Reducing Catheter Associated Urinary Tract Infections (CAUTI) in the Intensive Care Unit (ICU): Changing the Culture of Culturing

Mona Shah, MPH,CIC FAPIC, Cammy Hines, RN, CIC, Michael O. Vernon, DrPH, Kamaljit Singh, MD and Lance Peterson, MD,
NorthShore University HealthSystem, Evanston, IL

Abstract # 2109

Mona Shah, MPH,CIC,FAPIC
Mshah2@northshore.org

Background

CAUTIs are one of the most common preventable hospital acquired conditions. CAUTI rates in the ICUs throughout our multicenter acute care system were above the national average. Many of these urine cultures were ordered in the absence of clinical symptoms and yet classified as CAUTIs. We hypothesized that we could reduce inappropriate urine cultures by daily review of culture orders in patients with a urinary catheter.

Methods

NorthShore University HealthSystem (NorthShore) implemented guidelines for appropriate ordering of urine culture for patients with urine catheters in 2014. The culture was deemed appropriate if it met criteria in Table 1.

Table 1:

Appropriate Urine Culture Ordering	Inappropriate Urine Culture Ordering
Urinalysis and urine culture should only be collected from inpatients who have been hospitalized > 2 days when they meet all 3 of the following criteria: 1. The patient has a fever (>100.4°F) x 2 within 48 hours ***OR*** leukocytosis 2. No other identifiable source of infection has been identified 3. The patient has one or more of the following: o Costovertebral angle/flank pain o Suprapubic pain o Increase in urinary frequency, urgency or incontinence after catheter removal o Dysuria after catheter removal o Acute mental status or functional status change o Worsening of clinical status o Purulent discharge from around the catheter **Please document rationale for ordering cultures in progress notes	1. Performing "Routine" cultures in asymptomatic patients before or after urinary catheter removal 2. Culturing for a change in the color or character of the urine 3. When performing a "test-of-cure" on patients after they have been treated 4. Performing "routine" cultures on admission 5. Performing "routine" cultures pre-operatively before surgery (other than invasive urologic procedures) 6. Culturing when patient has "Urinary Retention".

Urine culture orders were reviewed daily by an Infection Preventionist. If the order did not meet the urine culture ordering guideline, the prescriber was contacted to cancel the test. This was a prospective, observational study. Chi-Squared analysis was used to compare the reduction in CAUTIs.

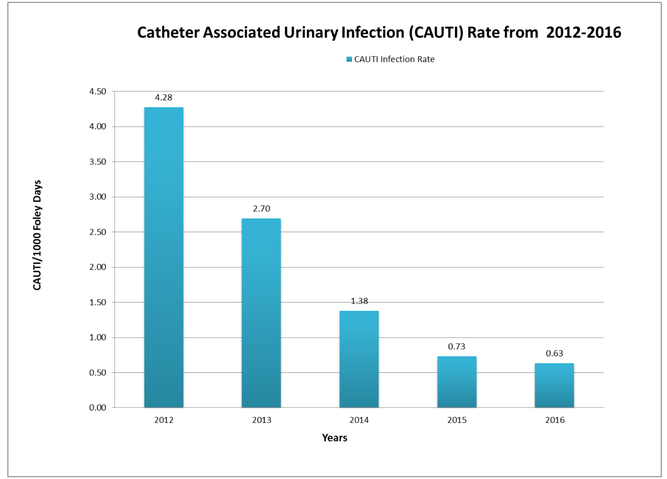
Results

Figure 1 shows the CAUTI rates in the ICUs from 2012-2016. During the period from 2012 to 2013 there was a modest decrease in CAUTI rates due to an education intervention with feedback on each CAUTI event to front line staff. However, this reduction was not statistically significant (p=0.085).
As a result, in 2014 a program involving review of daily ICU urine culture orders was implemented. This resulted in a significant reduction in CAUTI rates from baseline (p=0.00046). In 2015 the program was expanded to involve reviews of all hospital wide urine culture orders. This resulted in a further statistically significant reduction of CAUTI rates (p=<0.00001).

Conclusion

We found that using a culture appropriate guideline with an Infection Preventionist driven intervention was associated with a significant reduction in the rate of ICU CAUTIs. Real-time culture order review is a sustainable process that has continued the success of our CAUTI reduction program.

Figure 1:



References

1. An APIC Guide. Guide to the Elimination of Catheter-Associated Urinary Tract Infections (CAUTIs), 2008
2. Oman KS, Makic MB, Fink R, Schraeder N, Hulett T, Nurse-directed interventions to reduce catheter associated urinary tract infections. AJIC 2012; 40: 548-553.
3. TA Rowe and M Juthani-Mehta. Diagnosis and management of urinary tract infection in older adults. Med Clin North Am. 28:75-89, 2014.