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842. Impact of Active Treatment of Carbapenem-Resistant *Acinetobacter baumannii* Infections in US Hospitals Between 2014 and 2019

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Session: P-36. HAI: Gram-negatives (MDR-GNR)

Background. Treatment choices for carbapenem-resistant (CR) *Acinetobacter baumannii* infections are limited. We analyzed the impact of active treatment on outcomes in patients infected with CR vs carbapenem-susceptible (CS) *A. baumannii*.

Methods. Adult patients hospitalized between January 1, 2014 and June 30, 2019 with *A. baumannii* infections recorded in the Premier Database were retrospectively evaluated. Outcomes including mortality, discharge status (home vs other), and re-admission rates were calculated as a function of receipt of active antibiotic treatment, infection site, and CR status. Antibiotic therapy was considered active if given after the index culture and displaying *in vitro* susceptibility.

Results. Among 3,500 patients with *A. baumannii* (CR n=1,608; CS n=1,892), 2,057 patients (58.8%) received active treatment, with a much lower proportion of CR *A. baumannii* patients receiving active treatment than CS patients (606 [37.7%] vs 1,451 [76.7%]). Patients without active treatment had similar rates of in-hospital mortality (14.3% vs 12.9%, *P*=0.25) but were less likely to be discharged to home (26.3% vs 37.0%, *P*< 0.001) than those that received active treatment. No association between receipt of active treatment and overall mortality or discharged status was demonstrated for CR isolates (Table 1). However, among the subset of patients with CR bloodstream infections, mortality was higher in those without active treatment compared to those with active treatment (55.1% vs 25.9%, *P*=0.009). Overall readmission rates due to *A. baumannii* were considerably higher for those who did not receive active treatment vs those who did (16.0% vs 7.5%, *P*< 0.001) and the same was seen by differing infection sites; primarily driven by CR patients with bloodstream, respiratory, or urine infections (Table 2).

Table 1. Mortality and discharge status by active treatment and carbapenem susceptibility

Table 1. Mortality and discharge status by active treatment and carbapenem susceptibility

	Overall			Carbapenem Resistant (CR)			Carbapenem Susceptible (CS)		
Infection site	Total N	Death n (%)	Discharge home n (%)	Total N	Death n (%)	Discharge home n (%)	Total N	Death n (%)	Discharge home n (%)
Active treatment									
Blood	345	47 (13.6)	150 (43.5)	58	15 (25.9)	9 (15.5)	287	32 (11.1)	141 (49.1)
Respiratory	692	171 (24.7)	124 (17.9)	289	66 (22.8)	36 (12.5)	403	105 (26.1)	88 (21.8)
Urine	200	7 (3.5)	97 (48.5)	48	2 (4.2)	12 (25.0)	152	5 (3.3)	85 (55.9)
Wound	636	29 (4.6	293 (46.1)	170	12 (7.1)	26 (15.3)	466	17 (3.6)	267 (57.3)
Other	184	12 (6.5)	97 (52.7)	41	5 (12.2)	13 (31.7)	143	7 (4.9)	84 (58.7)
Total	2057	266 (12.9)	761 (37.0)	606	100 (16.5)	96 (15.8)	1451	166 (14.4)	665 (45.8)
Not active treatment									
Blood	127	49 (38.6)	33 (26.0)	69	38 (55.1)	6 (8.7)	58	11 (19.0)	27 (46.6)
Respiratory	515	108 (21.0)	58 (11.3)	406	85 (20.9)	31 (7.6)	109	23 (21.1)	27 (24.8)
Urine	171	11 (6.4)	51 (29.8)	129	9 (7.0)	26 (20.2)	42	2 (4.8)	25 (59.5)
Wound	512	25 (4.9)	200 (39.1)	316	20 (6.3)	76 (24.1)	196	5 (2.6)	124 (63.3)
Other	118	13 (11.0)	38 (32.2)	82	12 (14.6)	14 (17.1)	36	1 (2.8)	24 (66.7)
Total	1443	206 (14.3)	380 (26.3)	1002	164 (16.4)	153 (15.3)	441	42 (9.5)	227 (51.5)

Table 2. Readmission due to A. baumannii by active treatment and CR status among patients discharged alive

Table 2. Readmission due to *A. baumannii* by active treatment and CR status among patients discharged alive.

	Active treatment			Not active treatment		
	Overall	CR	CS	Overall	CR	CS
Total, N	1791	506	1285	1278	864	414
n (%)	135 (7.5)	84 (16.6)	51 (4.0)	204 (16.0)	183 (21.2)	21 (5.1)
Blood, N	298	43	255	80	31	49
n (%)	13 (4.4)	5 (11.6)	8 (3.1)	8 (10.0)	7 (22.6)	10 (2.0)
Respiratory, N	521	223	298	422	333	89
n (%)	47 (9.0)	34 (15.2)	13 (4.4)	85 (20.1)	76 (22.8)	9 (10.1)
Urine, N	193	46	147	164	123	41
n (%)	18 (9.3)	8 (17.4)	10 (6.8)	34 (20.7)	32 (26.0)	2 (4.9)
Wound, N	607	158	449	501	303	198
n (%)	43 (7.1)	27(17.1)	16 (3.6)	62 (12.4)	55 (18.2)	7 (3.5)
Other, N	172	36	136	111	74	37
n (%)	14 (8.1)	10 (27.8)	4 (2.9)	20 (18.0)	13 (17.6)	7 (18.9)

CR, carbapenem resistant; CS, carbapenem susceptible

Conclusion. Active antibiotic therapy was associated with improved outcomes in patients with *A. baumannii* infections, although perhaps not to the extent expected. Further investigation into the impact of active therapy on outcomes is warranted.

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843. Increased Carbapenemase Testing Following Implementation of VA Guidelines for Carbapenem-Resistant Enterobacteriaceae (CRE)

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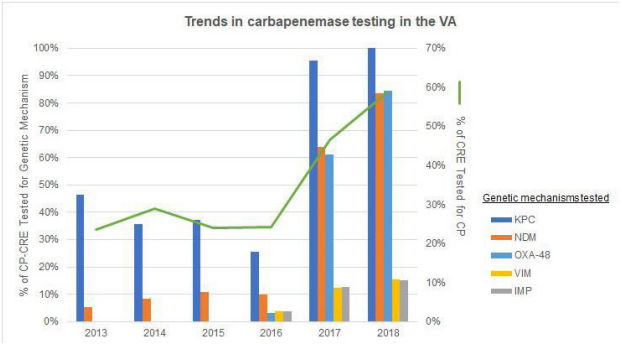
Session: P-36. HAI: Gram-negatives (MDR-GNR)

Background. Carbapenem-resistant *Enterobacteriaceae* (CRE) are a substantial burden, with recent data showing no change in hospital CRE between 2012-2017. All carbapenemases produced by CRE have been identified in the U.S., however trends in testing and detection over time have not been well described.

Trends in carbapenemase testing in the VA, 2013-2018



Methods. A retrospective cohort study of Veterans hospitalized between 2013-2018 with CRE cultures defined by either 2015 or 2017 VA guidelines. In general, this was *Escherichia coli*, *Klebsiella pneumoniae/oxytoca*, or *Enterobacter* spp. non-susceptible to imipenem, meropenem, and/or doripenem, and to 3rd generation cephalosporins for 2015 definition. Testing for *Klebsiella pneumoniae* carbapenemase (KPC), New Dehli metallo-β-lactamase (NDM), Verona integron-encoded metallo-β-lactamase (VIM), Imipenemase (IMP), and Oxacillinase-48-like (OXA-48) was summarized with descriptive statistics. Facility characteristics assessed included region, complexity, and rurality.

Results. Out of 5,778 CRE cultures, 1,900 (32.9%) were tested for carbapenemases and 1,612 (84.8%) of these had carbapenemases detected. Among CP-CRE cultures, 1,042 (64.6%) had testing for ≥1 genetic mechanism; all tests included KPC. Testing for NDM (n=585, 56.1%), VIM (n=102, 9.8%), IMP (n=102, 9.8%), and OXA-48 (n=507, 48.7%) was less frequent. KPC was detected in 915/1,042 cultures (87.8%), while NDM (n=7/585, 1.2%) was rarely detected. There were no cases of VIM, IMP, or OXA-48. Carbapenemase testing increased significantly over the study period; KPC, NDM, and OXA-48 were the predominant mechanisms tested (Figure 1). The South (38.6%) and Northeast (37.2%) had the highest proportion of CRE with carbapenemase testing. High complexity (vs low) and urban (vs rural) facilities were significantly associated with carbapenemase testing (p< 0.001).

Conclusion. Following publication of initial CRE guidelines in 2015, carbapenemase testing and detection increased in the VA, although tests for non-KPC carbapenemases were less frequent. Surveillance of non-KPC carbapenemases is important due to global dissemination and enhanced antibiotic resistance. Efforts should support carbapenemase testing in low complexity, rural facilities in the Midwest and West.

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844. Nosocomial *Pseudomonas aeruginosa* Blood-Stream Infections; Susceptibility Pattern and Mortality at a Tertiary Care Centre in Edmonton, Alberta, Canada

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Session: P-36. HAI: Gram-negatives (MDR-GNR)

Background. *Pseudomonas aeruginosa* is one of the leading gram negative nosocomial pathogens, causing severe infections including blood-stream infections