Summit on Antimicrobial Resistance.

The Veterinary Perspective on Responsible Use?

Peter Jones: President–Elect, British Veterinary Association
ABSOLUTELY – YES - It’s a must
It’s 20 years ago this year that the UK government introduced the Dangerous Dogs Act.
Comparison of data years 1997-98 to 2007-08 for FCE’s for those bitten or struck by a dog in UK
The statistics on dog attacks in UK

• For the whole of the UK, in 2005, there were 3,781 Accident & Emergency admissions in hospitals for dog attacks on children in the UK, up 42% from 2,652 in 2004.
• More than 100 victims of dog bites are admitted to hospital each week, a rise of 66 per cent in a decade.
• Serious attacks on young children by savage dogs soared by 14% in 2009. The dogs mauled 1,942 under-10s so badly they needed hospital treatment.
• This very serious rise in the amount of dog bites will hopefully convince ministers to finally overhaul the Dangerous Dogs Act.
• Deed not Breed!

CONCLUSION: Bad law does not solve the problem
Key questions,

1. Has the imposition of legal controls to prohibit the use of veterinary medicines helped in the campaign to minimise antimicrobial resistance?
2. What lessons have we learnt?
3. What is the veterinary profession doing about it?
4. What more do we need to do?
What has happened in Denmark after the growth promoter ban in the nineties?

Figure 39. Consumption of prescribed antimicrobials and growth promoters in animal production and prescribed antibacterials in humans, Denmark

What happened to resistance to therapeutic antimicrobials after the GP ban

Figure 6.1. Resistance (%) in Salmonella Typhimurium from pigs, Denmark

DANMAP 2010

a) The number of isolates varies between years (from 216 to 736)
WHAT HAPPENED IN THE NETHERLANDS AFTER THE GROWTH PROMOTER BAN IN THE NINETEES

Figure 3.2 Total sales of antibiotics in the Netherlands, 1998 to 2008.
Outcome of severe restriction on use of fluoroquinolones in Denmark

Figure 6.4. Resistance (%) in *Salmonella Typhimurium* in human cases acquired domestically (sporadic) or associated with travel, Denmark

Danmap 2010
Outcome of severe restriction on use of fluoroquinolones in Denmark

Figure 6.9 Resistance (%) in *Campylobacter jejuni* from human cases, Denmark

- Domestically acquired
- Travel abroad

% resistant isolates

- Tetracycline
- Erythromycin
- Ciprofloxacin

DANMAP 2010
Enrofloxacin banned in the US for poultry in 2003
Enrofloxacin use in animals & Quinolone-resistant
Salmonella Typhimurium DT104 (UK)
(data presented by WHO at TFAMR in Korea)
What happened after 1997?

- In England and Wales, isolations of multiresistant DT 104 from humans increased from about 200 in 1990 to >4000 in 1996. However, over the last two years there has been a significant decline in isolations, with numbers dropping by 48% in 1998, to 2000.

Figure 1: Emergence of multiresistant *Salmonella Typhimurium* in England & Wales

John Threlfall – personal communication
Epidemic S. Typhimurium, 1966 - 2008

DT 29: A, SSu, T: Plasmid

DT 204/193: T, Su, CSSuT, AK, G/Ap: Plasmid

DT 104: A, C, SSp, Su, T: Chromosomal
          Nx / Cp: Chromosomal
          Tm: Plasmid

John Threlfall – personal communication

John Threlfall – personal communication
### CTX-M genes in *Salmonella* in Europe, 2009

<table>
<thead>
<tr>
<th>Serotype</th>
<th>CTX-M</th>
<th>Country</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paratyphi B Java 1, 2</td>
<td>The Netherlands</td>
<td>Belgium, France</td>
<td>Poultry</td>
</tr>
<tr>
<td>Virchow</td>
<td>2</td>
<td>Belgium, France</td>
<td>Human, Poultry</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Turkey</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Belgium, France, Spain, UK*</td>
<td>Human, Poultry</td>
</tr>
<tr>
<td>Typhimurium 5</td>
<td></td>
<td>Greece</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Greece</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>UK</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>France, UK</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>UK</td>
<td>Human</td>
</tr>
<tr>
<td>Enteritidis 14</td>
<td></td>
<td>Spain</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>UK</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>17/18</td>
<td>UK</td>
<td>Human</td>
</tr>
<tr>
<td>Mbandaka 3</td>
<td></td>
<td>Poland</td>
<td>Human</td>
</tr>
<tr>
<td>Oranienburg 3</td>
<td></td>
<td>Poland</td>
<td>Human</td>
</tr>
<tr>
<td>Bovismorbificans 1</td>
<td></td>
<td>Italy</td>
<td>Human</td>
</tr>
<tr>
<td>Stanley 17/18</td>
<td></td>
<td>UK*</td>
<td>Human</td>
</tr>
<tr>
<td>Kentucky 15</td>
<td></td>
<td>France*</td>
<td>Human</td>
</tr>
<tr>
<td>Anatum 15</td>
<td></td>
<td>UK*</td>
<td>Human</td>
</tr>
</tbody>
</table>
Remember Question1. Has the imposition of legal controls to prohibit the use of veterinary medicines helped in the campaign to minimise antimicrobials resistance?
2. What lessons have we learnt?
Where else are the pressures coming from?

• There should be a ban on the use of certain types of antibiotics (quinolones and cephalosporins) in animals, in order to protect their activity in humans
  Sir Liam Donaldson CMO – UK Annual Report 2008

• Restrict or eliminate the use in food-producing animals of antimicrobials identified as critically important in human medicine, especially the use of fluoroquinolones, and third- and fourth- generation cephalosporins
  – WHO World Health Day 2011 Reduce Use of antimicrobials in Food Producing Animals

• Highly effective control option to reduce selective ESBL/AmpC producing bacteria at an EU level would be to stop all uses of cephalosporins/systemically active 3rd/4th generation cephalosporins or restrict their use
  – Scientific Opinion on public health risks of bacterial strains producing extended-spectrum beta-lactamases and/or Amp/C beta-lactamases in food and food producing animals; European Food Safety Authority (EFSA) panel on Biological Hazards. EFSA Journal 2011;9(8):2322

• 12 April 2011: The British Veterinary Association (BVA) and Federation of Veterinarians of Europe (FVE) have successfully seen off an attempt by MEPs to restrict the ability of vets to sell veterinary medicines directly to farmers and other animal owners.

• In order to contain antimicrobial resistance in man the use of 3rd/4th generation cephalosporins and fluoroquinolones in veterinary medicine should be prohibited
  – Health Commission report on antimicrobials resistance in the Netherlands 2011

• “Pets May Carry Bacteria Deadly to Humans”
3. What is the veterinary profession doing about it?

- Lobbying hard against bad law which does not solve the problem
- Challenging misconceptions about the causes of resistance
- Arguing for management of resistance to be based on sound scientific risk assessment: - WVA support at the Codex Task Force on AMR
- Education campaigns to raise awareness and reinforce the crucial importance of responsible use supported by appropriate guidelines
  - It’s not what we use, surely it has to be how we use them
- Promote stricter conditions in best practice for the use of certain categories of antimicrobials, which have special importance in human medicine (e.g. fluorquinolones and 3\textsuperscript{rd}-4th generation of cephalosporins)
- Encouraging better animal health management on farm to reduce the need for antimicrobials
- Promoting the One Health Concept: healthy animals means healthy food
RESPONSIBLE USE OF ANTIMICROBIALS
IN VETERINARY PRACTICE: THE 8-POINT PLAN

1. Work with clients to avoid need for antimicrobials
   - Integrated disease control programmes
   - Animal Health and Welfare Planning
   - Isolate infected animals wherever possible

2. Avoid inappropriate use
   - For example, for uncomplicated viral infections
   - Restrict use to ill or at-risk animals
   - Advise clients on correct administration of products and completion of course
   - Avoid underdosing

3. Choose the right drug for the right bug
   - Identify likely target organisms and predict their susceptibility
   - Create practice-based protocols for common infections based on clinical judgement and up to date knowledge
   - Know how antimicrobials work and their pharmacodynamic properties
   - Use antimicrobials with a spectrum as narrow as possible

4. Monitor antimicrobial sensitivity
   - While clinical diagnosis is often the initial basis for treatment, microbiological sensitivity must be determined whenever possible so that a change of treatment can be implemented if necessary

5. Minimise prophylactic use
   - Use only when animals are at risk and evidence that usage reduces morbidity and/or mortality
   - Regularly assess prophylactic use and develop written protocols for when prophylactic medication considered appropriate
   - Monitor antimicrobial sensitivity trends

6. Minimise use perioperatively
   - Use only when necessary and supported by strict aseptic techniques alongside written practice guidelines

7. Record and justify deviations from protocols
   - Be able to justify your choice of antimicrobial and dose
   - Keep accurate records of treatment and outcome to help evaluate therapeutic regimens

8. Report suspected treatment failure to the VMD
   - This may be the first indication of resistance
   - Report through the Suspected Adverse Reaction Surveillance Scheme (SARSS)

SPECIAL NOTE
Fluoroquinolones and third- and fourth-generation cephalosporins:
- Reserve these antimicrobials for clinical conditions that respond poorly to other classes of antimicrobials and where antibiotic sensitivity has been carried out.
- Do not administer systemically to groups or flocks of animals except in very specific situations and special attention should be given to the risk of antimicrobial resistance as part of the benefit-risk assessment.

ANTIMICROBIALS ARE ESSENTIAL FOR THE TREATMENT AND PREVENTION OF INFECTIOUS AND ZOONOTIC DISEASES IN BOTH ANIMALS AND HUMANS

EVERY USE INCREASES THE RISK OF DEVELOPMENT OF MICROBIAL RESISTANCE

RESPONSIBLE USE OPTIMISES THERAPEUTIC EFFECTS WHILE MINIMISING RESISTANCE DEVELOPMENT

RESPONSIBLE USE — AS LITTLE AS POSSIBLE.
**Are you PROTECTing your antibacterials?**

### Periodontal Disease
- Treat with amoxicillin, clavulanic acid + metronidazole.
- Alternatively, azithromycin or doxycycline.
- Practice Policy: Not mandatory.

### Skin Infections
- Skin and other traumatic wounds: Use amoxicillin克拉维酸酸、第一代头孢菌素 or clindamycin.
- Practice Policy: Not mandatory, but often used.

### Respiratory Infections
- Bacterial pneumonia (including aspiration): Use amoxicillin克拉维酸酸 or doxycycline.
- Acute respiratory infections: Use amoxicillin克拉维酸酸 or doxycycline.
- Practice Policy: Not mandatory, but often used.

### Gastrointestinal Infections
- Acute diarrhea with complications: Use amoxicillin克拉维酸酸 or metronidazole.
- Practice Policy: Not mandatory, but often used.

### Ear Infections
- Use amoxicillin克拉维酸酸 or doxycycline.
- Practice Policy: Not mandatory, but often used.

### Genitourinary Infections
- Cystitis: Use amoxicillin克拉维酸酸 or trimethoprim.
- Practice Policy: Not mandatory, but often used.

### Orthopaedic Infections
- Discospondylitis/osteoarthritis: Use amoxicillin克拉维酸酸 or ciprofloxacin.
- Practice Policy: Not mandatory, but often used.

### Antibacterial Options
- Ciprofloxacin: Not suitable for susceptible organisms.
- Practice Policy: Not recommended.

### Surgical Prophylaxis
- Prophylactic antibacterial use is not a substitute for good aseptic technique.
- Contraindicated for:
  - Prolonged surgery (>6 hours).
  - Inflammatory conditions.
  - Allergic reactions.
  - Practice Policy: Not mandatory, but often used.

### Antibiotics not indicated unless cytologically or culture is positive
- Cardiorespiratory.
- Chronic bronchitis/asthma.
- Asymptomatic.
- Practice Policy: Not mandatory, but often used.

### DO NOT USE
- There are strong arguments that antibiotics with restricted use in human medicine (e.g., trimethoprim, tetracycline, clindamycin) should not be used in animals under any circumstances.

### Second and Third Choice Antibiotics
- These antibiotics should be used only when other agents are not appropriate, either due to resistance or lack of efficacy.

### Follow the Cascade
- Suggested antibiotics are listed in alphabetical order. Order of selection should follow the Prophylactic Cascade. The following agents are not recommended: aminoglycosides, cephalosporins, macrolides, metronidazole, and trimethoprim.

*For further information on individual drugs and dosages, see BSAVA Small Animal Formulary, 7th edition.*
Building alliances
4. What more do we need to do?

- Every vet must be made aware of the problem
  - training, education, guidelines: NO EXCUSE FOR INACTION
- Every vet should be held accountable for which antimicrobial used
  - Clinical governance, health protocols
- Every vet must accept constraints on the use of certain classes of antimicrobials
  - Health planning, sensitivity testing, clinical judgment
- Every professional association must communicate better the need for vet antimicrobials, and always on prescription
  - ANIMALS NEED MEDICINES TOO – THEY DO!
Thank you for your attention