**ABSTRACT**

**Objectives:** To assess the in vitro activity of dalbavancin tested against S. pneumoniae clinical isolates collected from hospitalized patients in five continents worldwide.

**Methods:** A total of 14,957 isolates collected from 90 countries in North America (two countries, 172 centres), Latin America (15 countries, 34 centres), Asia (10 countries, 23 sites), Europe (36 countries, 120 sites) and South Africa (1 site) were included. Isolates were submitted to a monitoring laboratory as part of the SENTRY Antimicrobial Surveillance Program for 2011-2015. Bacteria were identified by standard algorithms and MALDI-TOF. Susceptibility testing was performed using CLSI approved methods. Interpretation of MIC results used CLSI (2014) and EUCENTRAL (2014) criteria for comparators. Isolates were segregated based on penicillin/sulfonamide MIC values (EUCAST criteria). S. pneumoniae displaying a resistance phenotype (MIC ≥ 0.12 mg/L) in at least three drug classes were considered as multidrug-resistant (MDR).

**RESULTS**

**Overall:**
- The rate of penicillin-nonsusceptible isolates (MIC ≥ 0.12 mg/L) was 40.7%, with highest rates in the APAC region (51.1%), followed by Latin America (47.5%), North America (41.4%) and Europe (32.6%).
- Similar geographic distributions for cefuroxime-cefotaxime-susceptibility rates (EUCENTRAL breakpoints, 0.12 mg/L) were observed, with the highest rate in the APAC region (38.4%), while Latin America (25.8%), North America (23.5%) and Europe (19.8%) had lower percentages.
- When S. pneumoniae isolates were stratified according to MDR phenotype, MDR rates were considerably elevated in the APAC region (54.4%), while similar rates were noted between the Americas (19.4 – 19.5%) and European countries and adjacent region (21.7%).
- Overall, dalbavancin (MIC0.5/0.03/0.12; ≤0.03 mg/L) had low MIC results when tested against the entire collection of isolates, regardless of resistance phenotype to penicillin (MIC0.03/0.03/0.06 mg/L) or cefuroxime (MIC0.03/0.03/0.12 mg/L; Table 1).
- Vancomycin (MIC0.03/0.06/0.12 mg/L) had low MIC results when tested against all clinical isolates of S. pneumoniae (96.4 – 99.3% susceptible) and linezolid (MIC0.6/0.6/1.2 mg/L) demonstrated consistent and acceptable (≥90%) susceptibility coverage across all analyzed resistance subtypes, including MDR (Table 2).
- Other comparator drugs, such as erythromycin and chloramphenicol demonstrated in vitro activity against S. pneumoniae isolates. Dalbavancin (MIC0.03/0.03/0.12 mg/L) was the most active agent tested against this collection of S. pneumoniae and resistant strains.
- Dalbavancin MIC values were at least eight-fold lower than vancomycin and linezolid (Table 2).
- Ceftriaxone (MIC0.03/0.03/0.12 mg/L) showed higher MIC results against MDR S. pneumoniae (MIC0.12/0.12/0.25 mg/L) compared to non-MDR isolates (MIC0.06/0.06/0.12 mg/L) with susceptibility rates of 92 – 92.1% and 90.1 – 98.8% (CLSI and EUCENTRAL criteria, respectively) (Table 3).

**DISCUSSION**

- **In vitro testing:** Dalbavancin showed the highest activity against S. pneumoniae isolates collected from worldwide centers.
- **Clinical implications:** Dalbavancin showed excellent susceptibility against S. pneumoniae isolates collected from worldwide centers. It could be considered as an alternative to vancomycin and linezolid in the treatment of MDR S. pneumoniae infections.

**ACKNOWLEDGEMENTS**

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