Background

Infection with carbapenem-resistant Enterobacteriaceae (CRE) is a growing health care challenge. To date in the United States, CRE have mainly caused health care-associated infections, usually affecting those with compromised immune systems, chronic medical conditions, frequent or prolonged stays in health care settings, invasive medical devices (e.g., ventilators or intravenous catheters), or a history of taking certain antibiotics for long periods. CRE can cause a wide variety of infections, including pneumonia, bacteremia, urinary tract and surgical-site infections. CRE are often resistant to all available antibiotics except colistin, which is nephrotoxic and neurotoxic.

In the health care setting, healthy patients may carry CRE on the skin or in body secretions such as sputum, urine or stool; transmission to others may occur via the hands of health care workers or contaminated environmental surfaces, medical devices or equipment.

To spare patients from toxic antibiotics and untreatable infections, aggressive control measures must be taken before these organisms become established in our hospitals and long-term care facilities.

If CRE are identified in your laboratory

- Submit a report to the local health department in the county of residence of the patient within one working day, either electronically or by calling or faxing the local public health authority (OAR 333-018-0015).
- Send E. coli, Klebsiella spp., and Enterobacter spp. isolates that meet the Oregon Public Health Division (PHD) CRE case definition to the Oregon State Public Health Laboratory (OSPHL; 503-693-4100) for further testing. Submission of isolates other than E. coli, Klebsiella spp., and Enterobacter spp. that meet the PHD CRE case definition may be requested by PHD on a case-by-case basis.
- Alert infection-prevention and clinical staff at the facility where the laboratory specimen was obtained.

<table>
<thead>
<tr>
<th>Current Breakpoints (µg/mL)</th>
<th>(M100-S24)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbenem</strong></td>
<td><strong>Susceptible</strong></td>
</tr>
<tr>
<td>Doripenem</td>
<td>≤1</td>
</tr>
<tr>
<td>Ertapenem</td>
<td>N/A</td>
</tr>
<tr>
<td>Imipenem</td>
<td>≤1</td>
</tr>
<tr>
<td>Meropenem</td>
<td>≤1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Old Breakpoints (µg/mL^)</th>
<th>(M100-S19^)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbenem</strong></td>
<td><strong>Susceptible</strong></td>
</tr>
<tr>
<td>Doripenem</td>
<td>N/A</td>
</tr>
<tr>
<td>Ertapenem</td>
<td>≤2</td>
</tr>
<tr>
<td>Imipenem</td>
<td>≤4</td>
</tr>
<tr>
<td>Meropenem</td>
<td>≤4</td>
</tr>
</tbody>
</table>

FOOTNOTES

1. CLSI. Performance standards for antimicrobial susceptibility testing; 24th informational supplement. CLSI document M100-S24. Wayne, PA: Clinical and Laboratory Standards Institute; 2014.
2. For laboratories using the old breakpoints, Enterobacteriaceae demonstrating ANY carbapenem MIC ≥2 (i.e., “positive carbapenemase screen”) AND ANY 3rd generation cephalosporin resistance should undergo confirmatory carbapenemase testing at OSPHL.

The Enterobacteriaceae family of bacteria includes these genera and groups:

- Averyella
- Budvicia
- Buttiauxella
- Cedacea
- Citrobacter
- Cronobacter
- Edwardsiella
- Enterobacter
- Escherichia
- Ewingella
- Hafnia
- Klebsiella
- Kluvyera
- Leclercia
- Leminorella
- Morganella
- Moellerella
- Pantoa
- Photorhabdus
- Plesiomonas
- Pragia
- Proteus
- Providencia
- Raoulletella
- Salmonella
- Serratia
- Shegilla
- Tatumella
- Trabusiella
- Xenorhabdus
- Yersinia
- Yokenella
- Enteric Group 58
- Enteric Group 59
- Enteric Group 60
- Enteric Group 63
- Enteric Group 64
- Enteric Group 68
- Enteric Group 69
- Enteric Group 137

OREGON PUBLIC HEALTH DIVISION REPORTING FOR CARBAPENEM-RESISTANT ENTEROBACTERIACEAE (CRE)

OREGON PUBLIC HEALTH DIVISION REPORTING FOR CARBAPENEM-RESISTANT ENTEROBACTERIACEAE (CRE)

Use this form to report suspected CRE isolates to the Oregon Public Health Division.

For a list of local health department phone numbers go to [www.healthoregon.org/diseasereporting](http://www.healthoregon.org/diseasereporting).

For a list of local health department phone numbers go to [www.healthoregon.org/acd](http://www.healthoregon.org/acd).

Enterobacteriaceae

• Enterobacteriaceae spp., and Enterobacteriaceae spp. isolates that meet the Oregon Public Health Division (PHD) CRE case definition to the Oregon State Public Health Laboratory (OSPHL; 503-693-4100) for further testing. Submission of isolates other than Enterobacteriaceae spp., and Enterobacteriaceae spp. that meet the PHD CRE case definition may be requested by PHD on a case-by-case basis.

Alert infection-prevention and clinical staff at the facility where the laboratory specimen was obtained.

Cre case definition for Oregon laboratories

Bacteria of the Enterobacteriaceae family (see list below) that:

For labs using the current CLSI (M100-S24) breakpoints:

- Are non-susceptible (i.e., intermediate or resistant) to one or more of the following carbapenems: doripenem, imipenem, or meropenem AND resistant to ALL of the 3rd-generation cephalosporins tested: ceftaxime, ceftriaxone, or ceftazidime; OR
- Carry a gene sequence specific for carbapenemase (e.g., PCR); OR
- Are positive for carbapenemase production by a phenotypic test (e.g., Modified Hodge Test if the isolate is Escherichia coli or Klebsiella spp. or Carba NP on any Enterobacteriaceae).

For labs using the old CLSI (M100-S19) breakpoints:

- Are non-susceptible (i.e., intermediate or resistant) to ANY of the following carbapenems: doripenem, ertapenem, or imipenem, or meropenem AND resistant to ANY of the 3rd-generation cephalosporins tested: ceftaxime, ceftriaxone, or ceftazidime; OR
- Carry a gene sequence specific for carbapenemase (e.g., PCR); OR
- Are positive for carbapenemase production by a phenotypic test (e.g., Modified Hodge Test if the isolate is Escherichia coli or Klebsiella spp. or Carba NP on any Enterobacteriaceae).

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OHA 8578 (Rev. 04/2014)