A Multidisciplinary Intervention to Prevent Catheter Associated Urinary Tract Infections Using Education, Continuum of Care, and Systemwide Buy-In: a Two-Year Data Review

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Abstract

Background: In 2014, a quality improvement initiative commenced at Scottsdale Osborn Medical Center (now HonorHealth) in response to a consistently high incidence of catheter-associated urinary tract infections (CAUTI) in the hospital’s intensive care unit (ICU). The project team worked with the Alliance of Independent Academic Medical Centers (AIMC) National Initiative, Health Services Advisory Group (HSAG), and the Scottsdale Healthcare information technology (IT) team to implement a multidisciplinary approach including education, continuum of care, and systemwide buy-in, with the goal of eliminating CAUTI on the Scottsdale Osborn campus (ICU and non-ICU).

Methods: The project was active beginning January 1, 2014 and lasted through the calendar year. The six best practice guidelines generated and initiated by the project team included staff education, electronic medical record (EMR) prompts and reminders, daily patient tracking, urine retention protocol, and a resident quality champion.

Results: The original 2014 study saw the number of Foley catheter days in the ICU drop by approximately 33% in 2014 with an associated decrease in CAUTI in the ICU in 2015. In non-ICU, a progressive decrease in Foley catheter days was noted throughout 2014 and 2015 with stable CAUTI rates throughout that time. In the two years since the project’s conclusion, the momentum has continued with a sharp 70% decline in CAUTI rates systemwide from 2014 to 2016.

Conclusions: The previous study lauded the initiative’s greatest success to be the decrease in urinary catheter days. However, in the subsequent two years, catheter days actually increased while the total number of CAUTIs and overall CAUTI rates decreased significantly. Additionally, National Surgical Quality Improvement Program data from 7/1/2015 – 6/30/2016 revealed Osborn ICU as a top decile performer among 640 other NSQIP sites. This indicates that the aforementioned multidisciplinary efforts implemented have had a lasting effect of improving infection prevention on the HonorHealth Scottsdale Osborn campus. There is still room for improvement, however, as despite the progress within the system the ICU standardized infection rates (SIR) compared to the national benchmark has been high for five of the last eight quarters.

Epidemiology

- Most common nosocomial infection (30%)3
- Daily risk of CAUTI development is between 3-10%, and is nearly 100% after 30 consecutive days3
- Leading cause of secondary hospital-acquired bacteremias3
- Approximately 10% mortality3
- Highest urinary catheter-day to patient-day ratios in trauma ICUs11
- Associated with increased: morbidity, mortality, mortality rate = 2.3%3
- Hospital cost, and
- Length of stay

Conclusion

It is evident that the 2014 intervention did have the desired lasting effect of lowering CAUTI rates in the Osborn ICU; in fact, CAUTI rates continued to decline in the two years following the end of the initiative. The previous study lauded the initiative’s greatest success in reducing CAUTI to be the decrease in overall urinary catheter days. However, in the subsequent two years, catheter days actually increased while the total number of CAUTIs and CAUTI rates decreased significantly. This reduction in CAUTI rates despite increased Foley catheter days appears to be due to the continued educational and prioritizing elements for nursing staff in meticulous Foley insertion, maintenance, tracking, and removal. Additionally, National Surgical Quality Improvement Program data from 7/1/2015 – 6/30/2016 revealed the Osborn ICU as a top decile performer among 640 other NSQIP sites. This indicates that the aforementioned multidisciplinary efforts implemented, particularly the continued nursing priority on Foley use, have had a lasting effect of improving infection prevention and patient outcomes on the HonorHealth Scottsdale Osborn campus. There is still room for improvement however, as despite the progress within the system, the ICU standardized infection rates (SIR) compared to the national benchmark has been high for five of the last eight quarters. Additionally, a point briefly mentioned in the 2014 study and yet to be evaluated here is the fact that the national definition and criteria for CAUTI were changed in the first quarter of 2015; the more stringent criteria could be an extraneous variable in the reducing the CAUTI rate at Osborn ICU; however, the impact would presumably affect all hospitals’ CAUTI data equally. The changed criteria also may have an impact on SIR data, as the most recent national baseline was established in 2009, prior to the change. Other future investigations will also look into exactly which ICU patients are presenting with CAUTI and where their Foley were inserted — e.g. comparing trauma patients, neurosurgical patients, emergency department patients, etc. — to find where in the hospital further areas of opportunity lie.

References
