Interaction of regulatory authorities (Ministries of Health) with those responsible for animal health

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PAHO Department in Health Emergencies
OUTLINE

1. Why the interaction is necessary
2. The instruments
3. The actions
WHO’S GLOBAL ACTION PLAN ON AMR

1. Improve awareness and understanding of AMR through education and training
2. Strengthen knowledge and evidence base through surveillance and research
3. Reduce the incidence of infection through effective hygiene and IPC measures
4. Optimize the use of antimicrobial medicines in human and animal health
5. Ensure sustainable investment through research and development
Resolution WHA 68.7 (26th May 2015) and GAP

• Recognizing that the main impact of antimicrobial resistance is on human health, but that both the contributing factors and the consequences, including economic and others, go beyond health, and that there is a need for a coherent, comprehensive and integrated approach at global, regional and national levels, in a “One Health” approach and beyond, involving different actors and sectors such as human and veterinary medicine, agriculture, finance, environment and consumers;

• Regulation of the use of antimicrobial agents is inadequate or poorly enforced in many areas, such as over-the-counter and Internet sales. Related weaknesses that contribute to development of antimicrobial resistance include poor patient and health care provider compliance, the prevalence of substandard medicines for both human and veterinary use, and inappropriate or unregulated use of antimicrobial agents in agriculture.
Why the interaction is necessary?
THE WORLD OF ANTIMICROBIAL RESISTANCE HABITAT

The World (of Antimicrobial Resistance) According to…
Human Bacterial Pathogens and Their Habitat
THE FLOW OF ANTIBIOTIC-RESISTANT BACTERIA

EPIDEMIOLOGY OF ANTIMICROBIAL RESISTANCE

AQUACULTURE
- Sea/Lakes
- Drinking Water

Rivers and Streams
- Drinking Water

SOIL
- Sewage
- Vegetation, Seed Crops, Fruit

WILDLIFE
- Swimming

Food Animals
- Sheep
- Cattle
- Poultry
- Veal Calves
- Other Farmed Livestock

Swine

Compartmented Animals
- Direct Contact

Animal Feeds
- Land Fill

Rendering
- Farm Effluents and Manure Spreading
- Dead stock
- Offal

Fuel Ethanol Producers
- Fuel & Potable Ethanol

Distillers Grain By-Products

Fuel & Potable Ethanol

Land Fill

Handling, Preparation, Consumption

After Linton AH (1977), modified by Irwin R J 2012
version
ANTIMICROBIALS USED IN HUMANS, ANIMALS AND PLANTS

Humans
- Only for human use:
  • Carbapenems
  • Oxazolidones
  • Lipopeptides
- Aminoglycosides
- Tetracyclines
- Oxolinic Acid (quinolone)
- Triazoles - antifungal
- Aminoglycosides
- Tetracyclines
- Oxolinic Acid (quinolone)
- Triazoles - antifungal

Animals
- Both
  • 3rd - 4th Gen cephalosporins
  • Macrolides (erythromycin)
  • Penicillins
  • Quinolones (Cipro)
  • Sulfonomides
  • Colistin
  • Other
- Only for veterinary use:
  • Aminocoumarins
  • Orthosomycins
  • Phosphoglycolipids
  • Polyethers/ionophores
  • Quinoxalines
  • Copper

Plants
- Only for veterinary use:
  • Aminocoumarins
  • Orthosomycins
  • Phosphoglycolipids
  • Polyethers/ionophores
  • Quinoxalines
  • Copper
The instruments
ADDRESSING AMR THROUGH INTEGRATED SURVEILLANCE: AGISAR

1. WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance
2. Established in December 2008
3. Provides expert advice to WHO on
   1. Containing food-related antimicrobial resistance
   2. Promoting integrated surveillance of antimicrobial resistance and antimicrobial usage

Physicians
Microbiologists
Veterinarians
Epidemiologists
Participants from all 6 WHO regions
Representatives from FAO, OIE, ECDC, EFSA
Integrated surveillance of antimicrobial resistance

- Integrated surveillance of antimicrobial resistance in foodborne bacteria is defined as the collection, validation, analyses and reporting of relevant microbiological and epidemiological data on antimicrobial resistance in foodborne bacteria from humans, animals, and food, and on relevant antimicrobial use in humans and animals.
THE WHO LIST OF CRITICALLY IMPORTANT ANTIMICROBIALS

• Ranking of antimicrobials according to their importance in human medicine

• For risk management and containment of antimicrobial resistance in the context of non-human antimicrobial use

• First developed by WHO in 2005

• Updated on regular basis (2007, 2009, 2013, and 2016)
### Antimicrobial class

<table>
<thead>
<tr>
<th>Antimicrobial class</th>
<th>CRITICALLY IMPORTANT ANTIMICROBIALS</th>
<th>HIGHLY IMPORTANT ANTIMICROBIALS</th>
<th>IMPORTANT ANTIMICROBIALS</th>
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<tbody>
<tr>
<td></td>
<td>C1</td>
<td>C2</td>
<td>P1</td>
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<tr>
<td><strong>HIGHEST PRIORITY</strong></td>
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<tr>
<td>Cephalosporins (3rd, 4th and 5th generation)</td>
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<td>✔️</td>
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<td>Glycopeptides</td>
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<td>✔️</td>
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<tr>
<td>Macrolides and ketolides</td>
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<td>Polymyxins</td>
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<td>Quinolones</td>
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<td><strong>HIGH PRIORITY</strong></td>
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<td>Aminoglycosides</td>
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<td>Ansamycins</td>
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<td>Carbapenems and other penems</td>
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<tr>
<td>Glycylcyclines</td>
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<td>Lipopeptides</td>
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<td>Monobactams</td>
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<td>Oxazolidinones</td>
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<td>Penicillins (natural, aminopenicillins, and antipseudomonal)</td>
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<td>Phosphonic acid derivatives</td>
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<td>Drugs used solely to treat tuberculosis or other mycobacterial diseases</td>
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<tr>
<td><strong>IMPORTANT ANTIMICROBIALS</strong></td>
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<td>Aminocyclitols</td>
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<td>Cyclic polypeptides</td>
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<td>Nitrofurantoin</td>
<td>✔️</td>
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<tr>
<td>Nitroimidazoles</td>
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<tr>
<td>Phosphonic acids</td>
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Note: Does not include non-medically important antimicrobials (e.g. ionophores, phosphoglycolipids).
WHO GUIDELINES ON USE OF MEDICALLY IMPORTANT ANTIMICROBIALS IN FOOD-PRODUCING ANIMALS

• Aim to preserve the effectiveness of medically important antimicrobials, particularly those critically important to human medicine

• Public health focus, but due consideration given to factors such as animal health and welfare

• Evidence-based: systematics reviews, literature reviews, GRADE approach, an independent multidisciplinary group of experts, external peer review

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http://apps.who.int/iris/bitstream/10665/258970/1/9789241550130-eng.pdf?ua=1
## WHO CIA LIST AND GUIDELINES RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Medical Importance</th>
<th>Overall use</th>
<th>Growth promotion</th>
<th>Prevention</th>
<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td>Critically important</td>
<td>We recommend an overall reduction in use of all classes of medically important antimicrobials in food-producing animals.</td>
<td>We recommend complete restriction of use of all classes of medically important antimicrobials in food-producing animals for growth promotion.</td>
<td>We recommend 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.</td>
<td>Clinical infection</td>
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<tr>
<td>Highly important</td>
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<td>Important</td>
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<td>Important</td>
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**Recom. 4a**
- Responsible and prudent use

**Recom. 4b**
- Responsible and prudent use
The actions
Some examples of possible actions

- Supporting Antimicrobial Stewardship in Veterinary Medicine
- Assessment of human food safety assessment for new antimicrobials
- Guidance on judicious use
- Guidance on phasing out production uses
- Updates to the veterinary feed directive,
- Enhanced integrated surveillance activities
- Education and outreach
- Collaboration with international partners focused on resistance.
Summary

• Integrated surveillance of antimicrobial resistance for foodborne bacteria expands on traditional public health surveillance to include multiple elements of the food chain, and to include antimicrobial use data, to better understand the sources of infection and transmission routes.

• The CIA List is an important component of WHO’s Global Action Plan on Antimicrobial Resistance
  • Supports risk management and containment of antimicrobial resistance mainly due to non-human antimicrobial use

• The WHO Guideline for Use of Medically Important Antimicrobials in Food-Producing Animals
  • Provides specific evidence-based recommendations to further support the Global Action Plan by preserving the effectiveness of medically important antimicrobials
Thank you