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

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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.

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.

Table 1:

<table>
<thead>
<tr>
<th>Appropriate Urine Culture Ordering</th>
<th>Inappropriate Urine Culture Ordering</th>
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<tbody>
<tr>
<td>1. Performing “Routine” cultures in asymptomatic patients before or after urinary catheter removal</td>
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<td>2. Culturing for a change in the color or character of the urine</td>
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<td>3. When performing a “test of cure” on patients after they have been treated</td>
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<td>4. Performing “routine” cultures on admission</td>
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<td>5. Performing “routine” cultures pre-operatively before surgery (other than emergent urgent procedures)</td>
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<td>6. Culturing when patient has “Urinary Retention”</td>
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**Please document rationale for ordering cultures in progress notes.**

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 further statistically significant reduction of CAUTI rates (p=<0.00001).

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).

Conclusions

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.

References