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/oxytoca* (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
Total	**4,623,333**	**0.89% (1,713/193,476)**	**0.037**	**12.6% (22,381/177,646)**	**0.484**

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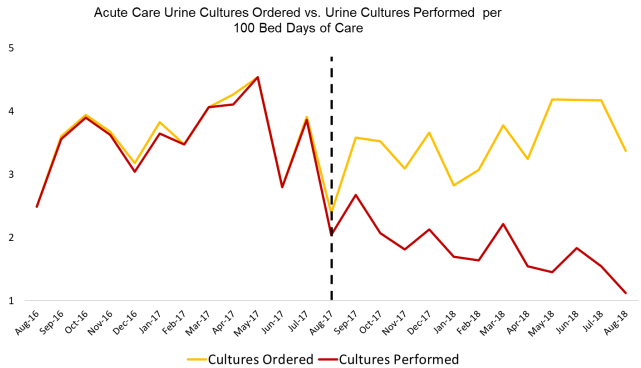
Background. Urine cultures are often positive in the absence of urinary tract infection (UTI) leading to unnecessary antibiotics. Reflex culturing decreases unnecessary urine culturing in acute care settings but the benefit in other settings is unknown.

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 Electrolytes Imbalances in Children

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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

the seventh day of AmB treatment; 1.97 ± 0.33 and 1.69 ± 0.46, respectively, it was statistically significant ($P = 0.025$). Mean serum magnesium value was also statistically significantly higher in NAC received group on the 14th day of treatment; 1.93 ± 0.20 and 1.72 ± 0.247, respectively, in both groups ($P = 0.01$). Mean serum sodium values on the 14th day of AmB treatment were also statistically different between 2 groups; 136.7 ± 3.7 and 140.04 ± 5.1, respectively ($P = 0.005$). Serum sodium values on the 14th day of AmB treatment was in more normal limits in NAC received group. Serum alanine aminotransferase level was significantly lower in NAC received group ($P = 0.02$). Serum aspartate aminotransferase level was significantly lower in NAC received group ($P = 0.007$). Nineteen of 37 (51.4%) patients who received NAC concomitantly with AmB and 44 of 50 patients (88%) who received AmB without NAC supplemented with potassium due to hypokalemia ($P < 0.001$). Two of NAC received 37 patients (5.4%) and 10 of NAC not received 50 patients (20%) died. Mortality was found 2.3 times more in NAC not-received group.

Conclusion. Co-treatment with oral NAC once daily in children during AmB treatment course was significantly effective in preventing or ameliorating different features of its nephrotoxicity including hypokalemia, hypomagnesemia, and renal potassium as well as magnesium wasting

Table 1. Demographics and laboratory characteristics of group 1 receiving AmB without NAC and group 2 receiving AmB with NAC

	AmB without NAC (n=50)	Amb with NAC (n=37)	p
Sociodemographic characteristics			
age (month,median,min-max)	94 (1-216)	115 (6-227)	>0,05
Gender (n)	29 male (%58) 21 female (%42)	19 male (%51,4) 18 female (% 48,6)	>0,05
Laboratory parameters			
At the time of AmB treatment			
Serum sodium (mEq/L)	137,644±4,68	133,83±19,87	>0,05
Serum potasium (mEq/L)	3,90±0,71	4,04±0,49	>0,05
Serum magnesium (mg/dL)	1,79±0,27	1,93±0,29	<0,05
Serum calcium (mg/dL)	8,64±0,76	**9,05±0,61**	**<0,09**
Serum phosphorus (mg/dL)	3,75±1,23	4,03±0,96	>0,05
Seum creatinine (mg/dL)	0,38±0,35	0,45±0,22	>0,05
3rd day			
Serum sodium (mEq/L)	138,08±4,35	138,93±8,1	>0,05
Serum potasium (mEq/L)	3,74±0,69	3,79±0,54	>0,05
Serum magnesium (mg/dL)	1,83±0,22	1,96±0,26	>0,05
Serum calcium (mg/dL)	8,44±0,7	8,66±1,36	>0,05
Serum phosphorus (mg/dL)	5,0±6,83	4,36±1,65	>0,05
Seum creatinine (mg/dL)	0,36±0,31	0,46±0,25	>0,05
7th day			
Serum sodium (mEq/L)	138,44±4,41	138,41±5,48	>0,05
Serum potasium (mEq/L)	3,89±0,86	3,81±0,65	>0,05
Serum magnesium (mg/dL)	1,69±0,46	**1,97±0,33**	**<0,025**
Serum calcium (mg/dL)	8,51±1,29	8,71±0,61	>0,05
Serum phosphorus (mg/dL)	4,17±1,28	4,01±0,96	>0,05
Seum creatinine (mg/dL)	0,46±0,57	,10±0,36	>0,05
14th day			
Serum sodium (mEq/L)	140,04±5,1	**136,7±3,7**	**<0,005**
Serum potasium (mEq/L)	3,91±0,75	3,84±0,65	>0,05
Serum magnesium (mg/dL)	1,72±0,247	1,93±0,20	**<0,01**
Serum calcium (mg/dL)	8,75±0,76	8,87±0,49	>0,05
Serum phosphorus (mg/dL)	4,20±0,94	4,03±0,9	>0,05
Seum creatinine (mg/dL)	0,40±0,33	0,55±0,32	>0,05
Need for potasium supplementation (n,%)	44 (88)	24 (64,9)	

Table 1. Comparison of demographics, clinical and paraclinical characteristics of 2 groups (n =87)

Variable	AmB with NAC (n=37)	AmB without NAC (n=50)	P value
Age (months)	115 (6-227)	94 (1-216)	0.289
Median-range			
Gender (%)			0.345
Male	19 (51.4)	29 (58)	
Female	18 (48.6)	21 (42)	
Diagnosis (%)			0.099
Hematological malignancy	22 (59,5)	19 (34)	
Oncological malignancy	3 (8,1)	9 (18)	
Immundeficiency	5 (13,5)	13 (26)	
Others	7 (18,9)	11 (22)	
AmB indication (%)			0.497
Empirical treatment of febrile neutropenia	32 (86.5)	42 (84)	
Others	5 (13.5)	8 (16)	
Duration of AmB treatment (days)			
Median-range	16 (4-85)	19 (6-75)	0.574
Co-administration of aminoglycosides (%)	17 (45.9)	32 (64)	0.176
Co-administration of vancomycin (%)	18 (48.6)	29 (58)	0,259
Co-administration of acyclovir (%)	2 (5.4)	1 (2)	0,38

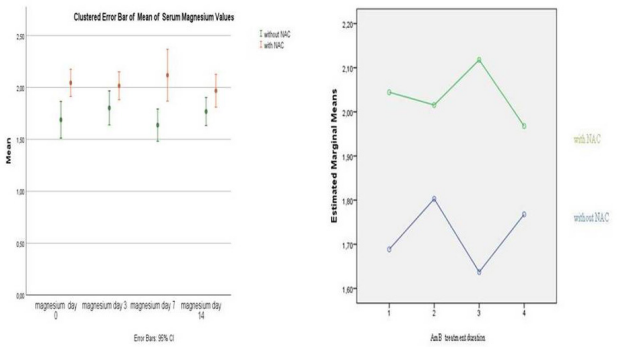

Figure 2. Mean serum magnesium values were statistically significantly higher in NAC received group

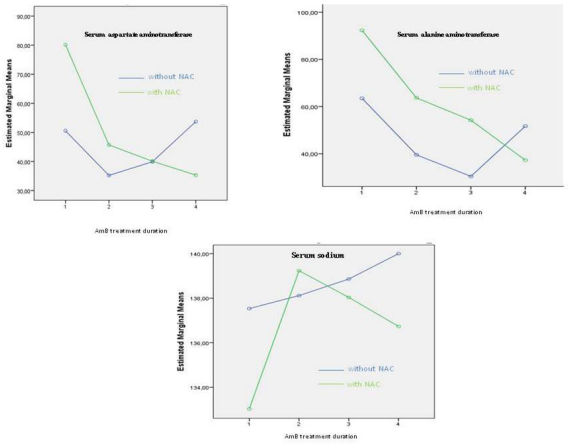

Figure 3. Change of serum aspartate aminotransferase, alanine aminotransferase and sodium levels according to time in 2 groups. Serum ALT value was significantly lower in N

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1444. Urine Screening Prior to Surgical Valve Replacement: Should It Be Performed?

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Background. Screening for and treatment of asymptomatic bacteriuria (ASB) is controversial prior to surgical valve replacement (SVR). The theoretical concern that the bacteria can translocate to the surgical site, causing infective endocarditis (IE), has not been well-described. At our institution, screening for and treatment of ASB is routine prior to SVR. This study aims to identify whether an association exists between ASB and post-op infections in patients undergoing SVR.

Methods. A single-center retrospective study was conducted for patients who had SVR between 2016 and 2018. Pre-op urinalyses (UAs) and cultures, symptoms of UTI, and antibiotic therapy were collected during the 60-day pre-op period. Infections, antibiotic therapy, development of resistance, 30-day readmission rates, and 30- and 90-day mortality rates were collected up to 3 months post-op. Statistical analysis was performed using the Chi-square and Fisher exact tests.

Results. Of the 358 patients who underwent SVR, pre-op UAs were performed in 329 (92%) patients; of whom, 296 (91%) were asymptomatic. Amongst those asymptomatic, 14 (5%) cultures were positive and 11 (79%) positive cultures were treated. Patients with ASB had no difference in post-op infection (1/14 [7%] vs. 32/282 [11%]; $P = 1$), 30-day readmission rate (1/14 [7%] vs. 44/282 [16%]; $P = 0.7$), or 90-day mortality rate (0/14 [0%] vs. 4/282 [1%]; $P = 1$) compared with those with negative urine cultures. Patients who were treated for ASB also showed no difference in these same outcomes compared with those not treated. IE was a complication in 3 of 358 (1%) cases, and none of these patients had ASB or symptomatic UTI prior to surgery. Antibiotic treatment prior to surgery was associated with acquisition of a multi-drug-resistant organism (9/68 [13%] vs. 15/290 [5%]; P = 0.02). There was a trend toward increased 30-day readmission rate (15/68 [22%] vs. 43/290 [15%]; P = 0.15) and development of resistance (1/68 [1%] vs. 0/290 [0%]; P = 0.19) in patients who received pre-op antibiotics.

Conclusion. In this study, ASB prior to SVR was not related to post-op infection, and treatment of ASB did not prevent future infection. Antibiotic treatment prior to SVR was associated with the development of MDROs. Urine screening prior to SVR should be avoided.

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

1445. Antimicrobial Activity of Novel β-Lactamase Inhibitor Combinations Tested against Organisms Causing Complicated Urinary Tract Infections in United States Medical Centers

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Background. High-dose extended-infusion cefepime-tazobactam (FEP-TAZ) is in clinical development at 2g/2g q8 hours administered over 90 minutes. We evaluated the potency and spectrum of activity of FEP-TAZ, ceftolozane–tazobactam (C-T), ceftazidime–avibactam (CAZ-AVI), and comparators tested against gram-negative bacilli (GNB) causing complicated urinary tract infections (cUTIs) in United States (US) hospitals.

Methods. In 2018, 3,023 GNBisolates (1/patient) were consecutively collected and susceptibility tested against FEP-TAZ (TAZ at fixed 8 mg/L) and comparators by