

Session: P061 In vitro activity of avibactam

Category: 3b. Resistance surveillance & epidemiology: Gram-negatives24 April 2017, 12:30 - 13:30
P1294**A global assessment of the in-vitro activity of ceftazidime-avibactam and comparator agents against Gram-negative isolates from paediatric patients**Meredith Hackel¹, Daniel Sahm², Gregory Stone³¹*International Health Management Associates, Inc.*²*Ihma; Microbiology*³*Astrazeneca Pharmaceuticals*

Background: Avibactam is a novel non- β -lactam β -lactamase inhibitor that restores the *in vitro* activity of ceftazidime against Enterobacteriaceae that produce class A (including KPC), class C, and some class D β -lactamases. As such ceftazidime-avibactam could be an effective agent for managing certain infections encountered in pediatric populations. Therefore, in this study we evaluated the *in vitro* activity of ceftazidime-avibactam and comparator agents against a collection of Enterobacteriaceae from pediatric patients collected globally in the 2014–2015 INFORM surveillance program.

Material/methods: 2,143 Enterobacteriaceae and 660 *Pseudomonas aeruginosa* non-duplicate isolates from complicated intraabdominal, complicated urinary tract, complicated skin and skin structure and lower respiratory tract infections were collected from pediatric (age ≤ 17 years) patients in 2014-2015. MICs were determined using CLSI broth microdilution guidelines. The percent susceptible (% S) was assessed using the FDA breakpoint of ≤ 8 mg/L for ceftazidime-avibactam and EUCAST breakpoints for comparators.

Results: 99.2% of all Enterobacteriaceae, including 98.1% of *K. pneumoniae* and 99.6% of *E. coli*, and 95.3% of *P. aeruginosa* were susceptible to ceftazidime-avibactam at the FDA breakpoint of 8 mg/L. Ceftazidime-avibactam was the most active drug tested against Enterobacteriaceae, followed by meropenem (98.4% S). Results are summarized by region below.

Organism	Percent Susceptible				
	Global	AP	Europe	LA	ME
Enterobacteriaceae	N=2143	N=245	N=1202	N=367	N=329
CAZ-AVI	99.2	98.8	99.5	98.6	99.1

CAZ	74.4	73.9	78.0	68.4	68.4
FEP	76.4	79.6	79.5	71.1	68.7
MER	98.4	99.2	98.3	97.6	99.1
TZP	78.4	85.3	79.3	73.6	75.4
<i>Klebsiella pneumoniae</i>	N=642	N=76	N=343	N=114	N=109
CAZ-AVI	98.1	96.1	98.8	98.3	97.3
CAZ	59.4	61.8	64.4	50.0	51.4
FEP	61.2	67.1	65.9	51.8	52.3
MER	95.6	97.4	94.8	95.6	97.3
TZP	60.8	73.7	62.4	50.9	56.9
<i>Escherichia coli</i>	N=736	N=84	N=442	N=106	N=104
CAZ-AVI	99.6	100	99.8	98.1	100
CAZ	80.0	75.0	85.3	71.7	70.2
FEP	78.3	79.8	82.8	70.8	65.4
MER	99.6	100	99.8	98.1	100
TZP	87.0	90.5	89.1	80.2	81.7
<i>Pseudomonas aeruginosa</i>	N=660	N=85	N=330	N=138	N=107
CAZ-AVI	95.2	95.3	95.5	92.8	97.2
CAZ	85.2	80.0	87.9	75.4	93.5
FEP	88.0	89.4	87.6	84	94
MER	81.7	77.7	80.9	76.1	94.4
TZP	80.2	75.3	83.0	71.7	86.0

CAZ-AVI, ceftazidime with 4 µg/mL avibactam; CAZ, ceftazidime; FEP, cefepime; MER, meropenem; TZP, piperacillin tazobactam

Conclusions: Ceftazidime-avibactam demonstrated potent activity against Enterobacteriaceae and *P. aeruginosa* isolated from a global population of pediatric patients, with no notable differences between regions. These findings indicate that ceftazidime-avibactam could be an effective agent for managing and treating certain infections encountered in pediatric populations.