In order to support the growth of the ECHO movement, Project ECHO® collects participation data for each teleECHO™ program. This data allows Project ECHO to measure, analyze, and report on the movement’s reach. It is used in reports, on maps and visualizations, for research, for communications and surveys, for data quality assurance activities, and for decision-making related to new initiatives.
Narrow the Mero
Meropenem Utilization and Optimization

Stephanie May, PharmD, BCIDP
ID/ASP Telehealth Pharmacist
June 22, 2022
Meropenem

• Carbapenem antibiotic

• Broad activity against gram-positive and gram-negative organisms
  • ESBLs
  • Pseudomonas aeruginosa

• Good anaerobic activity
## Meropenem and Ertapenem Spectrum of Activity

<table>
<thead>
<tr>
<th>Organism</th>
<th>Meropenem</th>
<th>Ertapenem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gram +</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSSA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>MRSA</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Streptococcus</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Enterococcus</td>
<td>+/-</td>
<td>X</td>
</tr>
<tr>
<td><strong>Gram -</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESBL Enterobacterales (i.e. <em>Proteus, E. coli, Klebsiella</em>)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Non-fermenters (<em>Pseudomonas, Acinetobacter</em>)</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td><strong>Gram - Anaerobes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Bacteroides fragilis</em></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>Atypical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycoplasma, Legionella, Chlamydia</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Meropenem

- **Dosing**

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard inpatient dose</td>
<td>Meropenem 500mg IV q6h</td>
</tr>
<tr>
<td>Severe infections and morbidly obese</td>
<td>Meropenem 2000mg IV q8h</td>
</tr>
<tr>
<td>Renal dysfunction</td>
<td>Modifications required for patients with CrCl &lt; 51 ml/min</td>
</tr>
</tbody>
</table>

- **Adverse events**
  - Lower seizure threshold (higher risk if underlying sz dx, h/o CVA, head trauma, renal dysfunction)
  - C. difficile infection
Importance of de-escalation

Risk of new resistance

• Patient-level
  • ↑ risk of new antibiotic resistance with each additional day of use
  • Risk significantly increases after 72h of use
• Community-level

Risk of *C. difficile* infection

• Exposure to broad-spectrum antibiotics can ↑ risk for CDI

Risk of other ADEs

Teshome et al. Pharmacotherapy (2019)
Appropriate Use of Meropenem

<table>
<thead>
<tr>
<th>Empiric Therapy</th>
<th>Targeted Therapy</th>
<th>Allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Severe</strong> infection in patients with risk factors for ESBL-producing organism -OR- • multi-drug resistant organism (MDRO) resistant to cefepime AND piperacillin/tazobactam</td>
<td>• Treatment of confirmed infection due to ESBL or MDRO resistant to cefepime and piperacillin/tazobactam -AND- • Unable to use ertapenem</td>
<td>Patients with severe allergies (e.g. anaphylaxis, shortness of breath, oropharyngeal swelling, DRESS, SJS) to penicillin <strong>AND</strong> cephalosporin antibiotics</td>
</tr>
</tbody>
</table>

Contact your ID pharmacist with questions on possible risk factors for these resistant organisms

Use ertapenem as definitive/targeted therapy when possible!

Verify all allergic reactions and de-escalate as appropriate

Patients with mild allergies may receive alternative beta-lactam antibiotics
From the Literature: Examples of ESBL Risk Factors

- History of ESBL infection
  - Chronic indwelling hardware or catheter
  - Receipt of IV antibiotics within 90 days

- Examples ≠ Indications
  - Recurrent UTIs
  - High ESBL burden community

Indications

Prompt de-escalation with cultures + susceptibilities!
IHC Meropenem Utilization
System Meropenem Use (2019 – 2021)
System Meropenem Use (2019 – 2021)

Patients **without** microbiologic indications or allergies
System Meropenem Use (2019 – 2021)

Meropenem Use Ratio

(DOT for patients **without** micro indication or allergies/DOT for all patients)
SCH Meropenem Use (2019 – 2021)

All Patients

Patients w/o micro or allergies

Mero DOT Ratio
Bibliography/References


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