Successful Reduction of Urinary Catheter Utilization in a Pediatric Intensive Care Unit

A Quality Improvement Project

April 9, 2014 | Heather Frick, BSN, RN, TNCC
Background

- CAUTI second most common cause of healthcare associated infections
- Daily risk for CAUTI associated with urinary catheters
- Early 2012, our PICU identified CAUTI rates and UCU above 75% for National Healthcare Safety Network (NHSN)
- CAUTI are publically reportable (IDPH & SPS)
Quality Improvement Initiative

- **Goals of this project:**
  - Decrease CAUTI rate
  - Reduce urinary catheter utilization

- **Hypothesis:**
  UCU and CAUTI could be reduced by implementation of evidence-based interventions
  - Daily device rounds
  - Earlier discontinuation of urinary catheters
  - Re-education of staff
Definitions
Standard NHSN reporting definitions

- **CAUTI**: urinary tract infection (UTI)
  - Indwelling urinary catheter in place for >2 days with presence of UTI criteria

- **UCU ratio**: urinary catheter days/patient days

- **CAUTI rates**: CAUTI events/UC days x 1000
Methods

• Multidisciplinary QI team utilized staged evidence based interventions
  - Daily urinary catheter needs assessment
  - Hourly documentation for indication of catheter

• CAUTI rates pre and post interventions were compared using the estimating equation Poisson regression analysis
Results

- 26 PICU patients were evaluated
- Urinary catheter duration 2 days (median)
- Indication evaluated and documented all UC days
- “Measurement of accurate urine output” was selected as indication for 95% of UC days
- Implementation of interventions reduced CAUTI rates from a mean of 5.94 to 2.28 ($p=0.26$)
- UCU ratio reduced from 0.31 to 0.15 ($p=0.0001$)
Results

PICU CAUTI Rate Pre and Post Intervention

PICU Urinary Catheter Utilization Pre & Post Intervention

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PICU Mean = 2.3
UCL = 23.4
LCL = 0

PICU Mean = 0.15
UCL = 0.22
LCL = 0.08

UCL = 0.22
LCL = 0.08

Urinary Catheter Utilization (UC/Patient Days)
Conclusions

• Implementation of evidence-based interventions significantly reduced UCU from 0.31 to 0.15

• CAUTI rates post intervention were reduced below NHSN mean of 5.94 to 2.3
Next Steps

• Implement a standardized audit plan to ensure compliance with UC insertion, maintenance and specimen collection
• Reinforce nursing education related to proper documentation of indication for UC
• Share lessons learned with other pediatric inpatient areas and SPS organization
Recommendations

• Increase study time
• Increase frequency of standard audits
• Redesign audit tool to improve ease of use
• Implement standardized bathing protocol
• Standardize product selection and ease of product access
• Perform a cause analysis to identify future opportunities to prevent infection
• Collaborate with “Solutions for Patient Safety” to optimize best practices
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Acknowledgements

• Li Lue and Hajwa Heather Kim, Biostatistical Consultants, UIC Center for Clinical and Translational Science (CCTS), IL.
• PICU medical and nursing associates.
• Denise Angst, PhD, Director for Advocate Center for Pediatric Research, ACH, IL.
• Patricia Thornton, BSN, RN, Clinical manager of PICU
• Kimberly Vander Ploeg, MSN, APN, CCNS, CCRN
References

