Tigecycline Activity Tested Against Bacterial Isolates Causing Bloodstream Infections in European Medical Centers

**ABSTRACT**

Objective: To assess the activity of tigecycline against bloodstream infection (BSI) isolates from European hospitals. Tigecycline is a novel glyoside antimicrobial approved by the European Medicines Agency for the treatment of complicated skin and skin structure infections and intra-abdominal infections.

Methods: Bacterial isolates (non-duplicate) were consecutively collected in 10 countries from 2007 to 2009. All isolates were identified using the VITEK 2 (bioMerieux) and antimicrobial susceptibility was determined by broth microdilution methods according to CLSI guidelines. Tigecycline susceptibility breakpoints were defined as ≤0.15 mg/L for staphylococci and ≤0.25 mg/L for streptococci and enterococci.

Results: A total of 25,401 strains were tested. Tigecycline was highly active against the 10 most frequent pathogenic bacterial spp. (97.8% at the established susceptible breakpoints. The main resistance phenotypes detected were methicillin-resistant (R) S. aureus (MRSA: 22.6%), vancomycin-resistant (VAN) Enterococcus spp. (97.7%), tigecycline was active against K. pneumoniae ATCC 27853. All QC results were within published ranges.

**RESULTS**

- **Table 1.** Frequency of occurrence of bacterial organisms isolated from bloodstream infections in European Medical Centers (2000-2007).

- **Table 2.** Tigecycline MIC distributions of bacterial isolates isolated from bloodstream infections in European Medical Centers (2000-2007).

- **Table 3.** Prevalence of selected resistance phenotypes.

**CONCLUSIONS**

- Tigecycline exhibited a wide-spectrum of activity and high potency versus contemporary BSI isolates collected in Europe, including multidrug-resistant organisms.

- Tigecycline was also very active against Acinetobacter spp. (MIC(s): 0.5 mg/L, ≥1 mg/L), and was the second most active compound tested against this emerging pathogen, ranked after polymyxin B (99.6% susceptible). Oxacillin (MIC(s): 0.5 mg/L, 5.0 mg/L) was the most active compounds tested against this pathogen group, followed by vancomycin (MIC(s): 1.0 mg/L, 10.0 mg/L).

- The main resistance phenotypes detected were methicillin-resistant S. aureus (MRSA: 28.3%) and CoNS (77.4%), tigecycline-resistant E. coli (20.3%) and oxacillin-resistant S. aureus (22.6%). Tigecycline was also the most active compound tested against ESBL-producing E. coli and Enterococcus spp. (85.2% and 98.5%, respectively).

- Tigecycline activity against ESBL-producing E. coli and Enterococcus spp. strains was susceptible to imipenem (92.0% and 97.9%, respectively) and tigecycline (99.6% and 100.0%, respectively) was similar to that of ceftriaxone (86.8%). Tigecycline and imipenem were the most active compounds tested against E. coli (99.9% susceptible) and Klebsiella spp. (97.8% and 98.6%), and Enterobacter spp. (97.8% and 98.6%; data not shown). Enterobacteriaceae organisms with ESBL phenotypes showed tigecycline MIC distributions very similar to non-ESBL producing organisms (Table 2).

**SELECTED REFERENCES**


**CONCLUSIONS**

- Tigecycline exhibited a wide-spectrum of activity and high potency tested against contemporary BSI isolates collected in European medical centers.

- Resistance to tetracyclines or other antimicrobial classes not adversely influence tigecycline activity.

- Treatment options for serious multidrug-resistant organism infections in nosocomial environments should benefit from the availability of parenteral tigecycline.