Vancomycin Resistance in *Enterococcus faecalis* Clinical Isolates Responsible for Bloodstream Infections in US Hospitals Over Ten Years (2010–2019) and Activity of Oritavancin

**Introduction**

- Enterococcus spp. are among the 5 most common causes of bacteremia worldwide. The 2019 report on antimicrobial resistance patterns in the US highlighted the serious threat posed by enterococcal infections.
- Due to intrinsic and acquired resistance factors, *E. faecium* and *E. faecalis* frequently challenge empirical and targeted antimicrobial therapy by fostering clinicians to seek alternative treatments for patients with serious infections.
- Oritavancin is a lipoglycopeptide antimicrobial agent that has activity against *Enterococcus spp.*, making it an important component in the treatment of enterococcal infections.
- Oritavancin impairs membrane barrier function and inhibits cell wall synthesis mechanisms.
- This study included a total of 1,081 *E. faecium* isolates causing bloodstream infection (BSI) in US medical centers.

**Materials and Methods**

- **Bacterial isolates:** This study included a total of 1,081 *E. faecium* isolates causing BSI.
- **Isolates were collected from 36 US medical centers in a prevalence mode design during 2010–2019.**
- **Isolates were determined to be clinically significant based on local guidelines and then were submitted to a central monitoring laboratory (JMI Laboratories, North Liberty, Iowa, USA) as part of the SENTRY Antimicrobial Surveillance Program.**
- **Isolates initially were identified by the participating laboratory.** Bacterial identifications were confirmed by MALDI-TOF MS (Bruker Daltonics, Bremen, Germany).
- **Isolates were determined to be clinically significant based on local guidelines and then were submitted to a central monitoring laboratory (JMI Laboratories, North Liberty, Iowa, USA) as part of the SENTRY Antimicrobial Surveillance Program.**
- **Isolates initially were identified by the participating laboratory.** Bacterial identifications were confirmed by the reference laboratory (JMI Laboratories, North Liberty, Iowa, USA) as part of local guidelines and then were submitted to a central monitoring laboratory (JMI Laboratories, North Liberty, Iowa, USA) as part of the SENTRY Antimicrobial Surveillance Program.

- **Antimicrobial susceptibility testing:**
  - **Isolates were tested for susceptibility by broth microdilution (BMD) following guidelines in the CLSI M07 (2018) with testing performed using BD BBL MicroScan™ panels (2010–2014) and BD Phoenix™ (2015–2016) panels manufactured by BD (Franklin Lakes, NJ),** with breakpoints established by the CLSI (2018) and EUCAST (2019).
  - **Quality assurance was performed by concurrently testing CLSI-recommended QC reference strains.**
  - **The EUCAST-resistant breakpoint for teicoplanin (>2 mg/L) was used for testing daptomycin.**
  - **Only linezolid and oritavancin (MIC ≤0.12 mg/L) showed >90.0% susceptibility against all *E. faecium* and *vancomycin*-resistant clinical isolates.**
  - **VanB phenotype (764) 97.3 97.1 98.3 100.0 94.1 98.3 100.0 98.4 96.7 98.1 97.7**
  - **VanA phenotype (9) 2.7 1.9 1.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.2**

- **VanA** and **VanB** phenotypes.

**Conclusions**

- **Vancomycin susceptibility rates among *E. faecium* causing BSI in the US decreased during 2015–2019.**
- **VanB phenotypes** comprised almost nonresistant in later years.
- **All VRE isolates and resistant subsets causing BSI in US medical centers**

**Acknowledgements**

This study was supported by Melinta Therapeutics. Melinta was involved in the design and decision to present these results, and JMI Laboratories received compensation for services in relation to the study. Melinta had no involvement in the collection, analysis, and interpretation of data.

**References**


**Contact**

Darcia C. Carvalhaes, MD, PhD
JMI Laboratories. 345 Beaver Rock Centre, Suite A North Liberty, IA 52254
Phone: (319) 655-1370
Email: darcia.carvalhaes@jmlabs.com