Tentative tetracycline ECOFFs for veterinary bacteria

VetCAST meeting, Amsterdam, 11 April 2016

Kees Veldman
ECOFFs

• Epidemiological cut-off values (ECOFFs) are intended to identify the wild-type distribution.
• Based on MIC distributions
• Categories: wild-type (WT) and non wild-type (NWT)
Request for MICs of tetracyclines

• Target antibiotics: tetracycline, doxycycline and oxytetracycline

• Target bacteria: the usual suspects

• Target animals: cattle, pigs, poultry, companion animals (and horses).
Request for MICs of tetracyclines

- VetCAST members were asked to supply MICs in a fixed format (example Excel sheet).

- First request for MICs: 17-09-2015

- Reminder: 22-12-2015
Result MIC collection

- Tetracycline MICs distributions:
  - Cattle: 48
  - Swine: 46
  - Poultry: 11
  - Cats & dogs: 36
  - Horse: 17
  - Turkey: 1

Total: 159 distributions (24.356 observations)
Results MIC collection

• Doxycycline MICs distributions:
  – Cattle: 6
  – Swine: 2
  – Poultry: 3
  – Turkey: 1
  – Horse: 0
  – Cats & dogs: 0

Total: 12 distributions (1573 observations)
EUCAST subcommittee on ECOFFs

• Members: Gunnar Kahlmeter, Derek Brown, John Turnidge

• Committee has set QC criteria for MIC distributions

• ECOFFs will be set with “common sense'' supported by statistical analysis. (Turnidge et al, CMI, 12, 418-425, 2006)

• VetCAST will take part in this process (Kees Veldman and Dik Mevius)
QC criteria for MIC distributions

Important QC criteria of MIC distributions for setting ECOFFs

- Complete species identification
- Normal distribution
- Minimum of 15 observations/distribution
- Minimum 5 distributions
- Minimum 100 observations in total
- No truncation at the lower end
## Tentative tetracycline ECOFFs of veterinary pathogens

<table>
<thead>
<tr>
<th>Bacterial species</th>
<th>No of distributions</th>
<th>No of observations</th>
<th>Tentative ECOFF (WT ≤ mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. pyogenes</td>
<td>2</td>
<td>78</td>
<td>work in process</td>
</tr>
<tr>
<td>A. pleuropneumoniae</td>
<td>4</td>
<td>246</td>
<td>work in process</td>
</tr>
<tr>
<td>B. bronchiseptica</td>
<td>4</td>
<td>447</td>
<td>work in process</td>
</tr>
<tr>
<td>S. hyicus</td>
<td>3</td>
<td>66</td>
<td>work in process</td>
</tr>
<tr>
<td>S. pseudintermedius</td>
<td>3</td>
<td>337</td>
<td>work in process</td>
</tr>
<tr>
<td>S. suis</td>
<td>7</td>
<td>1899</td>
<td>work in process</td>
</tr>
<tr>
<td>S. uberis</td>
<td>2</td>
<td>304</td>
<td>work in process</td>
</tr>
<tr>
<td>S. agalactiae</td>
<td>2</td>
<td>60</td>
<td>work in process</td>
</tr>
<tr>
<td>S. dysgalactiae</td>
<td>2</td>
<td>160</td>
<td>work in process</td>
</tr>
</tbody>
</table>
Examples

A. pyogenes/tetracycline

Tentative ECOFF: WT: ≤ Observations: 78
Sources: 2
Examples

S. pseudintermedius/tetracycline

Tentative ECOFF: WT:

Observations: 337
Sources: 3
Examples

![Graph of S. agalactiae/tetracycline]

<table>
<thead>
<tr>
<th>Tentative ECOFF:</th>
<th>WT:</th>
<th>Observations:</th>
<th>Sources:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>2</td>
</tr>
</tbody>
</table>
Tentative ECOFFs for doxycyline

Less data received and often truncated on the left side

Underneath 2 examples of MIC distributions.
Nine institutes provided MICs:

• Heike Kaspar and Jürgen Wallmann, Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL), Berlin, Germany
• Stefan Schwarz, Friedrich-Loeffler-Institut (FLI), Neustadt-Mariensee, Germany
• Antonio Battisti, Istituto Zooprofilattico Sperimentale del Lazio e della Toscana (IZSLT), Rome, Italy
• Björn Bengtsson, National Veterinary Institute (SVA), Uppsala, Sweden
• Annette Nygaard, DTU, Søborg, Denmark
• Karl Pedersen, DTU Vet, Frederickberg C, Denmark
• Lucie Pokludová, Institute for State Control of Veterinary Biologicals and Medicaments (ÚSKVBL), Brno, Czech Republic
• Annet Heuvelink, GD Animal Health, Deventer, the Netherlands
• Dik Mevius, CVI Lelystad, the Netherlands

Thank you!
• Please send us more MIC data to make tentative ECOFFs final.

• kees.veldman@wur.nl