheter associated urinary tract infections (CAUTI), which increases patients length of stay by 2-4 days, contributes to antibiotic use and resistance and the leading cause of secondary blood stream infection which have an associated mortality rate of 10%. It is the most common type of healthcare-associated infection (HAI) in hospitals and long-term facilities.

CAUTI accounts for about one third of all HAI's, making it one of the most common infection in the world. The annual cost of CAUTI in the United States is about \$350 million, given it is reasonably preventable through the adoption and implementation of evidence-based methods.

In 2013, our 37 bed heart failure/ cardiac telemetry unit's high indwelling catheter utilization (.13-.08) and high Foley days (949) led to high catheter associated urinary tract infection or CAUTI rate (9.66-16.13), the highest in the health system. As we drilled down on the problem, we identified inaccurate Intake and Output, staff knowledge deficits, and an inconsistent use of nurse driven urinary catheter protocol and inconsistent daily weights.

Inaccurate intake and output documentation and inconsistent daily weights are two areas that is very important for heart failure patient. Risk factors were also identified in developing CAUTI such as duration of catheter insertion, the female gender, and older age and non-compliant with the bundle. Common themes found during the drill down were obesity, diarrhea and diabetes.

Goal

To reduce the incidence of catheter associated urinary tract infection to zero on heart failure patients by combining intentional daily rounds, and focused staff, patient and family education and utilize evidence-based interventions defined by Centers for Disease Control (CDC).

Improvement Process

Using the Iowa model, the team reviewed literature for various practice strategies. The Iowa model highlights the importance of considering the entire healthcare system from the provider, to the patient, to the infrastructure, using research within these contexts to guide practice decisions. The team utilized Plan Do Check Act (PDSA) methodology by planning, trying, observing the results, and acting on what was learned. Baseline data on Intake and Output documentation and catheter care were collected. With the full engagement of department leadership, staff were re-educated on the urinary catheter guidelines, proper peri/Foley care, Intake and Output documentation and accurate daily weights through daily huddle messages and one on one staff education. RN4 was tasked to come in on weekend and off shift to provide staff education. Emphasis was made on the use of bladder scanner and in and out catheterization before placing an indwelling catheter. Practice was changed to record catheter output to every four hours. Post-education documentation was audited by leadership daily for 60 days, and the team continued the audits monthly.

The team designated a unit secretary to be their first “Foley Champion” to conduct intentional daily rounds to include chart reviews, room observations of best practices such as presence of securement device and bundle compliance. She was empowered to prompt nursing and medical staff to remove the catheter or determine a clear indication for continued use. These daily rounds re-educated staff on the practice standard and kept adherence to the catheter guidelines as a department priority.

Bundle for Insertion, Maintenance, and Removal of Urinary Catheter

Bundle for Insertion, Maintenance, and Removal of Urinary Catheter

Insertion

- **INSERT A CATHETER ONLY WHEN NECESSARY!** (per MD order)
- Use **smallest bore possible consistent with good drainage** (i.e., 14Fr for females-16Fr for males)
- Perform **hand hygiene** before donning gloves and having any contact with the catheter/drainage tubing.
- Perform peri-care prior to inserting the catheter. Use **sterile technique** when inserting catheters—see Clinical Skills Procedure (Is the Foley necessary—Foley Huddle; Two to insert)

Maintenance

- Maintain a closed, sterile drainage system. **DO NOT disconnect the bag** from the catheter; if specimen needed, collect the sample aseptically from the needleless sampling port with a sterile syringe after cleansing port with an antiseptic.)
- Perform **peri-care/catheter care every 12 hours (10a-10p)**
- Properly **secure** the catheter to the patient's leg with approved securement device.
- **Document** appropriately in medical record (insertion/removal date and time, where inserted, size, inserted by, second person assist, etc.) Label bag (orange label found in insertion kit).
- At all times, including during transport/procedures: **ALWAYS keep the drainage bag below** the level of the bladder. Keep catheter tubing free of kinks and dependent loops to prevent obstruction of urinary flow.
- Do not allow the drainage bag to lie on or touch the floor.
- Prior to transport or when more than 1/3 full, empty the catheter drainage bag.
- The nurse will document indications for continuance of the catheter daily
- Provide patient education—see patient education sheet

Other CAUTI prevention strategies implemented included mandatory competencies on Foley/peri care for all RN/NT's, elimination of bar soap, baby powder and bath basins. Patients were bathed using liquid soap and water at the sink. This was a culture change.

At present they have 2 Foley Champions, a nurse and a NT and both are responsible for intentional rounding and checking for bundle compliance and data collection. Recently, the use of external female catheter to reduce use of Foley catheter among female patients was implemented.



A Nurse Tech was designated as the daily weight champion. The Nurse Tech's role was to conduct audits on daily weights of all the patients and if there were no weights documented, to ask the nurse or the other nurse tech for the reason why.

An audit tool was created for data collection. Concurrently, daily weights are done consistently and accurately. Weights are done using standing scale only except for patients who are amputees or bed bound.

Data Collection Form: Catheter use and care compliance

| Data Collection Form: Catheter Use and Care Compliance | | | | | | |
|---|-----------|-----------|-----------|-----------|------------|-----------|
| Month | Year | Auditor | | | Department | |
| Components of Care | | | | | | |
| Securement- Is the foley properly secured to the leg? | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No |
| | N- Yes/No | N- Yes/No |
| When the patient is in the bed, the drainage tubing is not coiled, no dependent loops and flows straight from patient to bag. | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No |
| | N- Yes/No | N- Yes/No |
| Drainage bag is secured to bed and is not lying on floor | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No |
| | N- Yes/No | N- Yes/No |
| A red seal is present from drainage bag to catheter (a closed system) | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No | D-Yes/No |
| | N- Yes/No | N- Yes/No |
| Patient Name, MRS, & Room #: | | | | | | |
| Comments: | | | | | | |

Results/Outcomes

With the implementation of daily rounding combined with focused staff education, the units CAUTI rate of 16.13 dropped to 3.16 by the end of FY 2013. After implementation of quality improvement programs and practice change in 2014, the unit's CAUTI rate decreased to 1.22 having only 1 CAUTI and 817 Foley days. In 2015, the unit became CAUTI free until February, 2017 achieving 3 years of CAUTI free with 691 in Foley days. Unfortunately, in April, 2017 they had their first CAUTI after 3 years. This gave them a rate of 1.45 by the end of FY2017. The team went back and re-educated staff on Foley care and peri-care; used case study to better understand what happened and how to prevent another occurrence in the future. By April, 2018 they are again CAUTI free accomplishing 4 out of 5 years without CAUTI.

With the average cost of CAUTI ranging from \$911-\$3,824, this reduction represents a potential savings of up to \$397,696 in direct cost for infections avoided. These does not take into account any added potential cost that could result from penalties associated with value based purchasing.

In order to sustain being CAUTI free, our next step is to continue to train staff to train others in the proper Foley insertion with 2 person technique and incorporate training with new hire orientation and maintain CAUTI free culture by keeping Foley out within 2 days or not having Foley if not needed. We also have started the "Potty Buddy" whose role is to intentionally round on all patients from 6:00 AM-12:00 PM and provide bathroom assistance and at the same time decrease the use of call lights during the busy times.

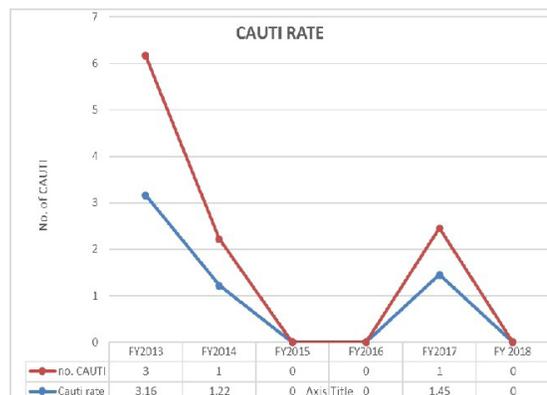


Figure 1: CAUTI rate.

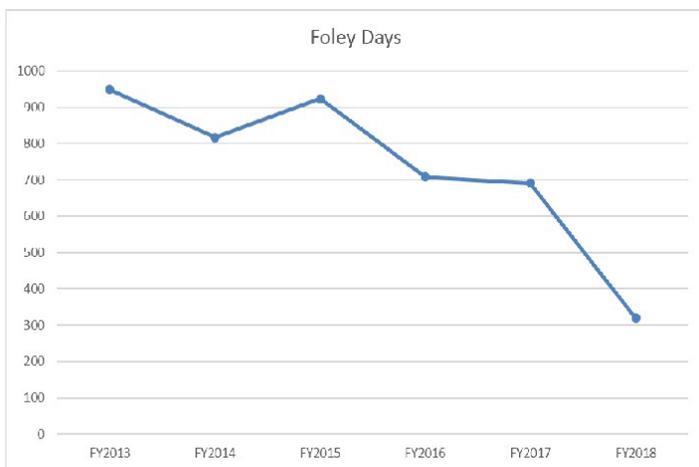


Figure 2: Foley Days.

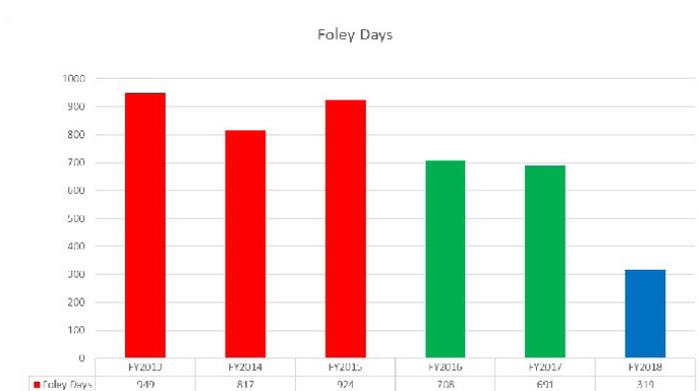


Figure 3: Foley Days.

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