P0334
Paper Poster Session
Susceptibility trends for old and new antibiotics

Activity of ceftazidime-avibactam against carbapenem-non-susceptible Enterobacteriaceae with and without additional ESBL and/or class C beta-lactamases isolated from a global surveillance programme, 2012–2014

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Background: Carbapenem resistance in *Enterobacteriaceae* can be mediated through expression of serine carbapenemases (KPC, OXA-48-like), metallo β-lactamases (MBLs), or extended-spectrum-β-lactamases (ESBLs) and AmpC cephalosporinases combined with changes in membrane permeability. Treatment options for carbapenem-resistant *Enterobacteriaceae* (CRE) are limited. We evaluated the *in vitro* activity of ceftazidime-avibactam against CRE collected globally in 2012–2014 through the INFORM surveillance program.

Material/methods: 805 CRE isolates were collected from 109 sites in 35 countries. Susceptibility testing was performed by broth microdilution and interpreted using FDA breakpoints (ceftazidime-avibactam; ≤8 mg/L [susceptible]; ≥16 mg/L [resistant]). Ceftazidime-avibactam was tested with doubling dilutions of ceftazidime at a fixed concentration of 4 mg/L avibactam. Isolates were screened for the presence of β-lactamase genes using PCR and microarray, followed by sequencing.

Results: 689 CRE isolates contained carbapenemases; the majority were KPC (459), followed by MBL (131) and OXA-48-like (99) enzymes. Most of these contained additional β-lactamases (ESBL and AmpC). Ceftazidime-avibactam showed potent activity against all subgroups, with the exception of isolates that contained an MBL. No regional differences were observed with the exception of diminished activity against carbapenemase-negative isolates from the Asia/Pacific region.

Percentage of isolates susceptible to ceftazidime-avibactam according to enzyme type					
Phenotype/ Enzyme content[a] (n)	**Ceftazidime-avibactam %S (n)[c]**				
	Global (805)[b]	**EUR (449)**	**AP (87)**	**MEA (61)**	**LA (208)**
Carbapenemase- (116)					
ESBL+	94 (72)	100 (27)	37 (8)	100 (4)	97 (33)
AmpC+	91 (23)	100 (10)	71 (7)	--	100 (6)
ESBL + AmpC	92 (12)	100 (4)	75 (4)	--	100 (4)
ESBL-, AmpC-	56 (9)	60 (5)	0 (2)	100 (1)	100 (1)
KPC+, MBL- (459)					
ESBL+	98 (199)	100 (110)	92 (13)	100 (1)	99 (75)
AmpC+	100 (16)	100 (3)	100 (6)	100 (2)	100 (5)
ESBL + AmpC	100 (9)	100 (2)	100 (3)	100 (1)	100 (3)
ESBL-, AmpC-	98 (235)	97 (140)	100 (4)	100 (15)	100 (76)
OXA-48-like, MBL- (99)					
ESBL+	100 (81)	100 (76)	--	100 (5)	--
AmpC+	100 (2)	100 (1)	--	100 (1)	--
ESBL + AmpC	50 (2)	0 (1)	--	100 (1)	--
ESBL-, AmpC-	93 (14)	92 (12)	--	--	100 (2)
MBL+ (131)	4 (131)	2 (58)	0 (40)	13 (30)	0 (3)

[a] Includes isolates that co-carry original spectrum β-lactamases
[b] Global, all; EUR, Europe; AP, Asia/Pacific; MEA, Middle East/Africa; LA, Latin America
[c] %S, percent susceptible (MIC ≤8 mg/L); n, number of isolates

Conclusions: CRE with different complex genotypes remained susceptible to ceftazidime-avibactam, except for isolates where carbapenem resistance was mediated by MBLs.