Managing the risk associated with use of antimicrobials in pigs

- Effect of the Yellow Card

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Berlin, November 12, 2013
Antimicrobials and pig production

- Diseased animals should be treated
  - Antimicrobials often form part of correct treatment

- A large pig production is associated with a non-negligible use of antimicrobials
  - Will lead to development of antimicrobial resistance

- Several initiatives have been put in place to mitigate the risk of antimicrobial resistance
Outline of presentation

1. Brief description of initiatives put in place
2. VETSTAT database
3. The Yellow Card Scheme and its effect
4. Discussion
Initiatives put in place in Denmark

- Ban on AGPs to finishers
- Ban on flouroquinolones
- Ban on cephalosporins + Yellow card initiative
- Ban on AGPs to weaners

Consumption of antimicrobials to all Danish livestock – 80% for pigs
Other initiatives

• Vets may prescribe but not sell antibiotics
• Herd health agreements
• Treatment guidelines developed
• VETSTAT database - records use of medicine prescribed for livestock
• DANMAP survey tracking development of ‘antibiotic resistance’ in livestock, food and human population since 1995
VETSTAT database

• All medicine used by the farmer is prescribed by the veterinary practitioner and recorded centrally in a database (VetStat)

• Enables an identification of trends in usage
  • By farm, veterinary practice or at national level
  • By animal species or age groups

• Run by Danish Veterinary and Food Administration

Despite of actions taken, consumption went on the increase 2008-2009
The Yellow Card Scheme

- Adapted in July 2010 by Danish Veterinary and Food Administration
- Make use of data recordings in Vetstat
- Restrictions imposed on pig farmers who use more antimicrobials than twice the average
  - Divided into age groups

<table>
<thead>
<tr>
<th>Age group</th>
<th>Permit limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sows and piglets</td>
<td>5.2</td>
</tr>
<tr>
<td>Weaners</td>
<td>28</td>
</tr>
<tr>
<td>Finishers</td>
<td>8</td>
</tr>
</tbody>
</table>

* Animal daily doses (ADD) per 100 animal days – limits have later been reduced further
Evaluation of antimicrobial consumption in sows and piglets in one herd

9-month moving average consumption of antimicrobials for age group in herd

Monthly consumption in ADD
Actions related to Yellow Card

Effect of Yellow Card on consumption of antibiotics

From 2010 to 2011: increase in production of 810,000 pigs
Consumption of vaccines: changes in use seen over 12 months

- Respiratory: +21%
- PCV2-related: +90%
- Gastro-intestinal: +43%
- Others: -7%

Comparison of lesions at meat inspection year 2011 versus 2010

<table>
<thead>
<tr>
<th>Lesion</th>
<th>Parameter estimate</th>
<th>Odds Ratio</th>
<th>Standard error</th>
<th>95% C.I.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic peritonitis</td>
<td>0.4381</td>
<td>1.55</td>
<td>0.0364</td>
<td>1.44-1.66</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Umbilical hernia</td>
<td>0.2036</td>
<td>1.23</td>
<td>0.0360</td>
<td>1.14-1.32</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Chronic enteritis</td>
<td>0.1765</td>
<td>1.19</td>
<td>0.0381</td>
<td>1.11-1.29</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Condemnation</td>
<td>0.1138</td>
<td>1.12</td>
<td>0.0582</td>
<td>1.00-1.26</td>
<td>0.047</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>0.0878</td>
<td>1.09</td>
<td>0.0387</td>
<td>1.01-1.18</td>
<td>0.020</td>
</tr>
<tr>
<td>Chronic arthritis</td>
<td>-0.0179</td>
<td>0.98</td>
<td>0.0468</td>
<td>0.90-1.08</td>
<td>0.702</td>
</tr>
<tr>
<td>Chronic pleuritis</td>
<td>-0.0336</td>
<td>0.97</td>
<td>0.0309</td>
<td>0.91-1.03</td>
<td>0.266</td>
</tr>
<tr>
<td>Chronic pneumonia</td>
<td>-0.3604</td>
<td>0.70</td>
<td>0.0853</td>
<td>0.59-0.82</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Chronic pericarditis</td>
<td>-0.5196</td>
<td>0.59</td>
<td>0.0747</td>
<td>0.51-0.69</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Tail bite infection</td>
<td>-0.6070</td>
<td>0.54</td>
<td>0.0607</td>
<td>0.48-0.61</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Effect on production

Source: Vinther, 2012
Use is on the increase again

- By 16% between Jan 2011 and May 2013
- But still lower than before the Yellow Card Scheme

Source: VETSTAT
Summary: Effect of Yellow Card

Documented effect:
- Decreased use of antimicrobials
- Increased use of vaccines
- Minor impact on health and production
  - assessed on average

Reports from the field:
- Vaccines not always that effective
- In some herds, necessary to change management
Discussion: Explanation for the relative low use of antimicrobials in Danish pig production

Primary factors
• Pig vet focuses more on advisory service than treatment
• Farmers are well-educated
• Pressure put on production by Danish Veterinary and Food Administration acts as incentive

Other factors
• Unique Danish SPF health management system
• High level of management in general
Tools: Manual

- Regarding use of antimicrobials
- Promoting prudent use
- Developed in collaboration with pig vets
- Published in Danish, English and Russian
- Can be found at: http://vsp.lf.dk/Viden/Til%20stadgangen/Manualer/antibiotika_praksis.aspx
Conclusion

- The Yellow Card Scheme is a useful tool to limit the consumption of antimicrobials in pig herds
  - Requires that consumption is monitored by species and age group

- Farmers become more aware of how their consumption contributes to the overall use
  - Will make use of the vet to seek alternative treatment

- However, maybe maximum limits might gradually become accept limits
  - Whereby the national consumption will increase
  - This will probably lead to new actions
Thank you for your attention
Secondary effect of Yellow Card - According to DANMAP 2012

DAPD = Number of standard doses for 1 kg animal divided by the estimated live biomass in age group