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Paper Poster Session
Susceptibility trends for old and new antibiotics

Activity of ceftolozane/tazobactam tested against organisms from urinary tract pathogens collected from 41 medical centres in Europe and Israel (2014)

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Background: Ceftolozane/tazobactam (TOL/TAZ) was approved by the European Medicines Agency for the treatment of adult patients with complicated intra-abdominal infections (in combination with metronidazole), acute pyelonephritis, and complicated urinary tract infections (cUTI), caused by *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, and *Pseudomonas aeruginosa*. 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 1,573 Gram-negative, non-duplicate, clinical isolates were collected from hospitalized patients 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 determined, as per CLSI guidelines. EUCAST breakpoints were used to determine %S.

Results: The rank prevalence of species/group is shown in the Table. Against 1,402 Enterobacteriaceae, TOL/TAZ (91.0%S) was more active than cefepime (FEP 84.9%S), ceftazidime (CAZ, 82.7%S), piperacillin-tazobactam (P/T, 86.6%S), and ciprofloxacin (CIP, 74.6%S), but less active than meropenem (MER, 98.4%S) and doripenem (DOR, 98.4%S). TOL/TAZ was very active against all non-ESBL phenotype (n=676, 100.0%S) and most ESBL phenotype *E. coli* (n=99, 12.8% of isolates, 87.9%S) and the majority of non-ESBL phenotype *K. pneumoniae* (n=153, 98.7%S). However, S was only 30.4% for ESBL phenotype *K. pneumoniae* (n=92, 37.6% of isolates) and 39.4%S for meropenem-S ESBL phenotype *K. pneumoniae* (n=71). Against 146 isolates of *P. aeruginosa*, TOL/TAZ (93.2%S) demonstrated greater activity than amikacin (AMK, 89.7%S), MER (85.6%S), FEP (83.6%S), DOR (82.2%S), CAZ (80.8%S), P/T (76.7%S), and CIP (71.0%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 1.5%.

Conclusion: *E. coli, K. pneumoniae* and *P. aeruginosa* were the most common UTI pathogens isolated from hospitalized patients 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), CIP and AMK against *P. aeruginosa,* hence representing a valuable treatment for patients with UTIs in European hospitals.

Organism	n/%	%S[a]	$MIC_{50/90}$ (mg/L)
Enterobacteriaceae	1402/89.1	91.0	0.25/1
E. coli	775/49.3	98.5	0.25/0.5
K. pneumoniae	245/15.6	73.1	0.5/>32
P. mirabilis	102/6.5	97.1	0.5/1
P. aeruginosa	146/9.3	93.2	0.5/4

a. Using EUCAST breakpoints