

Going Commando as Part of a Multifaceted Intervention to Reduce CAUTIs in Critically Ill Children



Children's
Healthcare of Atlanta



EMORY
UNIVERSITY

Matthew Linam, MD, MS^{1,2}, Lisette Wannemacher, BSN, RN, CPN², Kathryn Powell, BSN², RN, CCRN, Christina Calamaro BSN, RN, PhD² and Karen Walson, MD²

1. Division of Pediatric Infectious Diseases, Emory University School of Medicine
2. Children's Healthcare of Atlanta, Atlanta, GA

Matt Linam, MD, MS
Emory Children's Center, Room 534
2015 Uppergate Drive, Atlanta, GA 30322
wlinam@emory.edu, 404-727-4807

Background

- Catheter associated urinary tract infections (CAUTIs) are a source of preventable harm in children.
- Insertion and maintenance bundles have significantly reduced CAUTIs, but infections still occur.
- In mid-2019, we experienced an increase in CAUTIs in our pediatric intensive care unit (PICU).
- **The objective was to identify preventable causes of CAUTI and develop and test interventions to reduce them.**

Methods

- This quality improvement project was initiated in the PICU of a large tertiary children's hospital.
- **Interdisciplinary prevention rounds**
 - Led by the hospital epidemiologist and unit nursing leader with the bedside nurse
 - Occurred weekly (starting October 2019)
 - Included patients with urinary catheters in place for > 3 days
 - Discussions included strategies to optimize maintenance of the urinary catheter and identify catheters that could be removed
- **Additional interventions included**
 - No diapers for patients with a urinary catheter (starting March 2021)
 - Use of a urine collection device that prevented both urine stasis in the drainage tube and retrograde flow of urine into the bladder (starting August 2021)
- Hand hygiene and CAUTI prevention bundle compliance was measured by direct observation of staff.
- CAUTIs were identified by prospective surveillance by infection prevention using standard definitions.
- The rate of CAUTIs over time was analyzed using statistical process control charts

Results

- The baseline CAUTI rate (January 2017 - June 2019) was 0.5 infections/1000 catheter days with an average of 306 days between CAUTIs.
- Between July 2019 and February 2021, the CAUTI rate increased to 3.3 with an average of 88 days between CAUTIs.
- Annual compliance with hand hygiene and the CAUTI prevention bundle elements remained above 90% throughout all time periods.
- Except for a decrease in 2021, catheter days remained stable.
- No improvement was seen after the institution of weekly interdisciplinary rounds.
- **Starting in March 2021 after removal of diapers and implementation of the urine collection device, the CAUTI rate decreased to 0.84 with an average of 212 days between CAUTIs.**
- **After the interventions, there was a maximum of 573 days between CAUTIs.**

Figure 1. Statistical Process Control Chart Showing the Catheter-Associated Urinary Tract Infection Rate by Month in the Pediatric Intensive Care Unit from January 2017 through February 2024

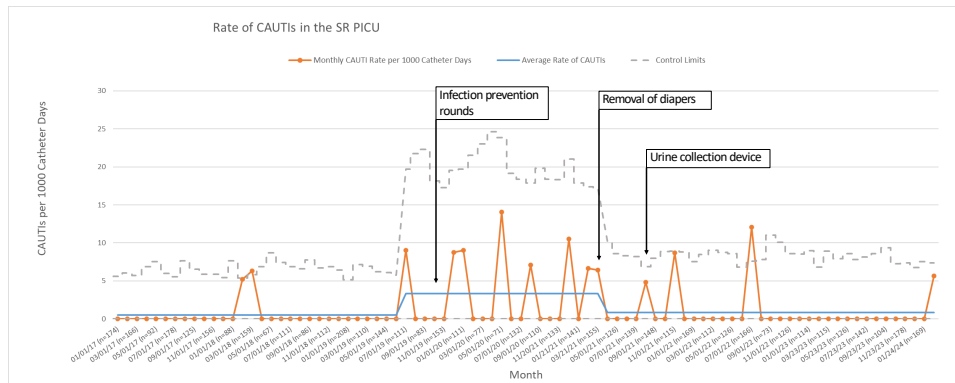


Figure 2. Urinary Catheter Days by Month in the Pediatric Intensive Care Unit from January 2017 through February 2024

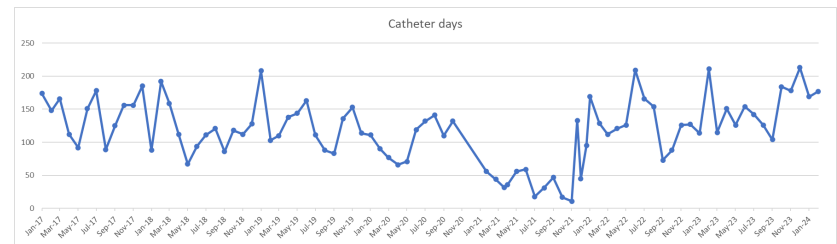
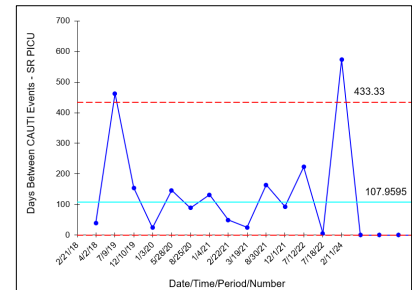


Figure 3. g Chart Showing Days Between Catheter-Associated Urinary Tract Infections in the Pediatric Intensive Care



Conclusions

- CAUTIs decreased after removing diapers in children with urinary catheters and use of the urine collection device.
- Removal of diapers likely reduced stool contamination around the catheter.
- The urine collection device prevented inadvertent retrograde flow of urine into the bladder.
- These interventions could augment current CAUTI prevention strategies.