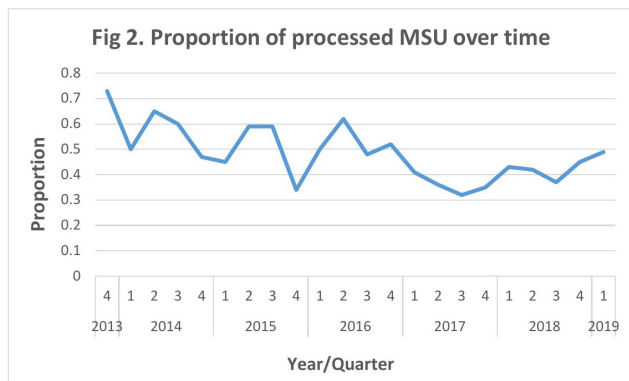
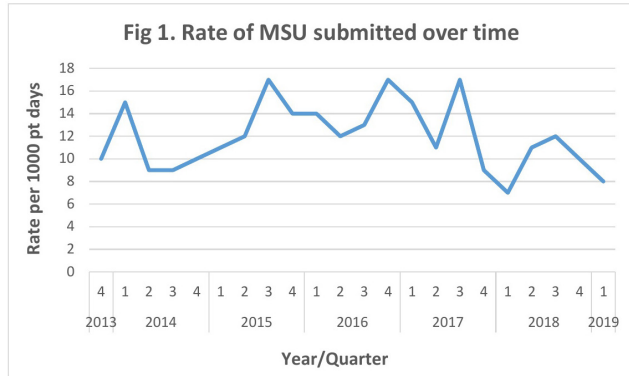


1,111/1,678 (66%) patients were asymptomatic when MSU was ordered. 1,393/1,678 (83%) had negative culture ( $N = 482$ ) or completed d4 follow-up ( $N = 911$ ). No symptomatic UTI/sepsis/systemic infection occurred; the only AE identified were 4 patients with prolonged UTS which might have been prevented by MSU processing (4/911; 0.4% patients with AE). Rates of MSU submitted remained stable at 12 per 1,000 patient-days,  $P = 0.59$  (Figure 1). Proportion of processed MSU decreased from 16/22, 73% in 2013 to 67/137, 49% in 2019 (Figure 2;  $P = 0.002$ ). Overall, microbiology workload decreased by 5 person-days/year (fewer MSU processed, but staff needed to respond to telephone calls). 275/1,678 (16%) patients received AB for presumed UTI; 221 (80%) treated empirically, 54 (20%) in response to positive MSU. Of 69 patients with ASB whose MSU was processed and positive, 32 (46%) were prescribed antibiotics. Assuming that 21% of rejected MSU from asymptomatic patients would have been positive, AB therapy for ASB was avoided in 66 patients.

**Conclusion.** Rejecting MSU specimens does not result in harm, and reduces lab workload and AB therapy for ASB.



**Disclosures.** All authors: No reported disclosures.

**1438. Escherichia coli (EC) ST131-H30 Clonal Group is Associated with Antimicrobial Resistance, Illness Severity, Host Compromise, and Non-Cure among Patients with Bacteriuria**

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**Session:** 157. Urinary Tract Infections

**Friday, October 4, 2019: 12:15 PM**

**Background.** EC sequence type ST131 is the leading cause of extraintestinal EC infections, and accounts for most fluoroquinolone (FQ)-resistant and extended-spectrum  $\beta$ -lactamase (ESBL)-producing EC clinical isolates. The ST131-H30 subclone (H30) is responsible for most antimicrobial resistance within ST131; however, H30's impact on clinical outcomes is poorly defined. We compared empiric treatment patterns and clinical outcomes of patients with bacteriuria caused by ST131 vs. non-ST131 EC, and by H30 vs. non-H30 EC strains.

**Methods.** Phylogroups, ST131, H30, and CTX-M-type  $\beta$ -lactamase genes were detected by PCR for 142 non-duplicate EC isolates collected prospectively from hospitalized or emergency-department-attending adults with monomicrobial bacteriuria at a Boston academic medical center (August 2013–January 2014). Clinical and microbiologic data were collected retrospectively from electronic health records. Baseline characteristics, empiric treatment, and clinical cure rates were compared between ST131 vs. non-ST131, and H30 vs. non-H30, patient cohorts.

**Results.** Of 142 patients with EC bacteriuria, most (76%) were female and elderly (mean age  $65.2 \pm 21.2$  years). Overall, 35% of isolates were ST131, of which 80% (39/49) were H30. Compared with other isolates, H30 isolates demonstrated a higher frequency of ESBL production (33% vs. 8%;  $P < 0.001$ ) and FQ resistance (90% vs. 8%;  $P > 0.001$ ). Patients with H30 isolates (vs. non-H30 isolates) were older (mean  $73.4 \pm 13.6$  vs.  $62.1 \pm 22.7$  years;  $P < 0.01$ ), had higher median (interquartile range [IQR]) APACHE II scores (10 [4] vs. 8 [9.5];  $P = 0.01$ ), more commonly had underlying complicating conditions (100% vs. 83%;  $P = 0.03$ ) and received *in vitro*-inactive empirical treatment (26% vs. 3%;  $P < 0.01$ ), and had a numerically lower clinical cure rate (84% vs. 96%;  $P = 0.08$ ). In contrast, patients with ST131 vs. non-ST131 isolates had similar median [IQR] APACHE II scores (9 [5] vs. 8 [9]), frequencies of symptomatic UTI (61% vs. 70%) and underlying complicating conditions (24% vs. 19%), and clinical cure rates (87% vs. 95%).

**Conclusion.** Among patients with EC bacteriuria, the ST131-H30 subclone was associated significantly with ESBL production, FQ resistance, illness severity, host compromise, and numerically lower clinical cure rates in symptomatic UTI.

**Disclosures:** Elizabeth B. Hirsch, PharmD, Merck: Grant/Research Support, Research Grant; Nabriva Therapeutics: Advisory Board; Paratek Pharmaceuticals: Advisory Board.

**1439. Reducing the Number of Urine Cultures Performed Through Stringent Urinalysis Reflex Criteria**

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**Session:** 157. Urinary Tract Infections

**Friday, October 4, 2019: 12:15 PM**

**Background.** Almost half of urine cultures (UCs) obtained are in asymptomatic patients, which may lead to misdiagnosis of urinary tract infection (UTI) and unnecessary treatment. To decrease misdiagnosis of UTI, changes were made to the order entry and urine culture process at our institution in April 2018. This included removal of a standalone UC from the electronic order entry system and development of a more stringent criterion for urinalysis with reflex culture (UAC). We evaluated the impact of these ordering changes on the total number of UCs performed.

**Methods.** This was a pre-post retrospective study comparing the hospital UAC rate per 1,000 patient-days and ED UAC rate per 1,000 visits in the pre-intervention period from April 2017 to March 2018 to the intervention period from May 2018 to March 2019 in a 319-bed teaching hospital in northwest Ohio. In April 2018, urine microscopy and UAC were the only available options. Furthermore, UC would only be performed if the following criteria were met: 10 white blood cells (WBC)/HFP. Standalone UC was available for the following patients who were excluded: immunosuppressed patients, pregnant women and patients undergoing invasive urologic procedures. These changes were accompanied by provider education, and providers were given the option to override UAC rules by calling the microbiology lab within 24 hours to request UC.

**Results.** After incorporating these changes, we observed an increase in the use of UAC compared with UC-only in both the ED (80% pre-vs. 94% post-implementation) and inpatient setting (59% pre-vs. 92% post-implementation). This was accompanied by a reduction in the overall UCs performed in both the ED (49.17 per 1,000 visits to 23.53 per 1,000 visits [ $P < 0.001$ ]) and inpatient units (23.31 per 1,000 patient-days to 9.31 per 1,000 patient-days [ $P < 0.001$ ]). Chart review of cases where providers overrode UAC criteria and requested UC have demonstrated no false negatives to date; cultures either had no growth or were consistent with contamination by polymicrobial urogenital flora.

**Conclusion.** Restricted access to standalone UC, implementation of UAC with more stringent criteria and provider education reduced the number of urine cultures performed without sacrificing sensitivity for detecting UTI and potential antimicrobial use.

**Disclosures.** All authors: No reported disclosures.

**1440. Prevalence and Regional Variation of in ESBLs and CRE Enterobacteriaceae (ENT) among Adult, Hospitalized Patients with ENT on a Urine Culture: A Multicenter Evaluation**

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**Session:** 157. Urinary Tract Infections

**Friday, October 4, 2019: 12:15 PM**

**Background.** Despite increased public health awareness of ESBLs and CRE, limited data exist regarding the true frequency of these resistant bacteria in urine cultures collected from adult patients in US hospitals. This study sought to quantify the prevalence and rates of ESBLs and CRE from urine cultures in adult hospitalized patients with ENT.

**Methods.** All hospitalized adults with a urine culture (first urine isolate of a species per 30-day period) from 377 hospitals in 2018 were evaluated (BD Insights

Research Database, Becton, Dickinson & Company). ESBL was defined as an ENT that was ESBL-positive per commercial panels or intermediate or resistant (non-susceptible, [NS]) to a third-generation cephalosporin; CRE was defined as an ENT that was NS to imipenem, meropenem, doripenem or ertapenem. Urine isolates were classified as community-onset (CO: < 3 days of an inpatient admission and no previous admission within 14 days) or hospital-onset (HO: ≥ 3 days post-admission or within 14 days of discharge) period. Prevalence and rates per 100 admissions were calculated overall, by onset location (CO vs. HO), and by US Department of Health and Human Services (HHS) geographic region.

**Results.** In 2018, there were 193,476 non-duplicate ENT urine isolates across 4,623,333 admissions; 63.6% were *E. coli* (EC), 19.5% were *K. pneumoniae/oxylotoca* (KPO), and 8.7% were *P. mirabilis* (PM). Overall, 12.6% were ESBL and 0.9% were CRE. Rate per 100 admissions was 0.484 and 0.037 for ESBL and CRE, respectively. Among CO, 11.8% were ESBLs and ESBL rates per 100 admissions were 0.358; 0.7% were CRE and CRE rates per 100 admissions was 0.024. Among HO, 15.7% were ESBLs and ESBL rates per 100 admissions was 0.126; 1.5% were CRE and CRE rates per 100 admissions was 0.013. Regional differences in both ESBL and CRE ENT were noted (table).

**Conclusion.** The prevalence of ESBLs/CRE among adult hospitalized patients with ENT in a urine culture was 13% and 1%, respectively. The % ESBL/CRE was higher among patients HO urine isolates whereas ESBL/CRE rates per 100 admissions were higher among patients with CO urine isolates. Considerable geographic variations were observed. Region and site of onset differences in ESBL/CRE epidemiology should be considered when making empiric antibiotic treatment decisions.

HHS Region	Admissions	CRE ENT		ESBL - EC, KPO, PM	
		% NS (n/Tested)	Rate/100 Adm	% NS (n/Tested)	Rate/100 Adm
Region 2: NJ, NY	650,651	1.12% (294/26,239)	0.045	13.6% (3,294/24,195)	0.506
Region 3: DE, DC, MD, PA, VA, WV	172,815	1.05% (87/8,267)	0.050	9.4% (707/7,539)	0.409
Region 4: AL, FL, GA, KY, MS, NC, SC, TN	1,072,786	0.99% (467/47,248)	0.044	12.5% (5,396/43,201)	0.503
Region 5: IL, IN, MI, MN, OH, WI	1,053,307	1.05% (436/41,420)	0.041	10.4% (3,933/37,839)	0.373
Region 6: AR, LA, NM, OK, TX	834,496	0.65% (226/34,830)	0.027	14.2% (4,548/32,085)	0.545
Region 9: AZ, CA, HI, NV	402,240	0.81% (153/18,804)	0.038	17.8% (3,125/17,515)	0.777
Region 10: AK, ID, OR, WA	165,753	0.36% (24/6,755)	0.014	8.9% (556/6,216)	0.335
Regions 1, 7, 8: CT, ME, MA, NH, RI, VT, IA, KS, MO, NE, CO, MT, ND, SD, UT, WY	271,285	0.26% (26/9,913)	0.010	9.1% (822/9,056)	0.303
<b>Total</b>	<b>4,623,333</b>	<b>0.89% (1,713/193,476)</b>	<b>0.037</b>	<b>12.6% (22,381/177,646)</b>	<b>0.484</b>

Note. To facilitate analysis, regions 1, 7 and 8 were combined due to small group sample sizes.

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#### 1441. Comparison of Cefpodoxime vs. Oral Cefuroxime for Urinary Tract Infections at a Large Academic Medical Center

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**Session:** 157. Urinary Tract Infections  
**Friday, October 4, 2019: 12:15 PM**

**Background.** Cefpodoxime (CPD) and cefuroxime (CFX) are both oral cephalosporins indicated for urinary tract infection (UTI) treatment. CPD may have unfavorable pharmacokinetics (PK) given the lesser degree of renal excretion and urine concentration vs. CFX and risk of collateral damage. The objective of this study was to compare the efficacy and safety of these two agents for UTI treatment.

**Methods.** We conducted a retrospective evaluation among adult patients who received CPD or oral CFX for ≥48 hours for UTI treatment between January 2013 and July 2018. The primary outcome was the rate of subsequent UTI within 90 days following therapy. Safety outcomes included the rate of *Clostridium difficile* infection (CDI) and development of isolates resistant to third-generation cephalosporins (TGC) within 90 days. We also examined missed opportunities for antibiotic de-escalation in culture-positive patients.

**Results.** Of 747 patients assessed for study inclusion, 295 patients met eligibility criteria (CPD n = 165, CFX n = 130). Median age was 72 years (IQR 55–84) and 71% were female. More patients in the CPD vs. CFX group had pyleonephritis (29% vs. 11%, P = 0.0005) and were treated in the emergency department (42% vs. 16%, P = 0.0005). *Escherichia coli* was most commonly isolated (n = 139), followed by *Klebsiella* spp. The rate of subsequent UTI for CPD vs. CFX was 18% vs. 16%, P = 0.647 at median of 25 vs. 32 days, P = 0.399. CDI rate was 1% vs. 2%, P = 0.324 and resistance to TGC was detected in 4% vs. 1%, P = 0.068 for CPD vs. CFX, respectively. Missed opportunities to de-escalate antibiotics based on cultures were found in one-third of patients. After adjusting for multiple factors in multivariate analysis, genitourinary abnormality (Odds Ratio [OR] 2.2, 95% CI 1.10–4.29, P = 0.026) and prior history of UTI within 180 days (OR 2.2, 95% CI 1.08–4.398, P = 0.03), but not the choice of oral cephalosporin, were the only independent predictors of subsequent UTI.

**Conclusion.** Despite less favorable urinary PK of CPD compared with CFX, in this patient cohort, no differences in efficacy or safety between the two agents for UTI treatment were found. These findings warrant further exploration. Stewardship strategies for de-escalation from higher generation cephalosporins to narrow-spectrum antibiotics based on susceptibilities should be implemented.

**Disclosures.** All authors: No reported disclosures.

**1442. Effect of Reflex Urine Culturing on Rates of Cultures and Infections in an Acute Care Hospital, Emergency Department, and Two Long-Term Care Facilities**  
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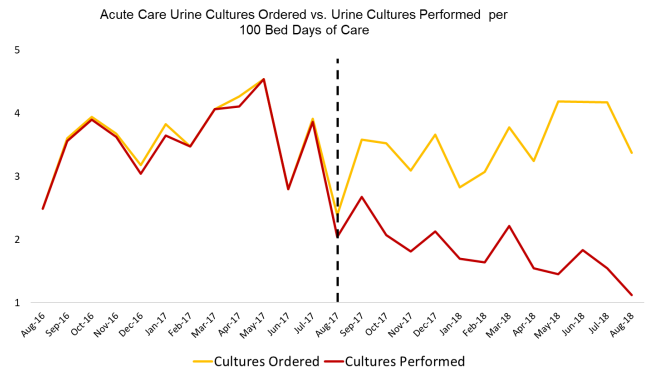
**Session:** 157. Urinary Tract Infections  
**Friday, October 4, 2019: 12:15 PM**

**Background.** Urine cultures are often positive in the absence of urinary tract infection (UTI) leading to unnecessary antibiotics. Reflex culturing decreases unnecessary urine culturing in acute care settings but the benefit in other settings is unknown.

**Methods.** This was a quasi-experimental study performed at a health system consisting of an acute care hospital, an emergency department (ED), and two long-term care (LTC) facilities. Reflex urine criterion was a urine analysis with > 10 white blood cells/high-power field. Urine cultures performed per 100 bed days of care (BDOC) were compared pre- (August 2016 to July 2017) vs. post-intervention (August 2017 to August 2018) using interrupted time series regression. Catheter-associated UTI (CAUTI) rates were reviewed to determine potential CAUTIs that would have been prevented.

**Results.** In acute care, pre-intervention, 894 cultures were performed (3.6 cultures/100 BDOC). Post-intervention, 965 urine cultures were ordered and 507 cultures were performed (1.8 cultures/100 BDOC). Reflex culturing resulted in an immediate 49% decrease in cultures performed (P < 0.001). The CAUTI rate 2 years pre-intervention was 1.8/1000 catheter days and 1.6/1000 catheter days post-intervention. Reflex culturing would have prevented 4/14 CAUTIs. In ED, pre-intervention, 1393 cultures were performed (5.4 cultures/100 visits). Post-intervention, 1959 urine cultures were ordered and 917 were performed (3.3 cultures/100 visits). Reflex culturing resulted in an immediate 47% decrease in cultures performed (P = 0.0015). In LTC, pre-intervention, 257 cultures were performed (0.4 cultures/100 BDOC). Post-intervention, 432 urine cultures were ordered and 354 were performed (0.5 cultures/100 BDOC). Reflex culturing resulted in an immediate 75% increase in cultures performed (P < 0.001). The CAUTI rate 2 years pre-intervention was 1.0/1000 catheter days vs. 1.6/1,000 catheter days post-intervention. Reflex culturing would have prevented 1/13 CAUTIs.

**Conclusion.** Reflex culturing canceled 16%-51% of cultures ordered with greatest impact in acute care and the ED and a small absolute increase in LTC. CAUTI rates did not change although reflex culturing would have prevented 29% of CAUTIs in acute care and 8% in LTC.



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#### 1443. N-Acetyl Cysteine Coadministration in Prevention of Amphotericin-Induced Electrolyte Imbalances in Children

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**Session:** 157. Urinary Tract Infections  
**Friday, October 4, 2019: 12:15 PM**

**Background.** Amphotericin B (AmB) can cause electrolyte abnormalities, including hypokalemia, hypomagnesemia, hypernatremia, and metabolic acidosis; and most important, acute renal failure.

**Methods.** We conducted a randomized prospective cohort study from March 2012 to February 2018 at Hacettepe University Ihsan Doğramacı Children Hospital to children receiving AmB.

**Results.** A total of 87 patients including 37 patients with NAC and 50 patients without NAC received liposomal amphotericin B during the study period. Serum creatinine, blood urea nitrogen, phosphorus were not different statistically in both groups during the study period. Serum sodium, potassium, calcium, phosphorus, magnesium values taken on third day of AmB treatment were not statistically different in both groups. Mean serum magnesium value was higher in NAC received group on