**ABSTRACT**

Background: A multicenter study was performed to evaluate the accuracy of testing meropenem/vaborbactam on a MicroScan Dried Gram-negative MIC (MSDGN) Panel when compared to a frozen ISO/CLSI broth microdilution reference panel. Materials/Methods: An evaluation was conducted at three U.S. sites by comparing MIC values obtained using the MSDGN to MICs utilizing an ISO/CLSI broth microdilution reference panel. A subset of 14 organisms for Enterobacterales and P. aeruginosa clinical isolates were tested among the three sites. Results: Essential and categorical agreement when compared to frozen reference panel results, for all isolates tested in efficacy as follows:

**Efficacy - Prompt (Table 2)**

- Essential Agreement for Enterobacterales and P. aeruginosa between MSDGN panel and frozen reference panel was 99.9% (769/775) for WalkAway System, 99.2% (769/775) for autoSCAN-4 instrument, 99.6% (772/775) for Manual read method using the Prompt inoculation method.

- Categorical Agreement for Enterobacterales and P. aeruginosa between MSDGN panel and frozen reference panel was 99.9% (771/775) for WalkAway System method, 99.7% (773/775) for autoSCAN-4 instrument, 99.9% (774/775) for manual read method using the Prompt inoculation method.

**Efficacy - Turbidity (Table 3)**

- Essential Agreement for Enterobacterales and P. aeruginosa between MSDGN panel and frozen reference panel was 99.2% (769/775) for WalkAway System, 99.1% (768/775) for autoSCAN-4 instrument, 99.1% (768/775) for manual read method using the turbidity inoculation method.

- Categorical Agreement for Enterobacterales and P. aeruginosa between MSDGN panel and frozen reference panel was 99.5% (771/775) for WalkAway System method, 99.9% (774/775) for autoSCAN-4 instrument, 99.9% (774/775) for manual read method using the turbidity inoculation method.

**INTRODUCTION**

A multicenter study was performed to evaluate the performance of meropenem/vaborbactam on EUCAST with reference to a MicroScan Dried Gram-negative MIC (MSDGN) panel using Enterobacterales and P. aeruginosa isolates.

**METHODS**

Study Design: MicroScan Dried Gram Negative MIC panels were tested concurrently with an ISO/CLSI frozen broth microdilution reference panel at three sites using both the Prompt and turbidity inoculation methods. A total of 775 Enterobacterales and P. aeruginosa clinical isolates were tested among the three sites.

**Background:**

- Reference panels were prepared and incubated according to inoculation during the efficacy phase. A subset of 14 organisms for Enterobacterales and P. aeruginosa clinical isolates were tested among the three sites.

- Quality Control Expected Results:

  - **Enterobacterales:** ATCC 25922: ≤0.038 μg/mL, ATCC 700603: ≤0.068 μg/mL.
  - **P. aeruginosa:** ATCC 27853: 0.12/8 μg/mL.

- Comparison:**

  - **Between MSDGN panel and frozen reference panel was 99.2% (769/775) for WalkAway System, 99.5% (771/775) for autoSCAN-4 instrument, 99.6% (772/775) for Manual read method using the Prompt inoculation method.

  - **Between MSDGN panel and frozen reference panel was 99.5% (771/775) for WalkAway System method, 99.7% (773/775) for autoSCAN-4 instrument, 99.9% (774/775) for manual read method using the Prompt inoculation method.

**Data Analysis**

- Essential Agreement (EA) = MSDGN panel MIC within ≤1 well of the two-fold dilution of the frozen reference result MIC.
- Categorical Agreement (CA) = MSDGN panel and reference categorical results (S, R) agree using EUCAST breakpoints for Enterobacterales and P. aeruginosa.

**Efficacy - Prompt (Table 2)**

- **Major Errors:** 1 well error from the panel dilutions

- **Quality Control**

  - Overall QC results for the MSDGN panel were 94.9-100% in range for organisms tested. Overall QC results for frozen reference panel were 99.2–100% in range for organism tested.

- **Reproducibility**

  - Overall agreement (within ±2 fold-dilation) between all sites for the reproducibility phase was ≥95% for all combinations.

**DATA ANALYSIS AND RESULTS**

**Table 1. Meropenem/Vaborbactam (EUCAST v10.0) Interpretive Breakpoints (mg/L)**

**Organism Group**

<table>
<thead>
<tr>
<th>Susceptible</th>
<th>Resistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterobacterales</td>
<td>≤0.06</td>
</tr>
<tr>
<td>P. aeruginosa</td>
<td>≤0.12</td>
</tr>
</tbody>
</table>

**Major Errors:** Frozen reference MIC is S and MSDGN panel MIC is R: calculated for susceptible strains only.

- **Quality Control**

  - Total No. S Isolates tested

- **Categorical Agreement for**

  - **Enterobacterales** and **P. aeruginosa**

- **Reproducibility**

  - Overall agreement (within ±2 fold-dilation) between all sites for the reproducibility phase was ≥95% for all combinations.

- **Panel Inoculation, Incubation, and Reading**

  - All isolates were subcultured onto trypticase soy agar (TSA) with 5% sheep blood and incubated for 18-24 hours at 34-37°C prior to testing. Isolates from frozen stocks were subcultured twice before testing. Inoculum suspensions for each strain were prepared with the direct standardization (turbidity standard) method for MSDGN and autoScan-4 reference panels. MICs of MSDGN panel were also inoculated using the Prompt inoculation method.

  - Following inoculation, MSDGN MIC panels were incubated at 35–1°C in the WalkAway system for 18–24 hours. All panels were read by the WalkAway, autoSCAN-4, and visually.

**CONCLUSION**

This multicenter study showed that meropenem/vaborbactam MIC results for Enterobacterales and P. aeruginosa obtained with the MSDGN panel correlate well with MICs obtained using frozen reference panels using EUCAST interpretive criteria.

**Acknowledgements**

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