Global In vitro Surveillance of Eravacycline Against Gram-negative and Gram-positive Clinical Isolates, Including Multidrug-Resistant Pathogens, Collected in 2017
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Introduction
Eravacycline is a novel, fully synthetic, fluoroquinolone antibacterial of the tetracycline class approved by the FDA and EMA for the treatment of complicated intra-abdominal infections (cIAIs) in patients ≥18 years of age. Eravacycline is active against Gram-negative pathogens and is a Gram-positive and anaerobic bacteria found in cIAI, and retains activity against the most common tetracycline-specific acquired resistance mechanisms (i.e., efflux and ribosomal protection). The purpose of this study was to expand in-vitro activity of eravacycline and comparators against Enterobacteriaceae, Acinetobacter baumannii, Stenotrophomonas maltophilia, Staphylococcus aureus (including methicillin-resistant S. aureus, MRSA) and Enterococcus spp., including those that are multidrug-resistant (MDR).

Methods
A total of 8755 clinical isolates collected from hospitals globally in 2017 from gastrointestional, gastrointestinal, body fluid, and respiratory sources were tested:
- MDR was defined as resistance to ≥3 from cefepime/ceftazidime/ceftriaxone/ceftazidime/ceftaroline (any one), aztreonam, gentamicin, a carbapenem (meropenem or ertapenem), levofloxacin, piperacillin-tazobactam, tetracycline or tigecycline, according to CLSI/FDA or EUCAST breakpoints.
- Minimal inhibitory concentration (MIC) values were determined by broth microdilution according to the CLSI guidelines for eravacycline and comparators.
- Quality control testing was performed each day of testing as specified by the CLSI.
- Antibiotic susceptibility was determined using CLSI breakpoint, except for eravacycline and tigecycline where FDA breakpoints were used, and EUCAST 2019 breakpoints.

Results

Figure 1. Percent Distribution of all Isolates by Geographic Origin

Table 1. Susceptibility of Enterobacteriaceae, Including MDR Isolates, to Eravacycline and Comparators

Table 2. Susceptibility of Citrobacter freundii, Enterococcus spp., E. coli, Klebsiella pneumoniae and Enterobacter cloacae, Including MDR Isolates, to Eravacycline and Comparators

Table 3. Susceptibility of Staphylococcus aureus, Including MRSA, to Eravacycline and Comparators

Table 4. Susceptibility of Enterococcus spp., Including Vancomycin-Resistant Enterococcus (VRE), to Eravacycline and Comparators

Table 5. Susceptibility of Stenotrophomonas maltophilia to Eravacycline and Comparators

Table 6. Susceptibility of Acinetobacter baumannii, Including Carbapenem-Resistant Acinetobacter baumannii (CRAB) Isolates, to Eravacycline and Comparators

Conclusions
- Eravacycline exhibited potent in vitro activity against Enterobacteriaceae, A. baumannii, and clinically important Gram-positive organisms, including multidrug-resistant pathogens collected globally in 2017.
- Eravacycline demonstrated 2- to 4-fold lower MIC50/90 values compared to tigecycline against Enterobacteriaceae, S. aureus, Enterococcus spp, and S. maltophilia, including resistant organisms.
- This 2017 global surveillance investigation highlights eravacycline’s broad spectrum potency against Gram-negative and Gram-positive bacteria, including MDR strains, and further underscores its potential benefit as an empiric treatment of intra-abdominal infections caused by resistant pathogens.