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Paper Poster Session
New and old antibiotics against Gram-positive cocci in vitro

Activity of linezolid when tested against contemporary European bacterial clinical isolates (2015)

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Background: International bacterial surveillance has shown that although very uncommon, linezolid resistance has been observed among coagulase-negative staphylococci (CoNS) in more frequency than enterococci. Resistance remains even lower among *Staphylococcus aureus* and streptococci. In this study, an interim evaluation of in vitro activity of linezolid and comparators against isolates from the European and Israeli component of the 2015 Zyvox® Annual Appraisal of Potency and Spectrum (ZAAPS) surveillance program are presented.

Methods: More than 4,000 isolates were collected from over 30 sites in Europe and Israel in 2015. Isolates were received from the following organism groups: *S. aureus,* CoNS, *Enterococcus* spp., *Streptococcus pneumoniae*, viridans group streptococci, and β-haemolytic streptococci. Isolates from each country were sent to a central monitoring laboratory for confirmatory identification and CLSI broth microdilution susceptibility testing. Susceptibility interpretations followed EUCAST breakpoint tables (Version 5.0, 2015). Isolates displaying elevated linezolid MIC results (≥4 mg/L) were retested using frozen broth microdilution, Etest and disk diffusion methods. PCR and sequencing were performed to detect mutations in 23S rRNA, L3, L4, and L22 genes, and acquired determinants (*cfr*; *optrA*).

Results: All *S. aureus* were susceptible to linezolid ($MIC_{50/90,}$ 1/1 mg/L), daptomycin, tigecycline, and vancomycin. MRSA represented 20.8% of *S. aureus*. Enterococci ($MIC_{50/90,}$ 1/2 mg/L), β-haemolytic streptococci ($MIC_{50/90,}$ 1/1 mg/L), viridans group streptococci ($MIC_{50/90,}$ 1/1 mg/L) and *S. pneumoniae* ($MIC_{50/90,}$ 1/1 mg/L) were all susceptible to linezolid. *S. pneumoniae* had overall penicillin and erythromycin resistant rates of 31.8% (MIC, ≥2mg/L) and 26.6%, respectively. Linezolid susceptibility for CoNS (64.7% methicillin-resistant CoNS) was 99.4%. Three linezolid-resistant CoNS were found. These were hospital-acquired isolates recovered from blood (two) and wound (one) specimens. These isolates originated from two sites in Italy and had linezolid MIC values of 16, 32 and 64 mg/L. Alterations in the 23S rRNA were observed in all three CoNS, but one isolate also carried *cfr* (linezolid MIC, 64 mg/L).

Conclusions: In this interim view of the 2015 European component of ZAAPS, linezolid-resistance remains uncommon (<1%). A linezolid resistance phenotype was only observed among CoNS, which were hospital-acquired isolates exhibiting a common linezolid resistance mechanism (target site alteration in 23S rRNA). Additionally, one isolate also had a plasmid-mediated resistance (*cfr*), emphasizing the importance of ongoing surveillance and molecular characterization of resistant isolates.**:**