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Paper Poster Session
Susceptibility trends for old and new antibiotics

Ceftolozane/tazobactam activity against intra-abdominal pathogens collected from 41 medical centres in Europe and Israel (2014)

David Farrell*[1], Helio Sader[1], Rodrigo E. Mendes[1], Ronald N. Jones[2]

[1]*Jmi Laboratories, North Liberty, United States*

[2]*Jmi Laboratories, North Liberty, Ia, United States*

Background: Ceftolozane/tazobactam (TOL/TAZ) was recently approved by the European Medicines Agency for the treatment of adults with acute pyelonephritis and complicated urinary tract infections and for complicated intra-abdominal infections (IAI; in combination with metronidazole) caused by *Escherichia coli, Klebsiella pneumoniae, Klebsiella oxytoca, Enterobacter cloacae, Proteus mirabilis, Pseudomonas aeruginosa, Bacteroides fragilis, Streptococcus anginosus, Streptococcus constellatus*, and *Streptococcus salivarius*., The Program to Assess Ceftolozane/Tazobactam Susceptibility (PACTS), a global surveillance program where methods for isolate collection, centralized reporting and analysis have been standardized, evaluates the *in vitro* activity of ceftolozane/tazobactam.

Methods: In 2014, a total of 567 Gram-negative, non-duplicate, non-consecutive, clinical isolates were collected from single patients with IAI in 41 medical centres across 21 European countries and Israel (number of centres): Austria (1), Belgium (1), Czech Republic (1), Denmark (1), Finland (1), France (4), Germany (5), Greece (1), Ireland (2), Israel (1), Italy (4), Netherlands (1), Norway (1), Poland (1), Portugal (1), Russia (3), Spain (3), Sweden (2), Switzerland (1), Turkey (2), United Kingdom (3), Ukraine (1). Isolates were tested for antibacterial susceptibility (S) by broth microdilution, and ESBL-phenotype was defined, as per CLSI guidelines. EUCAST breakpoints were used to determine %S.

Results: The rank prevalence of species/group is shown in the Table. Against 496 Enterobacteriaceae, TOL/TAZ (87.1%S) was more active than cefepime (FEP, 81.9%S), ceftazidime (CAZ, 77.6%S), piperacillin/tazobactam (P/T, 80.2%), and ciprofloxacin (CIP, 77.4%S), but less active than meropenem (MER, 97.0%S) and doripenem (DOR, 96.4%S). TOL/TAZ was very active against all non-ESBL phenotype (n=227, 100.0%S) but S was only 69.2% against ESBL-phenotype *E. coli* (n=52, 18.6% of isolates). The majority (97.6%) of non-ESBL phenotype *K. pneumoniae* (n=42) were S to TOL/TAZ but S was only 41.4% in ESBL-phenotype *K. pneumoniae* (n=29, 40.8% of isolates) and 63.2%S in meropenem-S ESBL-phenotype *K. pneumoniae* (n=19). Against 51 isolates of *P. aeruginosa*, TOL/TAZ (90.2%S) demonstrated greater activity than MER (78.4%S), FEP (74.5%S), DOR (70.6%S), CAZ (70.6%S), P/T (72.5%) and CIP (78.4%S), but lower activity than amikacin (AMK, 94.1%S). As with other β-lactam agents, TOL/TAZ demonstrated poor activity against *Acinetobacter* spp. and *Stenotrophomonas maltophilia* with a combined low occurrence rate of only 3.3%.

Conclusion: *E. coli, K. pneumoniae, E. cloacae* and *P. aeruginosa* were the most common Gram-negative aerobic pathogens isolated from patients with IAI in Europe and Israel during 2014. TOL/TAZ demonstrated higher S rates than other β-lactams (except for carbapenems) and CIP against Enterobacteriaceae, and higher S rates than other β-lactams (including carbapenems) and CIP against *P. aeruginosa.* These *in vitro* surveillance results support TOL/TAZ as a valuable treatment option for patients with IAIs in hospitals in Europe and Israel.

Organism	n/%	%S[a]	$MIC_{50/90}$ (mg/L)
Enterobacteriaceae	496/87.5	87.1	0.25/2
E. coli	279/49.2	94.3	0.25/0.5
K. pneumoniae	71/12.5	74.6	0.5/>32
E. cloacae	36/6.3	69.4	0.5/16
P. mirabilis	22/3.9	90.9	0.5/1
K. oxytoca	17/3.0	100.0	0.25/0.5
P. aeruginosa	51/9.0	90.2	0.5/4

a. Using EUCAST breakpoints