Antibiotic use for disease prevention in food-animals

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AFRICA-ASIA VIRTUAL WORKSHOP

Containing the ‘Silent Pandemic’

The Future Agenda on Antimicrobial Resistance
March 22-24, 2021
Antibiotic use/misuse in food-animals

Antibiotic use

<table>
<thead>
<tr>
<th>Therapeutic</th>
<th>Non-therapeutic</th>
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| • Therapeutic doses  
• Clinically diagnosed infectious disease | • Increase the rate of weight gain  
• Increase efficiency of feed utilization  
• Mass, routine use (largely through feed at sub-therapeutic doses) |

Growth promotion

<table>
<thead>
<tr>
<th>Prevention (prophylaxis)</th>
<th>Prevention – (control / metaphylaxis)</th>
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</table>
| • Individual or group of animals  
• With no clinical sign  
• Often routine use | • In a group of healthy animals (presumed to be infected/may have already been sub-clinically infected because they are at risk of infection), where one or more animal is already infected |

Though non-therapeutic, now being positioned as therapeutic by some agencies
But the reality and extent of preventive use calls for greater global attention to minimize it

- Several antibiotics of different classes used in almost all food-animal sectors - poultry, aquaculture, dairy, swine; including those which are critically important, frequently used to treat infections in community and hospitals, and are becoming ineffective due to growing resistance

- High proportion/quantum of overall antibiotic use (mass/group use, routine use, often higher/uncontrolled quantity - if given through water)

- Bound to increase with growing intensification (because of high stocking densities, less distancing, more disease onset and spread within the herd/flock)

- Likely adding significantly to resistance reservoirs (because of mass/group use, routine use, often sub-therapeutic dose intake - based on water intake)

- No fine line b/w growth promoter and prevention effect; so both need to be addressed together (not in parts). Examples from Europe exist, wherein total antibiotic use (including group treatment) increased when growth promoter use was restricted
EU has already planned to stop/restrict disease preventive use in animals (both prophylaxis and metaphylaxis) starting Jan 2022

- **Regulation (EU) 2019/6** of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products, which is applicable on 28 January 2022:

- “Antimicrobial medicinal products shall not be applied routinely nor used to compensate for poor hygiene, inadequate animal husbandry or lack of care or to compensate for poor farm management.”

Regarding prophylaxis, it says:

- “Antimicrobial medicinal products should not be used for prophylaxis other than in well-defined cases for the administration to an individual animal or restricted number of animals when the risk for infection is very high or its consequences are likely to be severe. Antibiotic medicinal products should not be used for prophylaxis other than in exceptional cases only for the administration to an individual animal.”

Regarding metaphylaxis, it says:

- Antimicrobial medicinal products should be used for metaphylaxis only when the risk of spread of an infection or of an infectious disease in a group of animals is high and where no appropriate alternatives are available.

It also says:

“Such restrictions should allow the decrease of prophylactic and metaphylactic use in animals towards representing a smaller proportion of the total use of antimicrobials in animals.”

“The veterinarian shall be able to provide justification for a veterinary prescription of antimicrobial medicinal products, in particular for metaphylaxis and for prophylaxis.” “As regards antimicrobial medicinal products for metaphylaxis or prophylaxis, they shall be prescribed only for a limited duration to cover the period of risk”
Despite action in the EU, the global guidance through the interagency coordination group does not reflect the need to minimize/eliminate disease prevention use; on the contrary ‘no mention’ is making it ‘acceptable’ more than ever

• The IACG report of 2019 does not recommend any action on antibiotics use for disease prevention

• This is despite suggestions from several civil society stakeholders before the recommendations were finalized as part of the consultative process:

‘**Need for stronger wording about the phasing out of antimicrobials not only as growth promoter but also for disease prevention in animals and plants was noted. Recommendation A3 could include stronger language in line with WHO and European Commission recommendations**’. **Summary report of 10 discussion meetings conducted between 31 January and 27 February 2019**

• CSE had also highlighted this gap in recommendation A3 (focused on phasing out growth promoters starting with HPClAs)

• CSE has once again pointed-out the issue/gap to the tripartite secretariat, while setting the agenda of the Global Leaders Group on Antimicrobial Resistance (formed as recommended by the IACG and tasked to shoulder its recommendations)
Further, disease prevention definition/wording varies among global agencies: creates scope of mis-interpretation/confusion in countries/among stakeholders; newer text seem to be justifying even pure preventive use

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<th>WHO</th>
<th>FAO</th>
<th>OIE</th>
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<td>“Disease prevention use (or prophylactic use) refers to use of antimicrobials in healthy animals considered to be at risk of infection or prior to the onset of clinical infectious disease. This includes use for control of the dissemination of a clinically diagnosed infectious disease identified within a group of animals, and prevention of an infectious disease that has yet not been diagnosed clinically.” <em>(source: WHO guidelines on use of medically important antimicrobials in food-producing animals)</em>&lt;br&gt;Originally sourced from: Codex text on foodborne antimicrobials, 2015</td>
<td><strong>Prophylaxis:</strong>&lt;br&gt;“The administration of an antimicrobial to susceptible but healthy animals to prevent the occurrence of infectious disease.”&lt;br&gt;&lt;br&gt;<strong>Metaphylaxis:</strong>&lt;br&gt;“The administration of an antimicrobial at therapeutic doses to all animals within a group in which some individuals have exhibited infection. Metaphylaxis acts both as a treatment for those animals currently infected and a preventive measure against infection in those animals who are healthy but risk becoming infected”&lt;br&gt;source: FAO - <em>Drivers, dynamics and epidemiology of antimicrobial resistance in animal production</em>, 2016</td>
<td>“To prevent: means to administer an antimicrobial agent to an individual or a group of animals at risk of acquiring a specific infection or in a specific situation where infectious disease is likely to occur if the drug is not administered.”&lt;br&gt;“To control: means to administer an antimicrobial agent to a group of animals containing sick animals and healthy animals (presumed to be infected), to minimise or resolve clinical signs and to prevent further spread of the disease” <em>(source: OIE Standards, Guidelines and Resolutions on Antimicrobial Resistance and the use of antimicrobial agents), 2020</em></td>
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**Codex - Proposed draft revision of the code of practice to minimize and contain foodborne antimicrobial resistance**

**Prevention of disease/prophylaxis:** Administration of antimicrobial agents to an individual or a group of animals at risk of acquiring a specific infection or in a specific situation where infectious disease is likely to occur if the antimicrobial agent is not administered. [agreed]

**Control of disease/metaphylaxis:** Administration of antimicrobial agents to group of animals containing sick and healthy individuals (presumed to be infected), to minimize or resolve clinical signs and to prevent further spread of the disease. [agreed]
Differing guidance/position on disease prevention use adds to the challenge; moreover, practically in limited diagnostic and/or weak extension settings, preventive use can invariably replace control/metaphylactic use.

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<td>Recommends “<strong>complete restriction of use of all classes of medically important antimicrobials in food-producing animals for prevention of infectious diseases that have not yet been clinically diagnosed.</strong>”</td>
<td>“<strong>Avoid preventive use of antibiotics.</strong>” “<strong>Preventive use (also called “prophylactic use”) of antibiotics should be applied only in exceptional situations,</strong> such as when a few animals in a group have been diagnosed with an infection that has probably already been infecting – or will soon be infecting – the rest of the group and the economic consequences are likely to be severe.” “<strong>The routine use of antibiotics to prevent diseases usually masks poor management practices or other shortcomings</strong>”</td>
<td>Considers prevention and control use as veterinary medical use</td>
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<td>“Antimicrobials <strong>classified as critically important for human medicine should not be used for control of the dissemination</strong> of a clinically diagnosed infectious disease identified within a group of food-producing animals”</td>
<td>(source: WHO guidelines on use of medically important antimicrobials in food-producing animals), 2015</td>
<td>Fluroquinolones, 3rd and 4th generation of Cephalosporins and Colistin should not be used as preventive treatment applied by feed or water in the absence of clinical signs in the animal(s) to be treated.</td>
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<td>(source: WHO guidelines on use of medically important antimicrobials in food-producing animals), 2015</td>
<td>(source: FAO Prudent and efficient use of antimicrobials in pig and poultry), 2019</td>
<td>(source: OIE Standards, Guidelines and Resolutions on Antimicrobial Resistance and the use of antimicrobial agents), 2020</td>
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**Codex -** [Proposed draft revision of the code of practice to minimize and contain foodborne antimicrobial resistance](source: Codex , 2020)

**Therapeutic use:** Administration of antimicrobial agents for the treatment, control/metaphylaxis and prevention/prophylaxis of disease. [not discussed]
Big takeaways from this review

1. **Lack of coherence** in the tripartite members on key issues – leading to confused messaging and guidance for country action.

2. Approach **requires high levels of regulatory systems** and institutions for surveillance which do not exist in most parts of the world.
Way ahead

We need a multi-pronged approach; to manage conservation, development and preventive priorities of the emerging world:

1. We need global guidance on the phase out of the use of antibiotics as growth promoters/and for disease prevention (prophylaxis and metaphylaxis) in food and livestock sectors

2. We need global guidance on the need for preventive health management through better housekeeping (particularly in the case of intensive farming) and a food systems approach so that antibiotic use is phased out

3. We need to regulate the use of antibiotics for ‘treatment’ so that it is targeted and done through qualified veterinarians

4. We need global coherence/clarity in the list of critically important antibiotics (for humans and animals) so that national governments can take action

5. Research on alternatives to antibiotics such as ethnoveterinary medicines/phyto-pharmaceuticals

The emerging world must work towards systems that minimize usage and not through complicated regulatory systems of classification between prophylaxis and metaphylaxis
Thank you

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