**Introduction**

Carbapenem-resistant Enterobacteriaceae (CRE) isolates are a growing issue worldwide.

- Most CRE isolates carry carbapenemase-encoding genes embedded in mobile genetic elements that harbor resistant genes to other antimicrobial classes.

Among carbapenemases detected in Enterobacteriaceae species, KPC, KPC-2, and KPC-3 are the most prevalent, followed by New Delhi metallo-beta-lactamase (NDM) and OXA-23 in Enterobacteriaceae species.

Meropenem-vaborbactam has been approved by the United States Food and Drug Administration (US FDA) for the treatment of complicated urinary tract infections.

- We evaluated the activity of meropenem-vaborbactam against T. 142 Enterobacteriaceae clinical isolates collected in Europe, Asia-Pacific, and Latin America during 2016.

**Materials and Methods**

A total of 1,412 Enterobacteriaceae clinical isolates collected during 2016 from 62 hospitals located in Europe, Asia-Pacific, and Latin America were included in the study.

- Isolates were limited to 1 per patient episode and were collected from patients hospitalized in hospitals (n=1,107), intensive care units (n=104), proton pump inhibitors (n=97), von Willebrand disease (n=63), and antibiotic-associated diarrhea (n=63).

- Species identification was confirmed, when necessary, by matrix-assisted laser desorption ionization-time of flight mass spectrometry.

- Isolates were tested for susceptibility against meropenem-vaborbactam and comparator agents using the broth microdilution method as described by the Clinical and Laboratory Standards Institute (CLSI; M100, 2018).

- Categorical interpretations for all comparator agents were those found in CLSI guidelines. (Table 1).

- Enterobacteriaceae species complex (n=19), Escherichia coli (n=9), and Klebsiella oxytoca (n=6) were the most common species after A. baumannii.

- Carbapenemase-encoding genes were detected in Enterobacteriaceae species.

- The prevalence of carbapenemase genes varied in the countries analyzed; CRE isolates were predominantly observed in the United States, Brazil, Italy, and Taiwan (10.7%; Figure 1).

- CRE isolates were detected in all countries evaluated except Australia, New Zealand, Singapore, Czech Republic, Portugal, Thailand, Taiwan, and China.

- CRE isolates were detected in Germany, Greece, Hungary, Croatia, the United Kingdom, Israel, and China (10.7%; Figure 1).

- CRE isolates were not detected in Australia, New Zealand, Singapore, Czech Republic, Portugal, Thailand, Taiwan, and China.

**Results**

Table 1 Activity of meropenem-vaborbactam tested against CRE and CPE isolates collected in Europe, Asia-Pacific, and Latin America

<table>
<thead>
<tr>
<th>Organism group</th>
<th>Enterobacteriaceae</th>
<th>Enterobacteriaceae complex (n=19)</th>
<th>Escherichia coli (n=9)</th>
<th>Klebsiella oxytoca (n=6)</th>
<th>CRE isolates tested</th>
<th>Europe CRE (220)</th>
<th>Asia-Pacific CRE (33)</th>
<th>Latin America CRE (33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC range (µg/mL)</td>
<td>0.005-1</td>
<td>0.03-1</td>
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**Conclusions**

- CRE- and carbapenemase-producing isolates are a problem worldwide.

- The prevalence of carbapenemase production varies around the world.

- As the incidence of CRE was relatively low, the activity of meropenem-vaborbactam was only slightly greater than the activity of meropenem alone against the collection of Enterobacteriaceae isolates tested.

- Meropenem-vaborbactam was the most active agent against isolates carrying KPC and was only less active than colistin and tigecycline against NDM isolates.

- Meropenem-vaborbactam is a valuable therapeutic option for the treatment of infections caused by CRE-producing isolates.

**Acknowledgements**

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**References**


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**Poster #P1043**

- 20/03/2018
- 14:00-14:15
- Main Hall, Room 1
- Dr. Mariana Castanheira
- Discovery of a cyclic boronic acid beta-lactamase inhibitor (RPX7009) with utility vs class A serine carbapenemase-encoding isolates from Enterobacteriaceae species

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**Figure 1** Prevalence of CRE and carbapenemase-producing Enterobacteriaceae (CPE) isolates in the surveyed countries

**Figure 2** Occurrence of carbapenemase genes in the countries surveyed

**Table 1** Activity of meropenem-vaborbactam tested against CRE and CPE isolates collected in Europe, Asia-Pacific, and Latin America

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