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ePoster Viewing

Methods for antibacterial susceptibility testing

Accuracy of predicting oritavancin susceptibility using vancomycin surrogate susceptibility testing of Gram-positive isolates from Europe

R.N. Jones[1], M. Castanheira[1], D.J. Farrell[1], R.K. Flamm[1], H.S. Sader[1], R.E. Mendes[1]

[1]*JMI Laboratories, North Liberty, IA, USA*

Objectives: To determine the *in vitro* testing accuracy of using the vancomycin susceptibility result to infer oritavancin susceptibility of gram-positive pathogens. Oritavancin is a lipoglycopeptide antimicrobial agent that was approved in 2014 in the USA, and that is currently under EMA review for treatment of acute bacterial skin and skin structure infections using a single 1200 mg intravenous dose. Due to a lack of commercial availability of in vitro susceptibility tests for oritavancin, a surrogate testing strategy using vancomycin could be used in clinical microbiology laboratories.

Methods: A total of 10,371 isolates of gram-positive pathogens including *S. aureus*, *Streptococcus pyogenes*, *S. agalactiae*, *S. dysgalactiae*, *S. anginosus* group and *Enterococcus faecalis* exclusively from European hospitals were tested against oritavancin and vancomycin during 2011-2013, using validated reference broth microdilution methods (CLSI M07-A9 methodology). Susceptibility to vancomycin was interpreted based on published EUCAST breakpoints; susceptibility to oritavancin was based on FDA breakpoints: <=0.12 mg/L for *S. aureus* and vancomycin-susceptible *E. faecalis;* <=0.25 mg/L for streptococci. Accuracy of susceptible categorical interpretation for oritavancin based on vancomycin susceptibility was determined.

Results: Using the EUCAST vancomycin susceptible breakpoint of <=2 mg/L to infer oritavancin susceptibility (<=0.12 mg/L) for *S. aureus* (7,410 comparisons) produced a 99.0% accuracy rate; all but one false-susceptible error was at an oritavancin MIC of 0.25 mg/L. Similarly high-level accuracy of 98.5% was observed for β-haemolytic streptococci (oritavancin susceptible, <=0.25 mg/L; 1,021 comparisons). Among the *S. anginosus* group isolates, complete concordance (oritavancin susceptible, <=0.25 mg/L; 100% accuracy) was noted between vancomycin and oritavancin susceptible categorical results (177 comparisons). For vancomycin-susceptible *E. faecalis* (1,195 comparisons), 99.7% of isolates were also susceptible (<=0.12 mg/L) to oritavancin. Overall, the rate of vancomycin surrogate accuracy to predict oritavancin susceptibility was 99.1% (see Table) as measured among isolates from European medical centres.

Conclusions: As the introduction of oritavancin *in vitro* susceptibility testing devices will be delayed relative to anticipated approval of oritavancin in Europe, a surrogate susceptibility testing strategy using vancomycin appears to be a viable approach for laboratory use. Accuracy of this method analysing over 10,000 recent European clinical isolates ranged from 98.4-100 % for targeted species including *S. aureus* (99.0%). Clinical microbiology laboratories are encouraged to apply vancomycin-susceptible categorical results to direct oritavancin therapy.

Pathogen (no. tested)	Surrogate test accuracy rate (%)
S. aureus (7,410)	99.0
βHS (1,021)	98.5
S. pyogenes (553)	98.4
S. agalactiae (379)	98.4
S. dysgalactiae (89)	100
VGS (587)	100
S. anginosus group (177)	100
E. faecalis, vancomycin-susc. (1,195)	99.7
All strains (9,803)	99.1

Abbreviations: βHS = β-haemolytic streptococci and VGS = viridans group streptococci.