rank sum). None of the azoles prolonged survival despite the significant reduction in the lung fungal burden ($P < 0.002$), possibly due to lack of reduction of fungal burden in kidneys and brains. MICA+ISAV did not enhance survival nor reduce tissue fungal burden vs. placebo.

Conclusion. Despite the *in vitro* activity of tested antifungals, only MICA demonstrated modest efficacy in mice infected with *S. apiospermum*. A combination of MICA+ISAV was ineffective in this model. Continued investigations of other drug combinations to treat scedosporiosis are needed.

Disclosures. **T. Kitt**, Astellas Pharma Inc.: Employee, Salary. **A. S. Ibrahim**, Astellas: Investigator and Research Contractor, Research grant.

2394. Different *Clostridioides difficile* Ribotypes Among Patients With Colonization, Initial Clinical Disease, and Recurrent Clinical Disease

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Background. *C. difficile* is the most common cause of hospital infections with a spectrum of presentation from asymptomatic carriage to severe recurrent diarrhea. Certain *C. difficile* ribotypes are associated with severe disease, but there are little data on ribotypes in asymptomatic carriers or severe recurrent disease. The aim of this study was to compare virulence potential of C.diff ribotypes with clinical disease severity.

Methods. This retrospective study included patients aged ≥18 years at NorthShore University HealthSystem (NUHS) from February 1, 2015 to May 30, 2017. Three groups of patients with positive PCR test for C. diff toxin gene were selected: (1) Asymptomatic patients positive for rectal carriage; (2) symptomatic outpatients with a single positive test (CDI); and (3) patients with recurrent CDI who underwent FMT. Clinical data were extracted from the Enterprise Database Warehouse. Isolates underwent fluorescent PCR ribotyping and were assigned to clades. Ribotypes with "high" (e.g., 027 and 078) and "low" (e.g., 106) virulence potential were defined as such. Virulence potential of cryptic ribotypes were considered "unknown." We used X^2 and independent samples median tests to compare categorical and continuous variables, respectively.

Results. 129 C. diff isolates (asymptomatic, $N = 66$; CDI, $N = 33$; FMT, $N = 30$) were ribotyped with 60 types identified. Median age was higher in asymptomatic patients [80.5 (IQR 70.8–90) years] compared with both CDI and FMT [69 (58–81) and 69 (51–83.5) years, respectively, $P = 0.004$] Low virulence ribotypes were identified more frequently in asymptomatic carriers than those with CDI or FMT (22/66 vs. 8/33 vs. 1/30, respectively, P = 0.006). High virulence ribotypes were found in all groups, with highest frequency in the FMT group (23/30) vs. asymptomatic (25/67) or CDI (13/33), $P = 0.001$).

Conclusion. Patients with severe or recurrent CDI had ribotypes associated with high virulence potential. In addition, asymptomatic carriers were more likely to have ribotypes of C.diff historically associated with a low virulence potential. Molecular C.diff typing may have a role in evaluating asymptomatic C.diff colonization vs. clinical disease.

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

2395. Mechanism-Based-Susceptibility Testing (MBST) Using Disc Diffusion Assays (DDA) to Guide Treatment of Multidrug- and Extensively Drug-Resistant *Pseudomonas aeruginosa* (MDR-XDR-*Pa*) in a Cystic Fibrosis (CF) Lung Transplant Recipient; Are We Ready for Combination Therapy vs. MDR-XDR-*Pa*?

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Background. Lung infections with MDR-XDR-Pa in patients with CF are challenging due to the emergence of antibiotic resistance. We applied MBST with DDA to guide combination antibiotic therapy in an 18-year-old woman with CF. We investigated if this approach can assist in choosing effective regimens.

Methods. Consecutive *Pa* respiratory isolates were collected between 12/16 and 3/18 and typed with MLST. After automated antibiotic susceptibility (AST) and Kirby-Bauer testing, we performed double or triple DDAs. Combinations were based on mechanisms (MBST) of anti-pseudomonal antibiotics (e.g., targeting of penicillin-binding proteins, β-lactamase inhibition, and cell membrane disruption).

Results. During therapy, 1859 antibiotic-days were administered. Fifteen *Pa* isolates, (9 sequence type (ST) 2100 and 1 ST463) with varying AST patterns were found (figure). MBST with DDA revealed active combinations for isolates resistant to individual antibiotics (table). These combinations led to a microbiological response permitting lung transplantation. Antibiotic regimens were also informed by allergies, clinical and radiologic findings.

Conclusion. Strains with evolving resistance profiles recapitulate the dynamic nature of respiratory infections in CF. Double or triple DDAs identified potential treatment options, e.g., vs. MDR-XDR *Pa*. MBST can support the management of challenging infections.

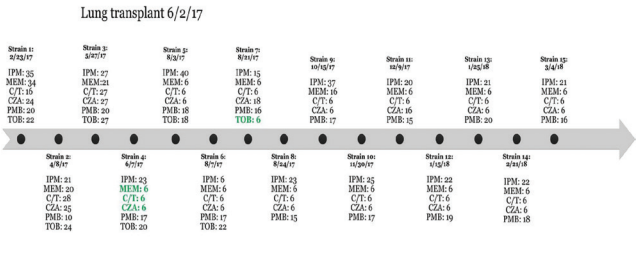
Table: Antimicrobial combinations reflecting zones of inhibition by strain and date.

CZA: ceftazidime–avibactam; C/T: ceftolozane-tazobactam; TOB: tobramycin; PMB: polymyxin B; FOF: fosfomycin; TZP: piperacillin–tazobactam; CIP: ciprofloxacin; IPM: imipenem; MEM: meropenem.

Bold: largest zone

		Combinations + inhibition zones (mm)		
Strain	Date	Combo 1	Combo 2	Combo 3
1	February 23, 2017	CZA + TOB 35	PMB + IPM 38	FOF 40+
2	April 8, 2017	CZA + TOB 31	FOF + CZA 35	PMB + C/T + MEM 39
3	May 27, 2017	FOF + TZP 40	C/T + TOB 37	PMB + CZA 33
4	June 7, 2017	FOF + TZP 15	PMB + CZA + IPM 22	C/T + IPM 24
5	August 3, 2017	FOF + TZP 18	PMB + CZA + IPM 38	C/T + IPM 42
6	August 7, 2017	FOF + TZP 19	PMB + IPM 21	
7	August 21, 2017	FOF + TZP 32	FOF + CZA 26	CZA + TOB 22
8	August 24, 2017	FOF + TZP 28	PMB +I PM 35	C/T + IPM 39
9	October 15, 2017	FOF + IPM 30	PMB + IPM 30	C/T + IPM 30
10	November 30, 2017	PMB+CIP 19	PMB + CZA + IPM 25	PMB + FOF + IPM 25
11	December 9, 2017	FOF + TZP 30	PMB + IPM 25	
12	January 15, 2018	PMB + IPM 23		
13	January 25, 2018	PMB + IPM 26		
14	February 21, 2018	FOF + TZP 20	PMB + CIP 21	
15	March 4, 2018	C/T + IPM 21	CZA + IPM 23	

Timeline of *pseudomonas aeruginosa* isolates depicting gradual emergence of antimicrobial resistance and results of single antibiotic disc diffusion



Bold green items illustrate first instance of resistance to a given antibiotic class
disk diffusion zones are in millimeters
Antibiotic abbreviations are as follows: IPM for imipenem; MEM for Meropenem; C/T for ceftolozane-tazobactam; CZA for ceftazidime-avibactam; PMB for polymyxin; TOB for tobramycin

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2396. Fosfomycin Resistance Among Carbapenem-Resistant Enterobacteriaceae Clinical Isolates in Connecticut, 2017

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Background. Fosfomycin is among the limited treatment options for carbapenem-resistant Enterobacteriaceae (CRE) infections. Despite its use, prevalence of fosfomycin resistance among CRE in the United States is largely unknown. In 2017, submission of Enterobacteriaceae isolates resistant to ≥1 carbapenem became mandated in Connecticut (CT), allowing further characterization at the state public health laboratory (SPHL). We analyzed fosfomycin resistance among CRE isolates in CT during 2017, and explored demographic and molecular factors potentially associated with resistance.

Methods. After confirming carbapenem resistance, SPHL tests fosfomycin susceptibility using disk diffusion. For each CRE patient, the isolate most resistant to fosfomycin was included in this analysis. We used the Clinical and Laboratory Standards Institute (CLSI) fosfomycin breakpoint for *Escherichia coli* (nonsusceptible <16 mm) to evaluate associations among fosfomycin resistance and demographic factors, carbapenemase activity (modified carbapenem inactivation method, mCIM) and carbapenemase genes tested at SPHL. We report fosfomycin resistance rate by European Committee on Antimicrobial Susceptibility Testing (EUCAST, resistance <24 mm for *E. coli*) criteria for comparison.

Results. Among 138 CRE isolates, 39 (28.3%) were fosfomycin nonsusceptible by CLSI criteria. Most nonsusceptible isolates were *Enterobacter cloacae* (18; 46.2%) or *Klebsiella pneumoniae* (17; 43.6%). Isolates from patients aged ≥65 years were more likely to be fosfomycin nonsusceptible than isolates from patients aged <65 years (χ^2 = 3.8; P = 0.050). No other demographic characteristics were statistically significant. Of fosfomycin nonsusceptible isolates, 12 (30.8%) produced a carbapenemase (mCIM-positive), and 9 (23.1%) had the bla_{KPC} gene. By EUCAST criteria, 96 (69.6%) CRE isolates were fosfomycin resistant.

Conclusion. A substantial proportion of CRE in CT during 2017 were fosfomycin nonsusceptible, and nonsusceptibility was associated with older patient age. Fosfomycin resistance risk factors and molecular mechanisms need further exploration. The substantial proportion of isolates with results falling between CLSI and EUCAST breakpoints warrants evaluation.

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

2397. Comparing Predictive Performance of INCREMENT Scores on Mortality Among Patients With Carbapenem-Non-Susceptible (CNS) *Klebsiella pneumoniae* (*Kp*) and *Enterobacter cloacae* Complex (*Ecc*) Bloodstream Infections (BSI) in the Veterans Health Administration (VHA)

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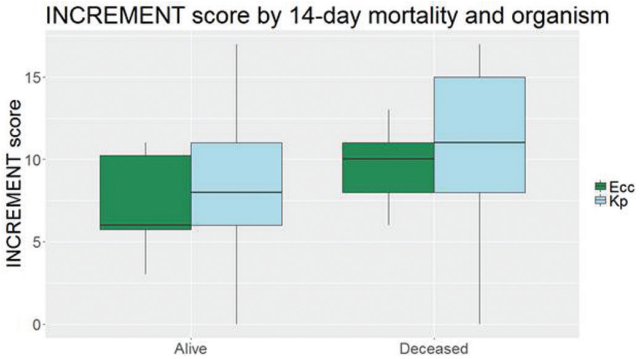
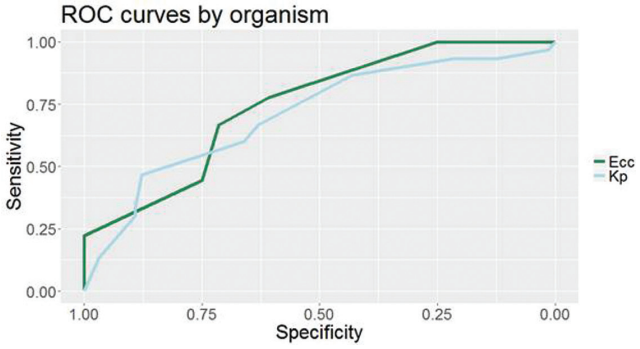
Background. INCREMENT is an international collaborative study of BSI caused by extended-spectrum β-lactamase (ESBL) or carbapenemase-producing *Enterobacteriaceae* (CPE) that has developed and validated predictive models for mortality. Most CNS *Enterobacteriaceae* BSI in the VHA are either *Klebsiella pneumoniae* (*Kp*) or *Enterobacter cloacae* complex (*Ecc*). We applied the INCREMENT score for CPE to predict mortality in patients with CNS-*Kp* and CNS-*Ecc* BSIs in the VHA and compared the distribution and predictive performance of the score across organisms.

Methods. Using nationwide VHA databases, unique patients in the continental United States with *Kp* or *Ecc* BSI post 48 hours of hospitalization from 2006 to 2015 were identified. Isolates with intermediate susceptibility or resistance to any tested carbapenem were considered non-susceptible. We used databases and medical records to obtain clinical characteristics, treatment, and outcomes, and applied INCREMENT criteria and definitions to calculate a prediction score. We compared the distribution of the scores by organism and used receiver operating curve methods to compare predictive performance between *Kp* and *Ecc* BSI.

Results. We identified 57 patients with CNS-*Ent* and 140 with CNS-*Kp* BSI. The demographics and infection characteristics were highly consistent across organisms, both afflicting patients who were predominantly male, older and chronically ill. Mortality at 14 days was 39% in CNS-*Ecc* and 38% in CNS-*Kp*. Similar proportions (65% of *Ecc* and 68% of *Kp*) met the criteria for an INCREMENT score: monomicrobial and alive over 48 hours after culture specimen. The distribution of scores was similar within mortality outcomes across organisms, with the highest scores observed in *Kp* patients who died (Figure 1). The ROC areas under the curve were 0.71 for CNS-*Ecc* and 0.75 for CNS-*Kp* (Figure 2). A multivariable logistic model predicting mortality detected neither an organism effect nor an interaction of organism and INCREMENT score.

Conclusion. The INCREMENT score, validated in a CPE cohort predominantly comprised of *Kp*, performed similarly well across CNS-*Ent* and CNS-*Kp* patients in our cohort. This suggests the model is robust to CNS organisms of undetermined resistance mechanism and that the association between INCREMENT and mortality is consistent across *Kp* and *Ecc*.





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

2398. Utilization Practices of Ceftazidime–Avibactam at Academic Medical Centers in the United States

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Background. Ceftazidime–avibactam (CAV) was US FDA-approved for complicated intra-abdominal/urinary tract infections in 2015, and for hospital-acquired/ventilator-associated pneumonia in 2018. However, little is known about its real-world use.

Methods. Encounters of inpatients receiving CAV at academic hospitals in the Vizient™ Clinical Resource Manager were identified (CAV encounters). CAV administered for ≤2 consecutive days during an encounter or any duration of CAV within 2 days of admission (excluding acute care hospital transfers) was considered empiric therapy. Targeted therapy was defined as ≥4 consecutive days or death within 2 days of therapy; empiric and targeted therapy cohorts were mutually inclusive. CAV-encounter characteristics, use patterns and Infectious Disease (ID) consultation were examined. Quarterly hospital uptake of CAV and % change in CAV encounter prevalence (using Poisson regression) were calculated.

Results. From January 2015 to December 2017, 20,590 CAV doses occurred in 2,128 encounters among 1,652 patients. Mean duration of therapy was 8 ± 7.9 days (range 1–86); overall mortality was 24%. The number of hospitals prescribing CAV increased from 5 to 92/168 and quarterly prevalence of CAV encounters increased from 5/10,000 hospitalizations in 2015q1 to 9.8 in 2017q4 (% change=2.1[0.7–3.6] %/quarter; (P = 0.004). Therapy was empiric in 904 (42%) encounters and targeted in 1,472 (69%); 63% of empiric CAV was initiated within 2 days of admission. CAV was initiated in the ICU in 862 (40.5%) encounters. Infection site was coded as respiratory in 34%, urinary in 26% and abdominal in 16% of encounters. Within 31 hospitals reporting consultant specialty, 29% of targeted therapy occurred without ID consultation. For targeted therapy encounters, CAV monotherapy occurred in 841 (57%) and