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Activity of tedizolid against methicillin-susceptible and -resistant Staphylococcus aureus isolated from patients in European centres and surrounding regions

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Background: Tedizolid has regulatory approvals for the treatment of acute bacterial skin and skin structure infections in the United States (US), European Union, and Canada. The activities of tedizolid and comparators were evaluated against *S. aureus* from medical centres across Europe and surrounding areas in 2015.

Material/methods: A total of 2,007 non-duplicate, single-patient *S. aureus* (454 methicillin-resistant [MRSA]) were collected from 13 European countries (27 sites) and Russia (3 sites), Turkey (2 sites) and Israel (1 site). Isolates were submitted to a monitoring laboratory as part of the Surveillance of Tedizolid Activity and Resistance (STAR) program. Identification was confirmed and susceptibility testing was performed by CLSI methods. MIC interpretation used the EUCAST criteria. Isolates displaying a resistance phenotype to at least 3 classes of antibacterials (in addition to methicillin) were considered multidrug-resistant (MDR).

Results: MRSA rates were lowest in Sweden (1.0%), the United Kingdom (10.0%), and France (14.1%) and were highest in Greece (45.5%), Italy (40.7%), Ireland (36.8%), and Israel (30.0%). Overall, tedizolid inhibited all isolates at ≤0.25 mg/L (100.0% susceptible) and had MIC_{50} and MIC_{90} results of 0.12 and 0.12 mg/L, respectively, against the MRSA and MDR subsets. Equivalent tedizolid MIC results ($MIC_{50/90}$, 0.12/0.12 mg/L) were obtained against methicillin-susceptible *S. aureus* (MSSA) isolates (see Table). Tedizolid and tigecycline ($MIC_{50/90}$, 0.06/0.12 mg/L; 100.0% susceptible) were similarly active against the MRSA population, and tedizolid had MIC results 4- to 16-fold lower than daptomycin ($MIC_{50/90}$, 0.25/0.5 mg/L; 100.0% susceptible), vancomycin ($MIC_{50/90}$, 0.5/1 mg/L; 100.0% susceptible), linezolid ($MIC_{50/90}$, 1/1 mg/L; 100.0% susceptible) and ceftaroline ($MIC_{50/90}$, 1/2 mg/L; 85.5% susceptible). These comparators and tedizolid showed equivalent MIC values against MDR

isolates, respectively, compared to MRSA. The only exception was tigecycline ($MIC_{50/90}$, 0.12/0.25 mg/L) that had MIC values against MDR isolates 2-fold higher than the MRSA subset. Tedizolid (MIC_{90}, 0.12 mg/L) and linezolid (MIC_{90}, 1 mg/L) showed consistent MIC_{90} values against MRSA from each region evaluated, while these values varied ±2-fold for other agents.

Conclusions: MRSA rates remained high in some European regions. Tedizolid demonstrated potent and consistent *in vitro* activity against MRSA and MDR clinical isolates from these European regions. Tedizolid activity was also greater than comparator agents.

S. aureus / phenotype[a]	MIC (mg/L)		Number (cumulative %) inhibited at tedizolid MIC (mg/L) of[b]:			
(no. tested)	50%	90%	≤0.03	0.06	0.12	0.25
MSSA (1,553)	0.12	0.12	10 (0.6)	346 (22.9)	**1075 (92.1)**	122 (100.0)
MRSA (454)	0.12	0.12	6 (1.3%)	138 (31.7%)	**293 (96.3%)**	17 (100.0%)
MDR (180)	0.12	0.12	3 (1.7%)	50 (29.4%)	**119 (95.6%)**	8 (100.0%)

[a] MSSA = methicillin-susceptible *S. aureus*; MRSA = methicillin-resistant *S. aureus*; MDR = multidrug-resistant (i.e., MRSA showing a resistance phenotype to at least three drug classes in addition to β-lactams).

[b] Bold values represent modal MIC results.