

day ICU readmission were evaluated utilizing multiple COX regression models. **Results:** In total, 6,303 patients (2,087 MICU, 3,636 SICU, and 580 both) were included in the study, with a median age of 65 years (IQR, 21). Most participants were male (57.5%), with a median length of stay of 175 hours (IQR, 186). After the intervention, blood-culture utilization rates decreased from 15.4% to 12.4% (IRR 0.80, 95% CI, 0.76–0.85) (Fig. 1). There was no difference in blood-culture positivity between the preintervention period (11.05%) and the postintervention period (11.64%;  $P = .459$ ). Days of therapy decreased from 1,180 to 1,130 per 1,000 patient days (IRR, 0.96; 95% CI, 0.95–0.98), and the length of therapy decreased from 602 to 579 per 1,000 patient days (IRR, 0.96; 95% CI, 0.94–0.99) (Fig. 2). There was no difference in 30-day mortality ( $P = .241$ ) nor 30-day ICU readmission ( $P = .888$ ) across the study periods after adjusting for potential confounders (Table 1). **Conclusions:** Our multifaceted intervention decreased blood-culture and antimicrobial utilization in the ICUs without significantly affecting the positivity rate, mortality, or readmission. This study suggests that educating providers on appropriate blood-culture use along with restriction could safely improve healthcare outcomes. Further studies are warranted to validate our results across various institutions and to evaluate the impact of blood-culture optimization in non-ICU patients.

**Disclosures:** None

*Antimicrobial Stewardship & Healthcare Epidemiology* 2023;3(Suppl. S2):s60–s61

doi:10.1017/ash.2023.304

#### Presentation Type:

Poster Presentation - Poster Presentation

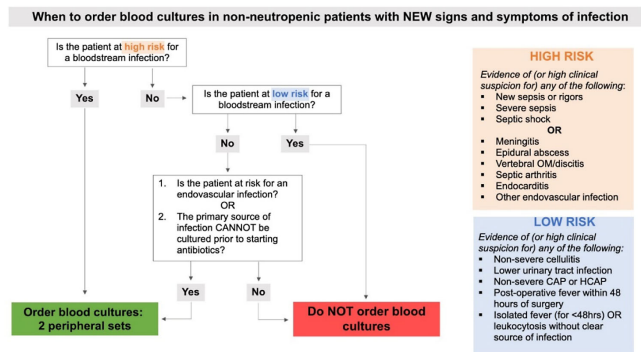
**Subject Category:** Diagnostic/Microbiology

#### Evaluation of interprovider consistency in interpretation of blood culture guidelines at an academic medical center

Sherif Shoucri; Tony Li-Geng; David DiTullio; Jenny Yang; Emily Fiore; Arnold Decano; Yanina Dubrovskaya; Dana Mazo and Ioannis Zacharioudakis

**Background:** Blood cultures are a fundamental tool in the diagnosis of infections, but they can lead to clinical confusion and waste resources when they yield false results. To optimize blood-culture orders at our institution, we developed an evidence-based clinical guideline (Fig. 1) to be used by frontline providers on nonneutropenic hospitalized adult inpatients. We retrospectively reviewed charts of patients with positive blood cultures to evaluate whether frontline providers and infectious diseases (ID) attending physicians were able to consistently interpret the guidelines to determine whether blood cultures were drawn appropriately. **Methods:** In total, 95 nonneutropenic adults with an initial positive blood culture collected while on an inpatient unit were identified through a query of the electronic medical record from January 2021 through June 2022. Patients with polymicrobial bacteremia and bacteremia due to *Enterococcus*, *Streptococcus*, and gram-positive rods were excluded. Moreover, 4 medical resident physicians reviewed all patients and 2 ID attending physicians reviewed one-quarter of cases; all were blinded to the culture results. Blood cultures were determined to be either appropriately or inappropriately performed based on our institution's guideline. The free-marginal multirater  $\kappa$  statistics with 95% CIs were calculated to evaluate interrater agreement. **Results:** Baseline patient demographics are shown in Table 1. Immune compromise without neutropenia was noted in 21 of 95 patients. Most patients were at high risk for bacteremia (72%) per our institutional guideline, most of whom were septic (67.7%). Low risk for bacteremia was found in only 12.3% of reviews. Medical resident physicians, ID attending physicians, and all reviewers combined agreed on whether blood cultures were drawn appropriately or inappropriately (84.2%, 92%, and 86.4% agreement rates, respectively). The free-marginal  $\kappa$  statistic was highest for ID attending physicians (0.84; 95% CI, 0.62–0.78), followed by attending physicians and resident physicians combined (0.73; 95% CI, 0.56–0.90), and resident physicians alone (0.68; 95% CI, 0.58–0.78). In the 21 patients with immune compromise, the agreement rates on blood culture appropriateness remained high among all reviewers, resident physicians, and ID attending physicians were 86.6%, 90.5%, and 95%, respectively. **Conclusions:** In our

retrospective study of nonneutropenic hospitalized adult inpatients, frontline providers and ID attending physicians interpreted blood-culture guidelines consistently, largely agreeing on which patients had cultures drawn appropriately. Agreement among ID attending physicians was excellent and remained substantial among medical resident physicians. Guidelines on the appropriate use of blood cultures are vital to limiting



**Table 1**

Baseline Characteristics	n (%)
Age <sup>1</sup>	63 (50-76.5)
Female	38 (40.0)
Race	
White	44 (46.3)
Black	17 (17.9)
Asian	12 (12.6)
Other or unknown	22 (23.2)
Immune compromise	21 (22.1)
Receiving chemotherapy	8 (8.4)
Solid organ or stem cell transplant	6 (6.3)
Other immune suppressing medication	5 (5.2)
Cirrhosis	2 (2.1)
Organism	
<i>Staphylococcus aureus</i>	16 (16.8)
Coagulase-negative <i>Staphylococcus</i>	40 (42.1)
Gram-negative bacteremia	37 (38.9)
<i>Candida</i> species	2 (2.1)
Risk of bacteremia	
High risk	311 (72.3)
Sepsis syndrome <sup>2</sup>	291 (67.7)
Low risk	53 (12.3)
Risk for endovascular infection or source unable to be cultured	19 (4.4)
None of the above	47 (10.9)
Total number of chart reviews	430 (100)

<sup>1</sup> Statistics presented: median (interquartile range)

<sup>2</sup> Sepsis syndrome: new sepsis, rigors, severe sepsis, or septic shock

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

*Antimicrobial Stewardship & Healthcare Epidemiology* 2023;3(Suppl. S2):s61–s62

doi:10.1017/ash.2023.305

# Presentation Type:

Poster Presentation - Poster Presentation

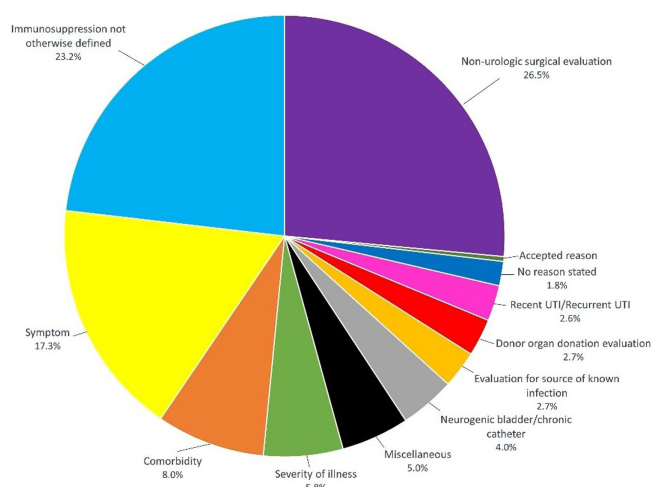
**Subject Category:** Diagnostic/Microbiology

## 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.

**Disclosures:** None

*Antimicrobial Stewardship & Healthcare Epidemiology* 2023;3(Suppl. S2):s62

doi:10.1017/ash.2023.306

# Presentation Type:

Poster Presentation - Poster Presentation

**Subject Category:** Diagnostic/Microbiology

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

Karen Acker; Michael Alfonso; 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

