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β-Lactam therapy for potential AmpC-producing organisms: a cohort study and an updated systematic review and meta-a#nalysis

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combination therapy in 631 (43%) encounters, which most often included aminoglycosides, colistin or tigecycline. Mortality was 22% in the monotherapy and 25% in the combination therapy group ($P = 0.08$).

Conclusion. CAV use across US academic medical centers has increased modestly over 3 years. More than 40% of CAV prescriptions appear to be empiric and targeted therapy often occurs without ID consultation at academic centers.

Table 1: Demographics for Encounters Receiving Ceftazidime-avibactam

Variable	Encounters receiving ceftazidime-avibactam N = 2128 (%)
Age (median and IQR)	56 (27)
Sex	
Male	1254 (59)
Female	874 (41)
Race	
White	1358 (64)
African American	462 (22)
Other	240 (11)
Unknown	68 (3)
Comorbid condition	
Congestive heart failure	501 (24)
Diabetes mellitus	810 (38)
Transplant	141 (7)
Malignancy	86 (4)
Dialysis	202 (9)
Tracheostomy	423 (20)
Chronic kidney disease	667 (31)
Presumed site of infection[#]	
Abdominal	330 (16)
Bacteremia	100 (5)
Central nervous system	8 (0.4)
Central venous catheter	136 (6)
Respiratory	720 (34)
Skin/soft tissue	167 (8)
Urinary	557 (26)
Unknown/other	656 (31)
Admission APR DRG Severity of Illness assignment*	
Minor	12 (1)
Moderate	153 (8)
Major	669 (33)
Extreme	1204 (59)
Hospital Region	
Midwest	30 (33)
Northeast	27 (29)
South	21 (23)
West	14 (15)
Length of stay (median days and IQR)	19 (31)
ICU stay	862 (41)

[#]Not mutually exclusive
*1 Encounter missing APR DRG SOI data
APR DRG= All patients refined diagnosis related groups (provided by 3M™)

Figure 1A: Cumulative Increase in the Number of Hospital Prescribing Ceftazidime-avibactam within the Vizient Database (168 hospitals) by Quarter, 2015q1–2017q4

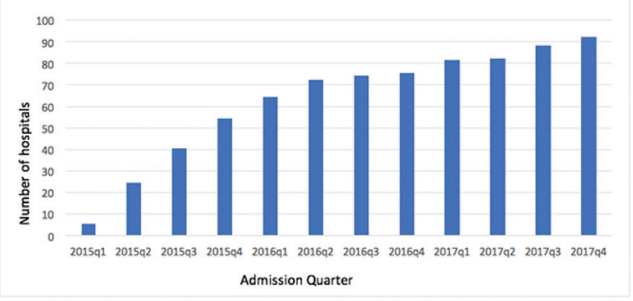
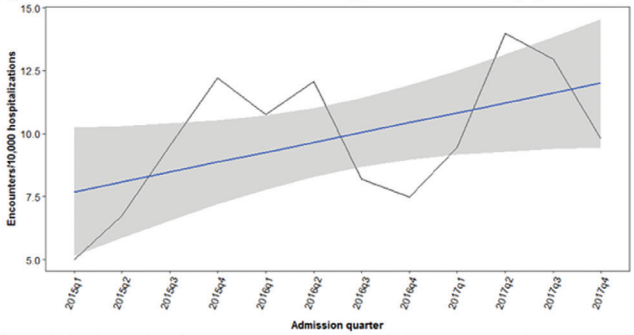
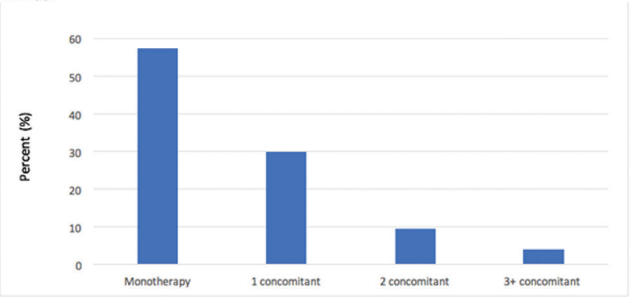


Figure 1B Trends in the Number of Encounters Prescribing Ceftazidime-Avibactam by Quarter



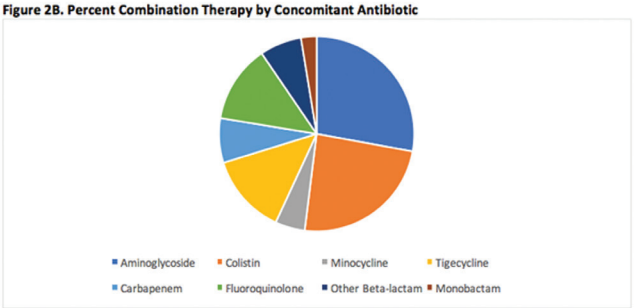
*Rate calculated as number of encounters receiving CA per total admissions in hospitals prescribing ceftazidime-avibactam by quarter.
**Quarterly Percent Change: 2.1 [0.7-3.6], (p=0.004)

Figure 2A. Percent of Targeted Therapy Encounters that Received Monotherapy versus Combination Therapy.



*Concomitant antibiotic was any of the select gram-negative active antibiotics (see below) prescribed for 3 consecutive days in addition to ceftazidime-avibactam, except for aminoglycosides which could be prescribed on day 1 and day 3 of the overlap period

Figure 2B. Percent Combination Therapy by Concomitant Antibiotic



*Aminoglycoside (amikacin, gentamicin, tobramycin), Carbapenem (ertapenem, doripenem, imipenem, meropenem), Fluoroquinolone (ciprofloxacin, levofloxacin), Other β-lactam (piperacillin-tazobactam, ampicillin-sulbactam, ceftazidime, cefepime), Monobactam (aztreonam)
[#]Reserve agents include: aminoglycosides, colistin, and tigecycline
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Disclosures. **All authors:** No reported disclosures.

2399. β-Lactam Therapy for Potential AmpC-Producing Organisms: A Cohort Study and an Updated Systematic Review and Meta-Analysis

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Background. Certain organisms, including *Serratia, Providentia, Acinetobacter, Citrobacter, Enterobacter*, and *Morganella* species (SPACE-M) may possess an inducible broad-spectrum β-lactamase, AmpC, which is not inhibited by most β-lactamase inhibitors. Our objective was to determine whether treating SPACE-M bloodstream infections (BSI) with potentially hydrolyzable β-lactams was associated with increased risk of 30-day mortality.

Methods. A retrospective cohort study was performed including all adult cases of bacteremia attributed to SPACE-M species between April 2010 and June 2015 at the McGill University Health Centre (Montreal, Canada). We used multivariable logistic regression to estimate the odds ratio (OR) of death or recurrence within 30 days for potentially hydrolyzable β-lactams vs. other therapies. We then updated a systematic review and meta-analysis comparing carbapenems to β-lactam/β-lactamase inhibitors (BL/BLIs). We included studies published up to December 31, 2017 and calculated the unadjusted OR for mortality within 30 days comparing BL/BLI vs. carbapenems as definitive therapy.

Results. Over the 5-year period, there were 173 BSI involving SPACE-M organisms at our center. After adjusting for patient comorbidities and severity of the initial illness, the use of hydrolyzable β-lactams as definitive therapy was not associated with an increased risk of death or recurrence when compared with other antimicrobial agents (OR 1.20, 95% CI 0.40–3.62). The meta-analysis further suggested that patients treated with BL/BLI therapy have similar outcomes to those treated with carbapenems (30-day mortality OR 1.13, 95% CI 0.58–2.20).

Conclusion. The use of β-lactam/β-lactamase inhibitors may remain a viable carbapenem-sparing option for patients with potential AmpC-producing organisms.

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