

Session: 250. Treatment of AMR Infections
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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 ($\chi^2 = 3.8$; $P = 0.050$). 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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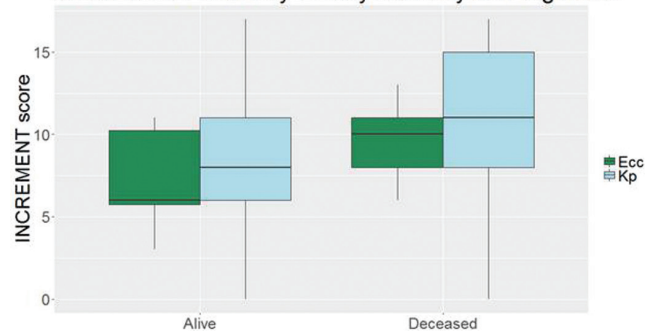
Background. INCREMENT is an international collaborative study of BSI caused by extended-spectrum β -lactamase (ESBL) or carbapenemase-producing Enterobacteriaceae (CPE) that has developed and validated predictive models for mortality. Most CNS Enterobacteriaceae BSI in the VHA are either *Klebsiella 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.

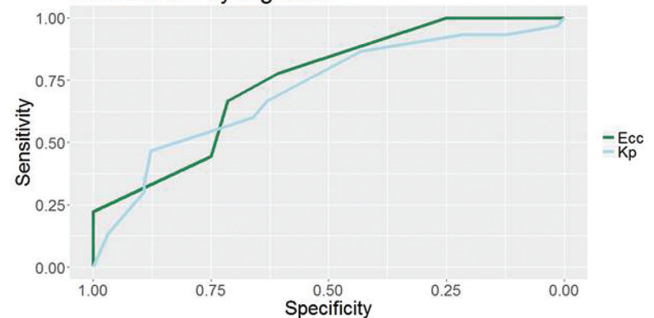
Results. We identified 57 patients with CNS-*Ent* and 140 with CNS-*Kp* BSI. The demographics and infection characteristics were highly consistent across organisms, both afflicting patients who were predominantly male, older and chronically ill. Mortality at 14 days was 39% in CNS-*Ecc* and 38% in CNS-*Kp*. 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*.

INCREMENT score by 14-day mortality and organism



ROC curves by organism



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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 VizientTM 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 (4% 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