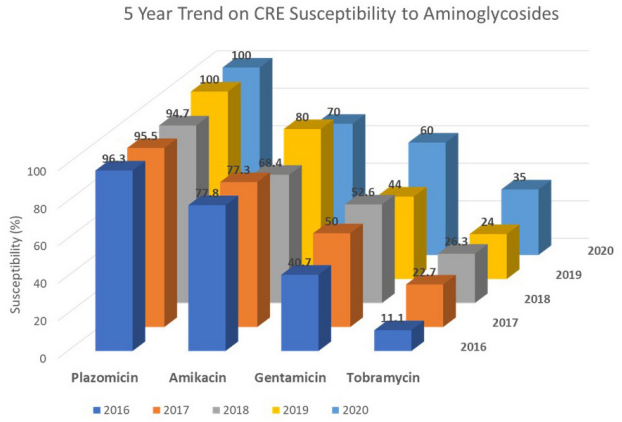

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1268. *In Vitro* Activity of Ceftazidime-Avibactam and Comparators against KPC-Producing Enterobacterales and *Pseudomonas aeruginosa* Collected in China as Part of the ATLAS Global Surveillance Program in 2019

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Session: P-72. Resistance Mechanisms

Background. Among Gram-negative bacteria, the rapid spread of carbapenemases has limited therapeutic options. *Klebsiella pneumoniae* carbapenemase (KPC), an Ambler class A serine β-lactamase, presents a particular challenge as it has become widespread, first identified in an isolate collected in the United States and thereafter moving throughout the world, including China. Fortunately, the β-lactamase inhibitor avibactam is a potent inhibitor of KPC, rendering many Enterobacterales and some *P. aeruginosa* isolates that carry KPC susceptible to ceftazidime-avibactam (CAZ-AVI) *in vitro*. This study reports on the *in vitro* activity of CAZ-AVI and comparators against Enterobacterales and *P. aeruginosa* isolates collected in China as part of the Antimicrobial Testing Leadership and Surveillance (ATLAS) program in 2019.

Methods. 1,443 non-duplicate Enterobacterales and 522 *P. aeruginosa* isolates were collected from 17 clinical sites in China in 2019. Susceptibility testing was done using broth microdilution according to CLSI guidelines and interpreted using CLSI 2021 breakpoints. 143/177 meropenem non-susceptible Enterobacterales isolates and 150/187 meropenem non-susceptible *P. aeruginosa* isolates were interrogated by whole genome sequencing (WGS; Illumina 2x150 bp reads).

Results. Enterobacterales isolates exhibited higher % susceptibility (% S) to CAZ-AVI than all comparators tested (96.0% S; Table). The addition of AVI to CAZ resulted in an increase in susceptibility from 61.3% to 96.0% in the overall collection of Enterobacterales isolates. 96.0% of KPC-positive Enterobacterales, and 67.8% of the meropenem non-susceptible sub-population were susceptible to CAZ-AVI, against which comparators were less active (≤42.9 % S). Among *P. aeruginosa* isolates, 89.8% were susceptible to CAZ-AVI, more than for any comparator except amikacin (AMK; 94.4% S). Against meropenem non-susceptible and KPC-carrying *P. aeruginosa* sub-populations more were susceptible to CAZ-AVI (75.9% and 83.3% S, respectively) and AMK (87.2% and 100% S, respectively) than to other comparators (≤40.6% and ≤8.3% S, respectively).

Results Table

Organism group	Antimicrobial (MIC_{90} [µg/mL]/% Susceptible)									
Phenotype/genotype (n)	CAZ-AVI		CAZ		MEM		AMK		TZP	
Enterobacterales All (1,443)	2	96.0	>128	61.3	>16	87.7	16	91.5	>64	72.8
Enterobacterales MEM-NS (177)	>64	67.8	>128	0.6	>16	0.0	>64	42.9	>64	1.1
Enterobacterales KPC positive (99)	4	96.0	>128	0.0	>16	1.0	>64	33.3	>64	1.0
P. aeruginosa All (522)	64	89.8	128	66.5	16	64.2	8	94.4	>64	44.6
P. aeruginosa MEM-NS (187)	>64	75.9	>128	40.6	>16	0.0	>64	87.2	>64	15.5
P. aeruginosa KPC positive (12)	>64	83.3	>128	8.3	>16	0.0	8	100	>64	0.0

CAZ-AVI, ceftazidime-avibactam; CAZ, ceftazidime; MEM, meropenem; AMK, amikacin; TZP, piperacillin-tazobactam; NS, non-susceptible.

Conclusion. CAZ-AVI demonstrated very good *in vitro* activity against Enterobacterales and *P. aeruginosa* isolates from China, including those that harbor KPC.

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1269. Infection, Clinical Syndromes and Antimicrobial Resistance by *Aeromonas* species: 13-Year Experience with an Emerging Pathogen at a Tertiary Care Center

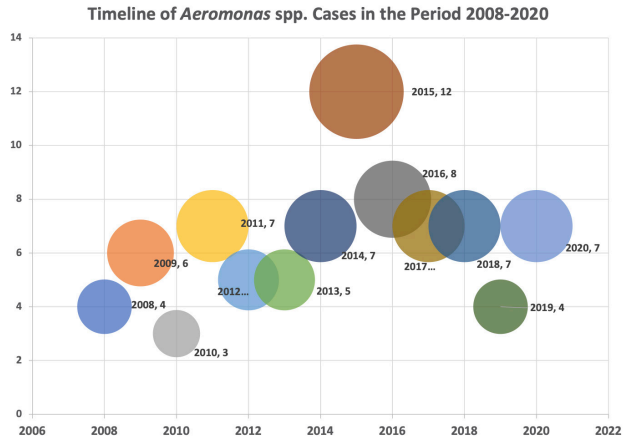
Roberto Pineda-Reyes, MD[1]; Joseph Orndorff, DO[1]; David Reynoso, MD, PhD[1]; [1]University of Texas Medical Branch, Galveston, Texas

Session: P-72. Resistance Mechanisms

Background. *Aeromonas* spp. are emerging pathogens that cause a wide breadth of clinical syndromes, ranging from acute gastroenteritis to skin and soft tissue infections, sepsis, and "flesh-eating" necrotizing fasciitis. Aeromonads have been associated with natural disasters and have predominance in estuarine ecosystems, generating a negative impact on the fishing industry and aquaculture, as well as morbidity and mortality in human populations at risk. Antimicrobial resistance patterns differ by geographic locations worldwide, and studies to guide the therapy in the era of multidrug resistance are lacking in the US.

Methods. A retrospective case series was designed to chart review all adult subjects who had culture proven *Aeromonas* spp. infections during the period 2008-2020. Demographic data, water exposure, clinical syndromes on presentation, origin (community-acquired vs. nosocomial) and severity of infection, antibiograms, empirical antibiotics, time-to-appropriate therapy, and treatment outcomes were collected.

Results. Eighty-two subjects were included in the analysis. Demographic and clinical data is summarized in Table 1. Near 20% individuals had water exposure, including 53% of those with traumatic wound infections. Skin and soft tissue infection (including traumatic and surgical wound infections) was the most frequent clinical syndrome (51.2%). Sepsis was present on admission in 33% inpatients. Appropriate antibiotics were instituted in a median of 2 days (IQR=1-5), and the most prescribed empiric agents were piperacillin-tazobactam (48%) and meropenem (13.3%). Most isolates were susceptible to cefepime (70/71, 98.6%), levofloxacin (72/78, 92.3%) and TMP-SMX (69/78, 88.5%). Resistance to meropenem was reported in 18/31 isolates (58.1%) after 2015. Treatment failure was identified in 32.3% cases.



Most cases (55%) were encountered during the months of spring and summer, which have warmer temperatures and seasonal heavy rains. Tropical storms caused significant flooding in the Galveston Bay area and Southeast Texas during the summer of 2015, which interestingly coincides with the high number of cases. However, following Hurricane Ike in 2008 or Hurricane Harvey in 2017, the number of cases did not significantly increase.

Table 1. Demographic and clinical data of 82 subjects with infections by *Aeromonas* spp.

Variable	n	(%)	Variable	n	(%)
Age	45.15 (SD 18.13)		**Specimen source**		
Sex			Blood	9	(11)
Male	52	(63.4)	Wound	47	(57.3)
Female	30	(36.6)	Stool	2	(2.4)
Immune status			Urine	5	(6.1)
Diabetes	18	(58.1)	Other body fluid	14	(17.1)
Cirrhosis	4	(12.9)	Quantitative	10	(12.2)
HIV	1	(3.2)	**Clinical Setting**		
Transplant	1	(3.2)	Outpatient	16	(19.5)
Autoimmune or rheumatologic disease	1	(3.2)	Inpatient	66	(80.5)
Corticosteroid therapy	1	(3.2)	**Monomicrobial infection**	22	(26.8)
Active malignancy	11	(35.5)	**Polymicrobial infection**	60	(73.2)
Ongoing chemotherapy	2	(6.5)	**Severity of disease**		
Ongoing other immunosuppressants	2	(6.5)	Uncomplicated	46	(56.1)
Clinical Syndrome on presentation			Complicated	36	(43.9)
Intraabdominal			**Sepsis**		
Diarrhea	3	(3.7)	Present on admission	22	(26.8)
Gastroenteritis	4	(4.9)	Hospital-acquired	5	(6.1)
Colitis	1	(1.2)	No sepsis	55	(67.1)
Cholecystitis	2	(2.4)	**ICU admission**		
Cholangitis	5	(6.1)	Yes	31	(37.8)
Peritonitis	3	(3.7)	No	51	(62.2)
Community-acquired pneumonia	1	(1.2)	**Treatment outcome**		
Skin & soft tissue infection	16	(19.5)	Successful	48	(58.5)
Traumatic wound infection	15	(18.3)	Failure	23	(28)
Surgical wound infection	9	(11)	Unable to determine	11	(13.4)
Necrotizing fasciitis	2	(2.4)	**30-day All-cause Mortality**		
Urinary tract infection	4	(4.9)	Yes	8	(9.8)
Burns	21	(25.6)	No	70	(85.4)
			Unable to determine	4	(4.9)

Conclusion. Aeromonads are emerging pathogens that cause mainly intraabdominal and skin and soft tissue infections. Their incidence is seasonal (55% cases in spring and summer) and it is associated with water exposure in more than half of those with traumatic wound infections. In subjects with specific risk factors, the use of carbapenem-sparing strategies, such as 3rd or 4th generation cephalosporins, fluoroquinolones or TMP-SMX, may improve outcomes.

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1270. Molecular Characterization of Carbapenemase Producing Enterobacterales, *Acinetobacter* spp. and *Pseudomonas* spp. in Nosocomial and Community-acquired Clinical Isolates in Bogota, Colombia

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Session: P-72. Resistance Mechanisms

Background. Antimicrobial resistance (AMR) in low-income and middle-income countries (LMICs) is a public health problem. AMR is a concerning problem in Gram-negative bacteria such are Enterobacterales, which are frequently carbapenem-resistant pathogens (CRP), and few therapeutic options are available. However, scarce data is known regarding the clinical, molecular characteristics, and clinical outcomes of patients infected with carbapenem-resistant pathogens in LMICs. Thus, this study will attempt to bring novel data in these regards.

Methods. This is a retrospective cohort study conducted in two reference hospitals in Colombia, South America. All consecutive patients infected with CRPs between 2017 and 2021 were included. Clinical data were gathered by retrospective chart review. Bacterial pathogens and antibiotic susceptibility were prospectively identified and stored by each hospital. Molecular characterization was performed by PCR in isolated bacteria.