Preventing Catheter Associated Urinary Tract Infections in Critically Ill Children Using a Bundle Approach

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1 Background

Catheter-associated urinary tract infections (CAUTI's) are hospital acquired infections (HAI's) that can be prevented through the standardization of practices in caring for Indwelling Urinary Catheters (IUC) (Andreessen, Wilde, and Herendeen, 2012).

It's commonplace in adult intensive care units (ICU's) to adopt and abide by guidelines that prevent CAUTI's, however, little research and standardization of practice is in place for prevention of CAUTI's in the pediatric population.

In October 2012, Judy Ascenzi, DNP, RN, Clinical Nurse Specialist at the Johns Hopkins Hospital (JHH) Pediatric Intensive Care Unit (PICU), implemented a care bundle in the PICU at JHH to address CAUTI prevention with this vulnerable population. The bundle emerged as part of her doctoral capstone project translating the evidence in CAUTI prevention into practice.

2 Methods

The PICU at JHH adopted a nurse- managed urinary catheter maintenance bundle that includes best practice guidelines from prominent organizations like the Centers for Disease Control.

I.Daily care guidelines and checklist for all patients with a urinary catheter. The goal is to avoid any unnecessary urinary catheters.

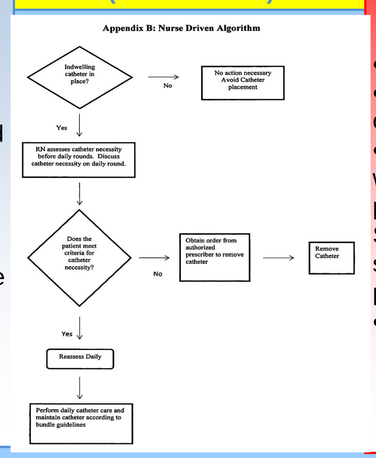
II.Weekly maintenance audit completed on a specified day each week for every catheterized patient.

III.Daily data collection to identify patients with a urinary catheter.

Maintenance Care

- Hand hygiene and gloves prior to manipulating catheter or drainage system
- Maintain closed system
- Drainage bag lower than bladder
- Empty drainage bag each shift
- Perineal care: daily and following each diaper change

Johns Hopkins PICU Nurse Driven Indwelling Urinary Catheter Prevention Bundle (October 2012)



Indwelling Urinary Catheters are NOT Indicated for:

- Incontinence
- Prolonged post op use
- Immobility without the presence of a Stage III/IV sacral or perineal pressure ulcer
- Patient request

3 Results

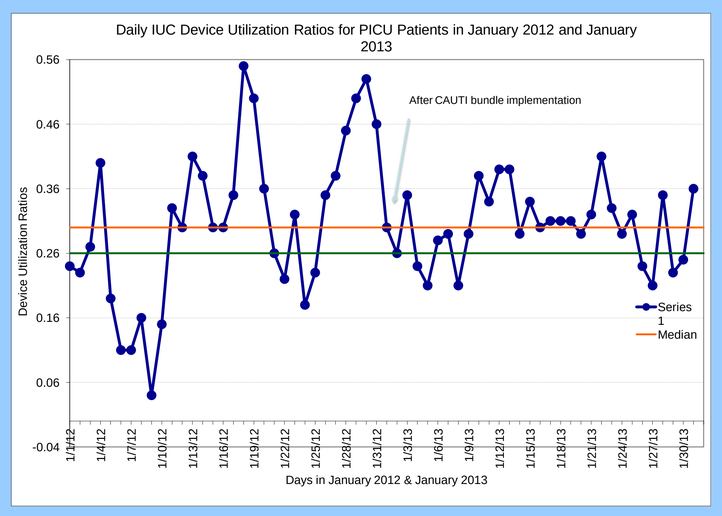
The specific aims of the project are related to post implementation of the nurse-managed urinary catheter maintenance bundle.

Specific Aim # 1
To decrease the number of urinary catheter days.

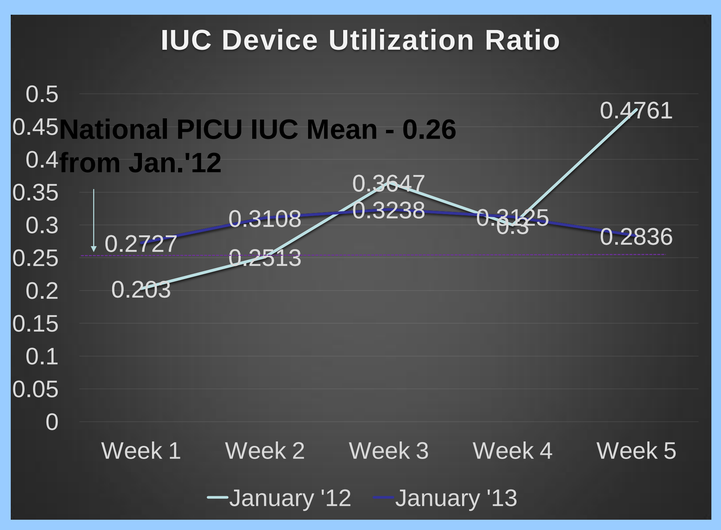
Specific Aim # 2
To decrease the duration of urinary catheterization.

Specific Aim # 3
To decrease the number of positive urine cultures.

In addressing **Specific Aim #2**, data was collected for the months of January 2012 and January 2013, respectively. The IUC Device Utilization Ratio (DUR) by week was compared for those months. The DUR includes total indwelling catheter days per total patient days.



An analysis of January 2013 DUR by week was also done in order to compare the results to the national average from 2012. It's critical to have a benchmark for improvement. How does the PICU at JHH compare to other hospitals?



4 Conclusions

In comparing the IUC DUR by day for the months of January 2012 and January 2013, the run chart shows that there was indeed a change related to the bundle implementation in October 2012, with 6 consecutive data points below the mean . As for the reason for this change seen on the PICU, one can only speculate to the cause. In order to formulate future plans of change, some questions are worth addressing first:

i.Do the staff reliably follow foley care procedures? What are the barriers to following the checklist?

ii.With the bundle in place, has it been easier for Dr. Ascenzi to remove foleys that aren't necessary?

iii. How has the new policy on the unit changed the culture amongst the staff regarding timely foley removal and CAUTI prevention? Are more conversations taking place on the unit regarding HAI's precautions?

iv.What was the patient population like in January 2013 compared to January 2012? Did that have any impact on the results?

Since the current IUC DUR national average for 2013 isn't available, it's a little difficult to make conclusions about how the PICU at JHH is doing compared to other children's hospitals. But, if only comparing the DUR in January 2013 to January 2012 on the PICU, there was a slight improvement from year to year.

5 Future Directions

Continue to collect data on the nurse driven bundle.

Assess barriers to implementing bundle.

Adopt seamless data entry processes so more time is spent refining protocols and educating staff on prevention of CAUTI's.

Disseminate data monthly to unit staff in the form of an email.

6 References

Andreessen, L., Wilde, M. H., & Herendeen, P. (2012). Preventing catheter-associated urinary tract infections in acute care: The bundle approach. *Journal of Nursing Care Quality,* doi:10.1097/NCQ.0b013e318248b0b1

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