Campylobacter jejuni and coli

Calibration of zone diameter breakpoints to MIC values

Version 2.3
June 2018
Campylobacter jejuni and coli
MIC and zone diameter correlates

• The following histograms present inhibition zone diameter distributions from EUCAST antimicrobial susceptibility testing. In most, the different colours of the bars indicate different MIC values. In some, the colours of the bars indicate a resistance gene or a resistance mechanism.

• The distributions include data for wild-type isolates and for isolates with acquired resistance mechanisms. A large number of isolates with MIC values close to the edge of the wild-type distribution and/or close to EUCAST clinical breakpoints were intentionally included. These distributions can not be used to infer resistance rates or the performance of the tests with routine isolates.

• For some agents, isolates were tested on more than one occasion, including parallel tests with disks and media from several manufacturers. When this is the case, data are presented as both the “number of isolates tested” and the “total number of MIC-zone diameter correlates”, including replicate tests and parallel tests with disks and media from different sources.
Campylobacter jejuni and coli
Materials and methods

- Antimicrobial susceptibility testing was performed on Campylobacter jejuni and C. coli from human clinical and veterinary isolates collected from several laboratories, including isolates with known resistance mechanisms. Disk diffusion was performed on MH-F media according to EUCAST methodology and MICs were determined with the ISO broth microdilution method or with agar dilution on MH-F media.

- The distributions of MIC vs. zone diameter in this presentation are the result of a collaboration between EUCAST; Central Veterinary Institute (CVI), Lelystad, the Netherlands; National Institute for Health and Welfare (THL), Turku, Finland; National Reference Laboratory for Antibiotics, Prague, Czech Republic and FDA, NARMS Program, USA.

- This presentation is based on EUCAST Clinical Breakpoint Tables v. 8.1.
Changes from previous version (2.2)

<table>
<thead>
<tr>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No changes. Breakpoints checked against latest version of EUCAST Clinical Breakpoint Tables.</td>
</tr>
</tbody>
</table>
Explanation of graphs:

Zone diameter distribution with MIC values or resistance mechanisms as coloured bars.

Ciprofloxacin 5 µg vs. MIC
*C. jejuni* and *coli*, 360 isolates (446 correlates)

No of observations

Inhibition zone diameter (mm)

MIC (mg/L)
- ≥32
- 16
- 8
- 4
- 2
- 1
- 0.5
- 0.25
- 0.125
- ≤0.06

Resistant by EUCAST
MIC breakpoints

Susceptible by EUCAST
MIC breakpoints
Ciprofloxacin 5 µg vs. MIC
*C. jejuni* and *coli*, 360 isolates (446 correlates)

(5 data sources)

<table>
<thead>
<tr>
<th>MIC (mg/L)</th>
<th>Breakpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥32</td>
<td>S≤0.5, R&gt;0.5 mg/L</td>
</tr>
<tr>
<td>16</td>
<td>ECOFF 0.5 mg/L</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>0.125</td>
<td></td>
</tr>
<tr>
<td>≤0.06</td>
<td></td>
</tr>
</tbody>
</table>

No of observations

Inhibition zone diameter (mm)
Erythromycin 15 µg vs. MIC
*Campylobacter jejuni, 727 isolates (764 correlates)*

(5 data sources)

<table>
<thead>
<tr>
<th>MIC (mg/L)</th>
<th>≤0.125</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>16</th>
<th>32</th>
<th>64</th>
<th>≥128</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of observations</td>
<td>0</td>
<td>5</td>
<td>35</td>
<td>62</td>
<td>281</td>
<td>326</td>
<td>166</td>
<td>61</td>
<td>3</td>
</tr>
</tbody>
</table>

**Breakpoints**
- **MIC**
  - S ≤ 4, R > 4 mg/L
- **Zone diameter**
  - S ≥ 20, R < 20 mm

**ECOFF**
- 4 mg/L
Erythromycin 15 µg vs. MIC
_Campylobacter coli_, 104 isolates (134 correlates)

(5 data sources)

**Breakpoints**

<table>
<thead>
<tr>
<th>MIC</th>
<th>S≤8, R&gt;8 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone diameter</td>
<td>S≥24, R&lt;24 mm</td>
</tr>
</tbody>
</table>

**ECOFF**

8 mg/L
Tetracycline 30 µg vs. MIC
C. jejuni and coli, 817 isolates (844 correlates)

(4 data sources)

Breakpoints

<table>
<thead>
<tr>
<th>MIC</th>
<th>S≤2, R&gt;2 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone diameter</td>
<td>S≥30, R&lt;30 mm</td>
</tr>
</tbody>
</table>

ECOFF

1 mg/L (C. jejuni), 2 mg/L (C. coli)