The Impact of Urinalysis Reflex Criteria on Surveillance Catheter-Associated Urinary Tract Infections (CAUTIs)

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ABSTRACT

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Background:
The diagnosis of catheter-associated urinary tract infection (CAUTI) is challenging because of nonspecific associated symptoms and signs.

Methods:
We conducted a literature review of laboratory findings and urinalysis to determine which elements were a high predictor for positive cultures and infection. The evidence and literature suggests that urinalysis is an acceptable method to detect urinary tract infection. Urine culture should be performed when a urinalysis is positive, but not routinely when a urinalysis is negative. A WBC >10 is a high predictor for infection regardless of other positive elements. At our institution, a urinalysis (UA) with reflex to culture criteria was available. A culture would be performed based on positive UA criteria which included presence of leukocyte esterase, nitrite, or a WBC count of ≥10 high-power field. Medical records for CAUTI events identified by surveillance definition were retrospectively reviewed for a urinalysis with microscopy as a trigger for urine culture.

Results:
Following National Healthcare Safety Network (NHSN) surveillance definitions, 31 CAUTIs were identified from September 1, 2014 – April 30, 2016. We reviewed which UA elements reflexed to culture and noted when cultures were ordered without urinalysis with microscopy. In May, 2016, UA reflex criteria were adjusted so that cultures would only be performed if WBC >10. Urine culture orders without UA reflex criteria were restricted to specific patient populations including oncology, OB, neutropenic, and pediatric. Based on revised criteria for UA reflex to culture, 5 (16%) cases would not have reflexed to culture. In addition 5 (16%) cases had neither a UA nor the UA were negative. This could translate to reductions of 32% NHSN surveillance CAUTIs.

Conclusions:
Routine urinalysis orders for nonspecific signs and symptoms can lead to inflated rates of surveillance CAUTIs and unnecessary use of resources.

NEW IP UA w/MICROSCOPIC, REFLEX CULTURE (PROVIDER EDUCATION)

• There is opportunity to support antimicrobial stewardship and reduce treatment of asymptomatic bacteriuria. The criteria for a UA reflex to culture and change to WBC >10
• Order sets, preference lists and user preference lists updated with the new order

UPDATED URINE CULTURE ORDER

• An indication will be required for a urine culture. This will include: OB, urology, neutropenic, pediatric.
• For patients outside of these specialty populations, order IP urinalysis with microscopic reflex culture.

ISSUES:
• Retrospective UA review indicated urinalysis reflex to culture criteria were not specific to urinary symptoms.
• False positive UA/Inability to distinguish patient’s infection in quality improvement
• Inflated CAUTI rates and/or Standardized Infection Ratios can result in inappropriate hospital penalties.

PROJECT

• A process improvement team reviewed NHSN criteria and identified the definition was not specific to clinical infections.
• Baseline data analysis suggested that the presence of leukocyte esterase or nitrite alone were not high predictors of positive urine cultures and symptomatic bacteriuria.
• Urinalysis criteria to trigger culture may be too sensitive. Literature was reviewed to determine which UA elements are high predictor of positive urine cultures and symptomatic bacteriuria.
• Criteria reflex urinalysis culture were changed to WBC >10. Order restrictions were applied to urine culture orders without urinalysis reflex.