

unnecessarily collected cultures, which can lead to extended length of stay and increase cost across hospital systems. Further analyses on the clinical impact of this guideline are ongoing.

**Disclosures:** None

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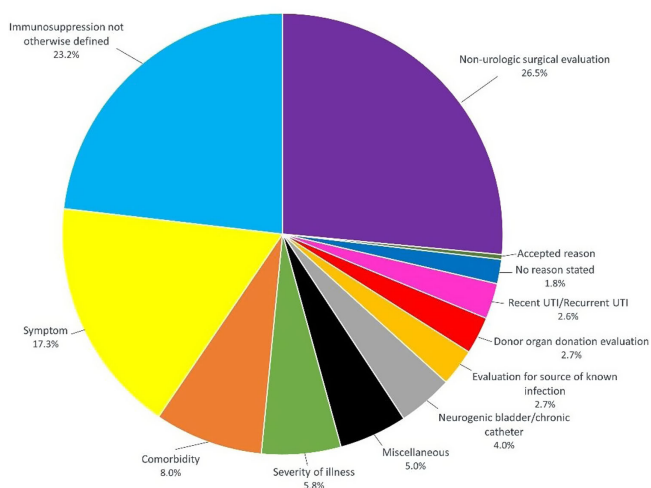
**Subject Category:** Diagnostic/Microbiology

**Evaluation of indication in a urinalysis driven reflex urine culture protocol at an academic medical center**

Mackenzie Keintz; Jasmine Marcelin; Mark Rupp and Trevor Van Schooneveld

**Background:** Asymptomatic bacteriuria (ASB) is a widespread problem in hospitalized patients in which only a small subset of patients benefit from treatment. Other patient populations with ASB are harmed by treatment. In 2014, our institution implemented a urinalysis (UA)-driven reflex culture protocol which evaluated patient symptoms, risk factors, and the UA to determine whether bacterial culture was performed (Fig. 1). The goal of this process was to ensure that urine cultures were only performed in those patients who had symptoms of UTI and an abnormal urinalysis while allowing for exceptions in populations where treatment of ASB may be appropriate (ie, pregnancy, aged <3 years, impending urologic surgery, kidney transplant) or where the urinalysis may not be useful in determining whether infection is present (ie, neutropenia). An “other” indication with free-text documentation required was included to allow for unique situations. We evaluated the free-text option to determine whether additional indications were needed and whether data entered were medically appropriate. **Methods:** This retrospective review at a Midwestern, tertiary-care, academic medical center included inpatient UA with UTI evaluation order sets between July 1, 2020, and June 30, 2022. Descriptive statistics analyzed order-set utilization. **Results:** In total, 35,469 “urinalysis to reflex culture” order sets were submitted, of which 9,493 resulted in culture. Of these, 839 (8.8%) were ordered with an indication of “other.” “Other” was the most cited indication for special population override contributing to 40% (n = 839 of 2,085) of these indications, followed by kidney or pancreas transplant (29%) and neutropenia (13%). The write-in options fell into 1 of 11 themes (Fig. 2). The 3 most common reasons a urine culture was obtained using the free-text option were non-urologic surgical intervention (n = 223 of 839), immunosuppression not

Figure 2. Distribution of special population “other” indication by theme



otherwise defined (n = 195 of 839), and symptom presence (n = 146 of 839). Based on current literature, 97% of other indications were inappropriate (n = 816 of 839). If the UTI protocol had been strictly followed, 696 of 839 (83%) cultures ordered with an indication of “other” would not have been obtained, due either to lack of symptoms or, if symptomatic, lack of pyuria. **Conclusions:** Most cultures obtained by selecting the “other” special population option on the algorithm were obtained in situations in which a urine culture was unnecessary. Removing the “other” indication from the algorithm may improve appropriateness of urine culturing with a possible decrease in CA-UTI and treatment of ASB. Although most write in rationales were inappropriate, adding an additional category for deceased donor-organ evaluation would be reasonable.

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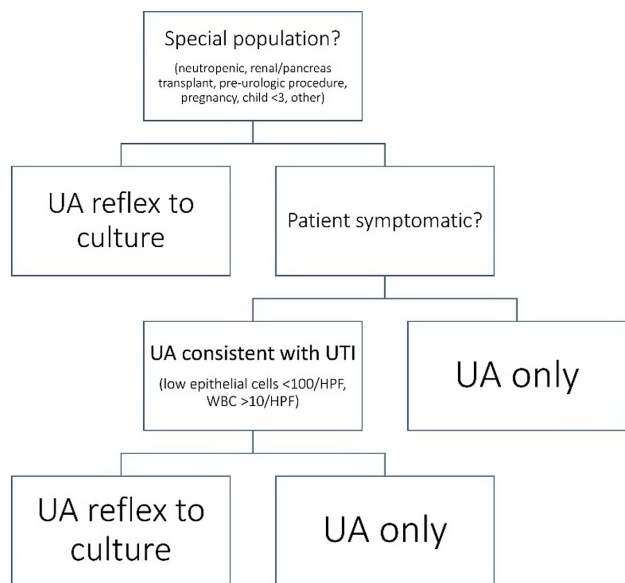
Poster Presentation - Poster Presentation

**Subject Category:** Diagnostic/Microbiology

**Identifying opportunities for diagnostic stewardship in UTI testing in pediatrics**

Karen Acker; Michael Alfonzo; Tess Gray; Taylor Dempsey; Lisa Saiman; Lars Westblade; Sabrina Racine-Brzostek and Nicole Gerber

**Background:** Reflexive urine culturing, a strategy wherein urine cultures are only performed on samples with pyuria, is increasingly being used to reduce unnecessary urine cultures, healthcare costs, and inappropriate antibiotics. To support implementation of a reflexive urine-culture order for pediatric patients aged <18 years, we assessed the proportion of urine cultures that would be avoided with reflexive urine culturing, and we calculated the sensitivity and negative predictive value (NPV) of the  $\geq 10$  white blood cells (WBC) per high-powered field (HPF) threshold for diagnosing urinary tract infections (UTI) in patients aged <18 years who presented to the pediatric emergency department (ED). **Methods:** A retrospective review of patients <18 years with a urine culture performed from January to May 2022 in an urban, tertiary-care, pediatric ED was performed. A positive urine culture was defined as  $\geq 50,000$  CFU/mL for catheterized specimens and  $\geq 100,000$  CFU/mL for clean-catch or unspecified specimens. Pyuria was defined as  $\geq 10$  WBC/HPF. ‘True UTI’ was defined as a positive urine culture with a consistent clinical presentation (eg, fever or dysuria). Sensitivity, specificity, and NPV were calculated using the pyuria threshold of  $\geq 10$ WBC/HPF compared to the gold standard of a ‘true UTI.’ **Results:** During the study period, 658 patients aged <18 years



had urine cultures sent, of which 46 (7%) were positive. In all, 407 urine cultures (61.9%) were obtained by clean catch, 233 (35.4%) were obtained by urethral catheterization, 2 (0.3%) were obtained by Foley catheter, and 16 (2.4%) were unspecified. Among the 46 positive cultures, 32 (69.6%) had  $\geq 10$  WBC/HPF, and 55 (9.0%) of 612 negative cultures had  $\geq 10$  WBC/HPF. Of the 14 patients with positive urine cultures without pyuria, 8 had a contaminated sample or asymptomatic bacteriuria, 3 had urologic abnormalities, and 3 were infants aged  $< 3$  months. Of the 14 patients, 3 (21.4%) had a consistent clinical presentation for UTI and were treated with antibiotics: 2 were infants aged  $< 3$  months and 1 had urologic abnormalities. Using the  $\geq 10$  WBC/HPF threshold compared to 'true UTI,' sensitivity was 91.4%, specificity was 91.5%, positive predictive value was 36%, and NPV was 99.5%. Sensitivity and NPV increased to 100% when infants aged  $< 3$  months and urologic patients with positive urine culture were excluded. We estimated a cost saving of ~\$200,000 had reflexive testing been in place. **Conclusions:** A reflexive urine culture for specimens with  $\geq 10$  WBC/HPF would have reduced the number of urine cultures substantially because 571 (86.8%) of 658 urine cultures would not have been performed. To prevent missed diagnoses of UTI, infants aged  $< 3$  months and children with urologic abnormalities should be excluded from this diagnostic stewardship intervention.

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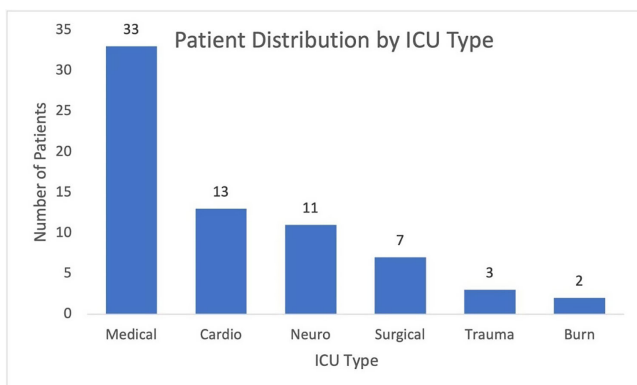
Poster Presentation - Poster Presentation

**Subject Category:** Diagnostic/Microbiology

**Assessment of endotracheal aspirate culture appropriateness among adult ICU patients at an academic medical center**

Michael Chambers; Romney Humphries; Bryan Harris and Tom Talbot

**Background:** Ventilator-associated pneumonia (VAP) is a significant cause of mortality in intensive care units (ICUs), but minimal research exists regarding the appropriateness of ordering endotracheal aspirate cultures (EACs). We evaluated the diagnostic utility of rationales given for EAC collection in ICUs at an academic medical center to assess potentially inappropriate EAC ordering. **Methods:** The study population comprised all adult patients admitted to an ICU in 2019 who underwent EAC collection. A random 10% sample from this population, stratified by ICU type, was selected. Clinical and diagnostic characteristics within 24 hours of EAC collection were identified by chart review. Clinical documentation was reviewed to identify ICU provider rationales for ordering EAC. **Results:** In total, 749 patients underwent EAC collection. Among them, 75 patients comprised the random sample, of whom 7 (9.3%) were excluded due to extubation before culture collection. Figure 1 shows patient distribution by ICU type. From these 68 patients, 105 EACs were collected. Of these, 41 (39%) were positive for potential pathogens, and 59 (56.2%) had explicit rationales for EAC collection, including fever (44.1%), hypoxia (18.6%), leukocytosis (16.9%), secretions (11.9%), shock (10.2%),



**Table 1: Clinical and Diagnostic Characteristics among ICU Patients within 24 Hours of EAC Collection**

Characteristic	Sensitivity (%)	Specificity (%)	Positive LR	Negative LR
<b>Fever</b>	70.7	53.1	1.5	0.6
Hypothermia	12.2	81.3	0.7	1.1
<b>Hypoxia</b>	41.5	62.5	1.1	0.9
<b>Leukocytosis</b>	68.7	28.1	0.9	1.2
Leukopenia	8.8	96.7	2.7	0.9
<b>Secretions</b>				
Thick	39.0	65.6	1.1	0.9
Bloody or pink	9.8	82.8	0.6	1.1
Tan	31.7	79.7	1.6	0.9
Green	2.4	98.4	1.6	1.0
Yellow	14.6	90.6	1.6	0.9
<b>Shock</b>				
Pressor requirement	36.6	59.4	0.9	1.1
Three or more pressors	12.2	93.8	2.0	0.9
<b>Imaging</b>				
Consolidation	4.9	89.1	0.4	1.1
Opacity	22.0	75.0	0.9	1.0
Atelectasis	48.8	64.1	1.4	0.8
Effusion	22.0	65.6	0.6	1.2
Pulmonary edema	26.8	82.8	1.6	0.9
<b>No Rationale Given for EAC</b>	36.6	51.6	0.8	1.2

LR = Likelihood Ratio  
EAC = Endotracheal Aspirate Culture

and radiologic findings (8.5%). Also, 43.8% of EACs had no explicit rationale for collection. Table 1 shows sensitivities, specificities, positive likelihood ratios (LRs), and negative LR for these rationales and related characteristics. **Conclusions:** EACs were commonly ordered without clear clinical indications. Of the noted rationales for EAC collections, most performed poorly at predicting positive cultures, which challenged common rationales for ordering EAC. This study could serve as a foundation for diagnostic stewardship interventions for EAC, potentially decreasing unnecessary cultures.

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**Subject Category:** Dialysis

**Developing a statewide infection prevention program assessment service for dialysis settings using a six-sigma framework**

Chelsea Ludington and Renee Brum

**Background:** Due to the need for recurrent and direct access to the bloodstream, patients who require hemodialysis are at higher risk of developing healthcare-associated infections. Failure to assess gaps in systems and processes impedes the implementation of quality and performance improvement initiatives. In Michigan, there is no consultative service offered to dialysis units to assist with infection prevention practices, and no statewide dialysis data are being utilized. The Michigan Department of Health and Human Services developed a consultative, nonregulatory service dedicated to providing a comprehensive assessment of dialysis-based infection prevention programs. **Methods:** A multidisciplinary team created an infection prevention dialysis evaluation program using the six-sigma define-measure-analyze-design-verify model. These elements included content within the dialysis-specific Infection Control Assessment and Response (ICAR) Tool from the CDC with supporting program assessment items. From August 2021 through August 2022, the team completed 17 inpatient dialysis assessments within our cohort's 17 hospitals. Data were analyzed using descriptive statistical analysis, and the final analysis included 1,086 observations from the developed assessment tool. Observations were grouped into 7 infection prevention categories: appropriate use of single and multiuse devices and supplies, aseptic technique, bloodborne pathogen prevention, cleaning and disinfection, hand hygiene, personal protection equipment (PPE) use, and storage of