P0323
Paper Poster Session
Susceptibility trends for old and new antibiotics

In vitro activity of tigecycline against beta-lactam-resistant Enterobacteriaceae isolates collected in European countries as part of the Tigecycline European Surveillance Trial (TEST) in 2014

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Background: TEST monitors the *in vitro* activity of the glycylcycline tigecycline and comparator antimicrobial agents against clinical isolates collected in Europe. This study reports the *in vitro* activity of tigecycline against a subset of ESBL-producing and carbapenem non-susceptible *Enterobacteriaceae* isolates collected in 2014.

Material/methods: Non-duplicate clinical isolates were collected from defined infection sites and identified to the species level. Antibiotic susceptibility testing was performed by CLSI broth microdilution by the local laboratory using supplied panels and interpreted using EUCAST breakpoints. Confirmation of meropenem non-susceptibility and extended-spectrum-β-lactamase (ESBL) activity was performed at a central laboratory. A subset of *Enterobacteriaceae* isolates that were meropenem non-susceptible (MIC > 2 mg/L) and/ or confirmed as ESBL producers were screened for the presence of genes encoding ESBLs, AmpC β-lactamases, serine carbapenemases (KPC, OXA-48, GES), and metallo-β-lactamases (MBL).

Results: 8,100 *Enterobacteriaceae* were collected from sites in 19 European countries. The overall collection was 79.4% susceptible to cefepime, 98.1% susceptible to meropenem, and 92.3% susceptible to tigecycline. A subset of 1,131 isolates (620 *Klebsiella pneumoniae*, 453 *Escherichia coli*, 42 *Enterobacter* spp. and 16 other *Enterobacteriaceae*) were molecularly characterized for β-lactamase genes. 94.5% of characterized isolates, including those that produced MBLs and additional β-lactamases, were inhibited by ≤ 2 mg/L tigecycline. The tigecycline MIC distribution against characterized isolates and cumulative percent inhibited at each MIC value are shown below.

	Tigecycline MIC (mg/L)								
Enzyme content[a]	**≤0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**≥8**	**N**
ESBL	40	191	182	189	106	58	33	4	803
ESBL + AmpC		1	1	1					3
AmpC		1	1	3	3		2		10
KPC +/- ESBL +/- AmpC		3	14	43	86	40	11	4	201
OXA-48 +/- ESBL +/- AmpC			7	17	11	9	6		50
GES Cpase			2						2
MBL +/- ESBL +/- AmpC[b]		3	11	12	11	4	1		42
No ESBL, AmpC or Cpase identified	3	4	5	5	1	1	1		20
Total (N)	43	203	223	270	218	112	54	8	1131
% Cumulative Inhibited	3.8	21.8	41.5	65.3	84.6	94.5	99.3	100	

[a]Includes isolates that also carry original spectrum β-lactamases. Cpase, carbapenemase
[b]Includes three isolates carrying MBLs and KPC and one isolate carrying an MBL and OXA-48.

Conclusions: Tigecycline had good *in vitro* activity against *Enterobacteriaceae* that carried one or more β-lactamases, including combinations of ESBLs and carbapenemases. Tigecycline is one of the few currently available antimicrobial agents with significant activity against difficult-to-treat *Enterobacteriaceae* such as those producing MBLs.