ECO Asia Poultry
Online Conference 2021

Antimicrobial stewardship and its role in sustainable poultry farming and egg production

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ECO ANIMAL HEALTH

Topics

1. Why sustainability and antibiotic stewardship matter

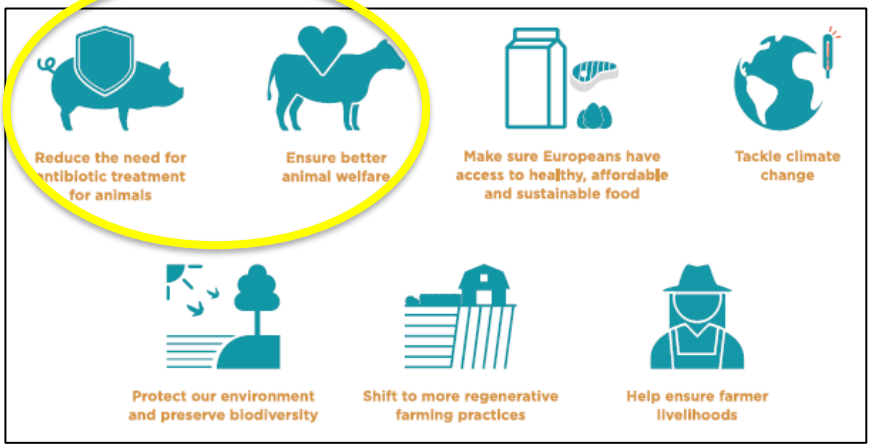
2. Antibiotic classifications and the link to the future

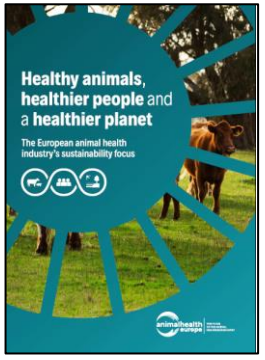
3. The European example

4. The significance for SE Asia and the poultry industry

Sustainability and animal health

- The UN Sustainable Development Goals (SDGs) as a blueprint for a better and more sustainable future
- Better animal health contributes to at least 10 of these SDGs[1]
- Reduce the need for antibiotics and ensure better animal welfare





1. Animal Health Europe. Healthy animals, healthier people and a healthier planet: the European animal health industry's sustainability focus

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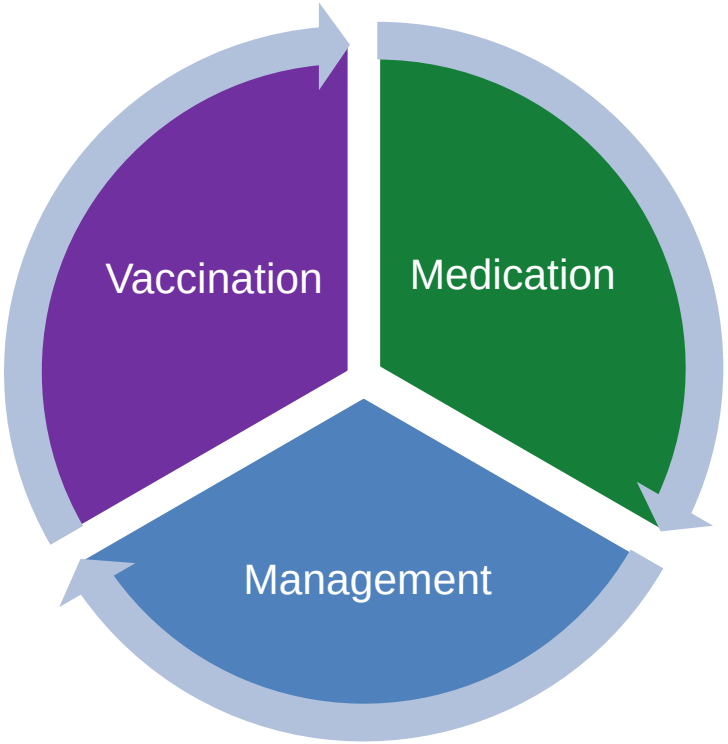
VALOSIN Stay Ahead

The Mycoplasma Treatment
AIVLOSIN Stay Ahead

Better animal health requires a holistic approach



Healthy animals require fewer antibiotic interventions

RESPONSIBLE USE OF MEDICINES IN AGRICULTURE ALLIANCE
ruma

'All medicines on farm should be used as little as possible and as much as necessary'

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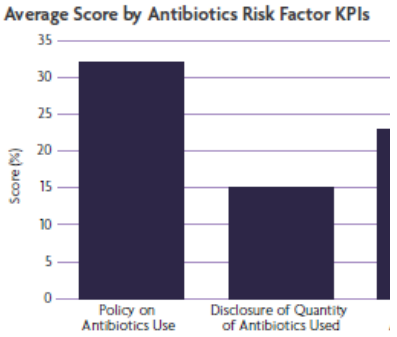
NGO, consumer and investor *awareness* of sustainability and AMR

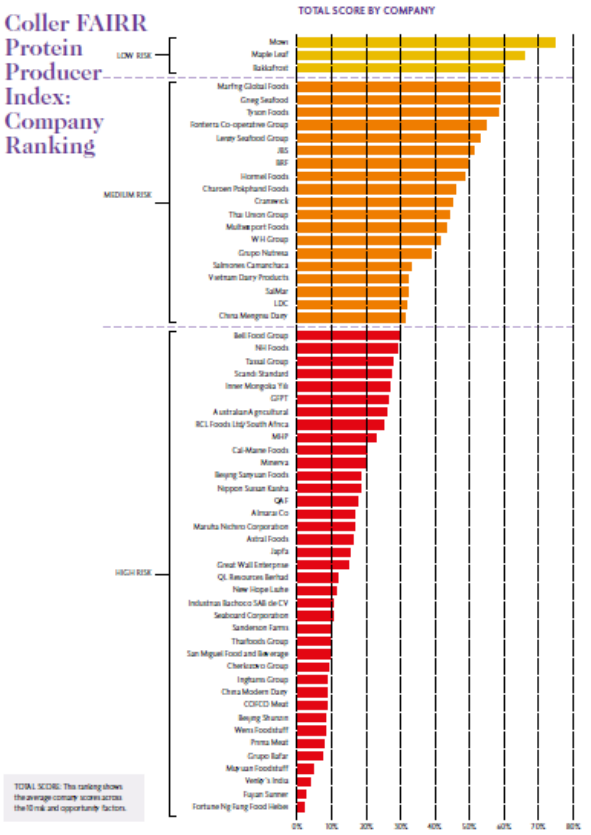
ALLIANCE TO SAVE OUR ANTIBIOTICS

SOIL ASSOCIATION ORGANIC STANDARD

COMPASSION in world farming

FAIRR
A COLLER INITIATIVE





‘70% of Index companies, totalling $243.8bn in market capital, and 89% of companies in Asia rank as HIGH RISK for Antibiotics.

Perception rather than science for the AMR component?

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The Mycoplasma Treatment

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Growing demand for animal-sourced protein in Asia

- Global population predicted to grow by 1/3 (2015 to 2050) to reach 9.7 bn[1]
- Growing demand for animal-sourced protein in low-income countries as incomes rises

Asia's growth is predicted to outperform the rest of the world's[2]

Predicted Growth (%)[2]		
	Asia	**World**
2021	7.5	6.0
2022	6.4	4.9

- Food scares, health perceptions, welfare and sustainability leading to interest in plant-based or meat alternatives

1. Henchio et al. 2021. Animal. IMF 2. IMF, July 2021

Animal-based protein contribution to AMR

WHO ‘10 Threats to Global Health in 2019’, the start of the next 5-year strategic plan

1. Air pollution and climate change
2. Noncommunicable diseases
3. Global influenza pandemic
4. Fragile and vulnerable settings
5. **Antimicrobial resistance**
6. Ebola and other high-threat pathogens
7. Weak primary health care
8. Vaccine hesitancy
9. Dengue
10. HIV

‘Drug resistance is driven by the overuse of antimicrobials in people, but also in animals, especially those used for food production, as well as in the environment. WHO is working with these sectors to implement a global action plan to tackle antimicrobial resistance by increasing awareness and knowledge, reducing infection, and encouraging prudent use of antimicrobials. ‘

World Health Organization

Opportunity for alternative proteins?

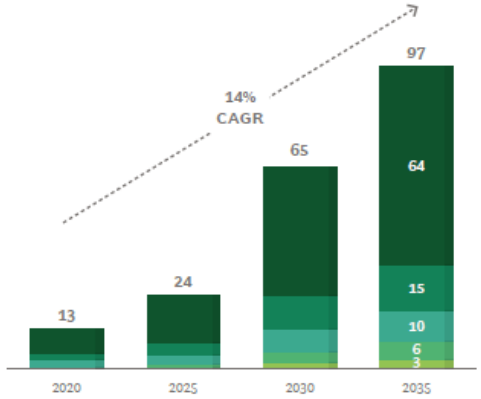
- 11-22% of global animal-based protein is “very likely” to be alternative by 2035[2]

1. Burset March 2021 2. BCG March 2021

Opportunity for alternative proteins?

- 11-22% of global animal-based protein is “very likely” to be alternative by 2035[2]
- Asia-Pacific represents the largest opportunity: large and growing population which is consuming more protein as people become wealthier; market will represent 2/3 of global consumption by 2035

Asia-Pacific, the largest market for alternative proteins, will continue to grow the fastest



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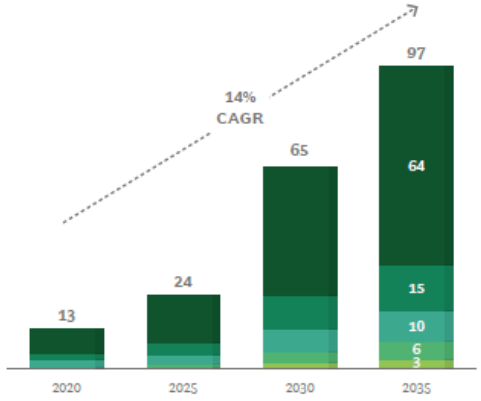


- Asia-Pacific
- Europe
- North America
- Latin America
- Rest of the World

1. Burset March 2021 2. BCG March 2021

The macroenviroment for sustainable livestock farming

- Protein demand will increase
- Healthy animals contribute to sustainability
- Pressure placed on livestock protein-sector from NGOs and consumers around sustainability, welfare, healthy diets, food safety, AMR
- There could be an increased interested in alternative over animal-based in the future
- Sustainable livestock protein production into the future will depend on meeting stakeholder demands

Topics

1. Why sustainability and AMR matter

2. **Antibiotic classifications and the link to the future**

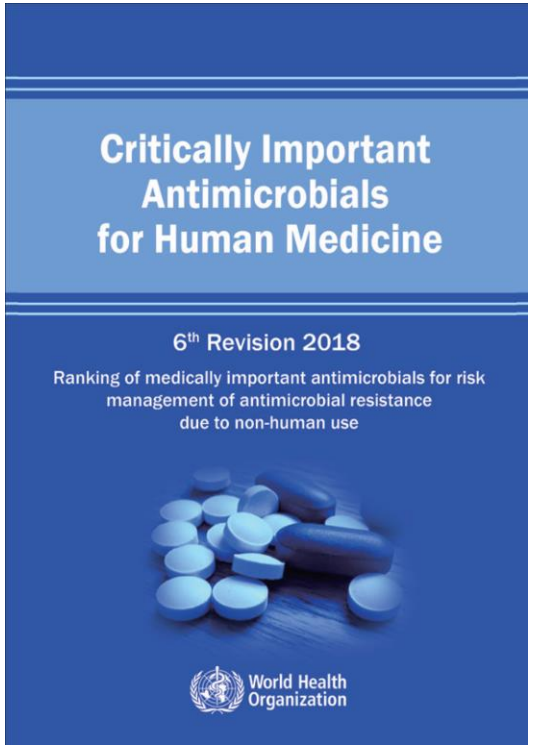
3. The European example

4. The significance for SE Asia and the poultry industry

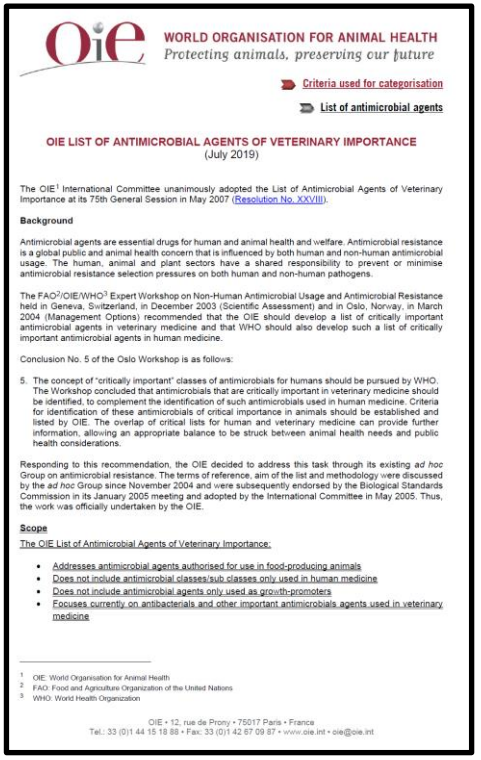
WHO, FAO and OIE – the antimicrobial stewardship 'triumvirate'

WHO and OIE categorised antibiotics for human and vet medicine, respectively

World Health Organisation (WHO) 6th Revision 2018



World Organisation for Animal Health (OIE) July 2019



WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Criteria used for categorisation

List of antimicrobial agents

OIE LIST OF ANTIMICROBIAL AGENTS OF VETERINARY IMPORTANCE
(July 2019)

The OIE[1] International Committee unanimously adopted the List of Antimicrobial Agents of Veterinary Importance at its 75th General Session in May 2007 (Resolution No. XXVIII).

Background

Antimicrobial agents are essential drugs for human and animal health and welfare. Antimicrobial resistance is a global public and animal health concern that is influenced by both human and non-human antimicrobial usage. The human, animal and plant sectors have a shared responsibility to prevent or minimise antimicrobial resistance selection pressures on both human and non-human pathogens.

The FAO[2]/OIE/WHO[3] Expert Workshop on Non-Human Antimicrobial Usage and Antimicrobial Resistance held in Geneva, Switzerland, in December 2003 (Scientific Assessment) and in Oslo, Norway, in March 2004 (Management Options) recommended that the OIE should develop a list of critically important antimicrobial agents in veterinary medicine and that WHO should also develop such a list of critically important antimicrobial agents in human medicine.

Conclusion No. 5 of the Oslo Workshop is as follows:

5. The concept of "critically important" classes of antimicrobials for humans should be pursued by WHO. The Workshop concluded that antimicrobials that are critically important in veterinary medicine should be identified, to complement the identification of such antimicrobials used in human medicine. Criteria for identification of these antimicrobials of critical importance in animals should be established and listed by OIE. The overlap of critical lists for human and veterinary medicine can provide further information, allowing an appropriate balance to be struck between animal health needs and public health considerations.

Responding to this recommendation, the OIE decided to address this task through its existing *ad hoc* Group on antimicrobial resistance. The terms of reference, aim of the list and methodology were discussed by the *ad hoc* Group since November 2004 and were subsequently endorsed by the Biological Standards Commission in its January 2005 meeting and adopted by the International Committee in May 2005. Thus, the work was officially undertaken by the OIE.

Scope

The OIE List of Antimicrobial Agents of Veterinary Importance:

- Addresses antimicrobial agents authorised for use in food-producing animals
- Does not include antimicrobial classes/sub classes only used in human medicine
- Does not include antimicrobial agents only used as growth-promoters
- Focuses currently on antibacterials and other important antimicrobials agents used in veterinary medicine

1 OIE: World Organisation for Animal Health
2 FAO: Food and Agriculture Organization of the United Nations
3 WHO: World Health Organization

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Tel.: 33 (0)1 44 15 18 88 • Fax: 33 (0)1 42 67 09 87 • www.oie.int • oie@oie.int

WHO classification in CIA, Highy Important & Important

Antimicrobial classes used in human medicine categorized based on 2 criteria

C1: The antimicrobial class is the sole, or one of limited available therapies, to treat serious bacterial infections in people

C2: The antimicrobial class is used to treat infections in people caused by either (1) bacteria that may be transmitted to humans from non-human sources, or (2) bacteria that may acquire resistance genes from non-human sources

Critically Important	Highly Important	Important
Both C1 & C2 met	C1 or C2 met	Neither C1 nor C2 met

WHO classification in CIA, Highly Important & Important

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Critically Important

Both C1 & C2 met

Highly Important

C1 or C2 met

Important

Neither C1 nor C2 met

Highest Priority CIAs

All P factors met

High Priority CIAs

Not all P factors met

CIAs further prioritized according to 3 factors

P1: Used to treat a large number of people with infections for which limited antimicrobials are available

P2: Used with high frequency in human medicine or in certain high-risk groups

P3: Used to treat human infections for which an extensive evidence exists on the transmission of resistant-bacteria or genes from non-human sources

World Organisation for Animal Health (OIE) List of Antimicrobial Agents of Veterinary Importance (2019)

3 Categories based on 2 Criterion

C1: Response rate to the questionnaire regarding Veterinary Important Antimicrobial Agents. Met when a majority of the respondents (more than 50%) identified the importance of the antimicrobial class in their response to the questionnaire.

C2: Treatment of serious animal disease and availability of alternative antimicrobial agents. Met when compounds within the class were identified as essential against specific infections and there was a lack of sufficient therapeutic alternatives.

Vet Critically Important (VCIA)	Vet Highly Important (VHIA)	Vet Important (VIA)
Both C1 & C2 met	C1 or C2 met	Neither C1 nor C2 met

OIE Recommendations*

Fluoroquinolones, 3rd & 4th generation Cephalosporins and Colistin:

1. Not to be used orally as preventive treatment in the absence of clinical signs in the animal(s) to be treated

2. Not to be used as a first line treatment unless justified; when used as a second line treatment, it should ideally be based on the results of bacteriological tests

3. Extra-label/off label use should be limited and reserved for instances where no alternatives are available. Such use should be in agreement with the national legislation in force

4. Urgently prohibit their use as growth promoters

- The classes in the WHO category of Highest Priority Critically Important Antimicrobials should be the highest priorities for countries in phasing out use of antimicrobial agents as growth promotors

*OIE List of Antimicrobial Agents of Veterinary Importance (2019)

WHO and OIE lists comparison

WHO classification (6th revision, 2018)	OIE List of Antimicrobial Agents of Veterinary Importance (2019)

Critically Important (CIA)
Highest Priority
Cephalosporins (3rd, 4th & 5th gen)
Glycopeptides
Macrolides & Ketolides
Polymyxins
Quinolones
High Priority
Aminoglycosides
Ansamycins
Carbapenems & other penems
Glycylcyclines
Lipopeptides
Monobactams
Oxazolidinones
Certain Penicillins
Phosphonic acid derivatives
Drugs for TB, mycobacterial dis

Vet Critically Important
Aminoglycosides
Amphenicols
Cephalosporins (3rd & 4th Gen)
Macrolides
Penicillins
Quinolones (2nd gen - FQs), Sulfonamides & Diaminopyrimidines
Tetracyclines

Highly Important
Amphenicols
Cephalosporins (1st & 2nd gen)
Lincosamides
Certain Penicillins Pseudomonic acids
Riminofenazines
Steroid antibacterials
Streptogramins
Sulfonamides, combos, etc
Sulfones
Tetracyclines

Vet Highly Important
Ansamycin - Rifamycins
Cephalosporins (1st & 2nd Gen)
Ionophores
Lincosamides
Phosphonic Acid Derivatives
Pleuromutilins
Polypeptides & Polymyxins
Quinolones (1st Gen)

Important
Aminocyclitols
Cyclic polypeptides
Nitrofuran derivatives
Nitroimidazoles
Pleuromutilins

Vet Important
Aminocoumarin
Arsenical
Bicyclomycin
Fusidane
Orthosomomycins
Quinoxalines
Streptogramins
Thiostrepton

WHO and OIE lists comparison

WHO & OIE lists should form the basis for national and regional planning

WHO classification (6th revision, 2018)	OIE List of Antimicrobial Agents of Veterinary Importance (2019)
Critically Important (CIA)	**Vet Critically Important**
Highest Priority	Aminoglycosides
Cephalosporins (3rd, 4th & 5th gen)	Amphenicols
Glycopeptides	Cephalosporins (3rd & 4th Gen)
Macrolides & Ketolides	Macrolides
Polymyxins	Penicillins
Quinolones	Quinolones (2nd gen - FQs), Sulfonamides & Diaminopyrimidines
High Priority	Tetracyclines
Aminoglycosides	
Ansamycins	
Carbapenems & other penems	
Glycylcyclines	
Lipopeptides	
Monobactams	
Oxazolidinones	
Certain Penicillins	
Phosphonic acid derivatives	
Drugs for TB, mycobacterial dis	
Highly Important	**Vet Highly Important**
Amphenicols	Ansamycin - Rifamycins
Cephalosporins (1st & 2nd gen)	Cephalosporins (1st & 2nd Gen)
Lincosamides	Ionophores
Certain Penicillins Pseudomonic acids	Lincosamides
Riminofenazines	Phosphonic Acid Derivatives
Steroid antibacterials	Pleuromutilins
Streptogramins	Polypeptides & Polymyxins
Sulfonamides, combos, etc	Quinolones (1st Gen)
Sulfones	
Tetracyclines	
Important	**Vet Important**
Aminocyclitols	Aminocoumarin
Cyclic polypeptides	Arsenical
Nitrofuran derivatives	Bicyclomycin
Nitroimidazoles	Fusidane
Pleuromutilins	Orthosomomycins
	Quinoxalines
	Streptogramins
	Thiostrepton

National Action Plans (NAPs) and local lists should reflect the market situation

Some factors that can influence local antimicrobial use (AMU) guidelines

- Definitions and categorisation of antibiotics e.g. CIAs
- Antibiotic Growth Promotion (AGP) use allowed?
- Vet prescription needed?
- Animals/products are exported to Europe, what does this mean?
- Are antibiotics allowed for disease prevention?
- Buyer/retailer with restrictions on antibiotic use?
- Requirement to reduce use of antibiotics

Topics

1. Why sustainability and AMR matter

2. Antibiotic classifications and the link to the future

3. **The European example**

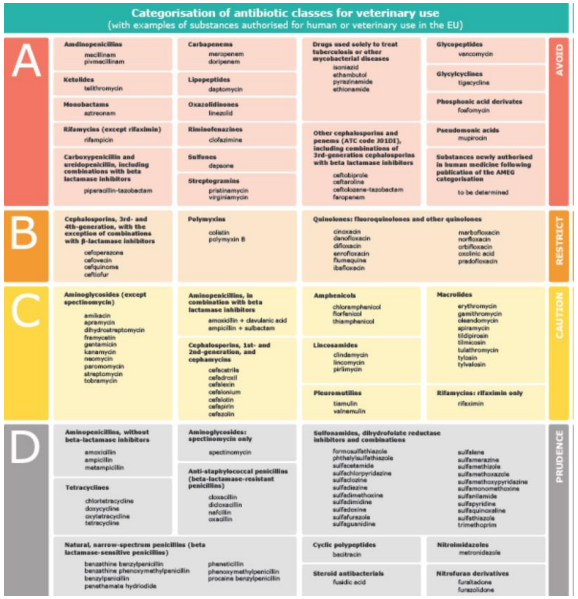
4. The significance for SE Asia and the poultry industry

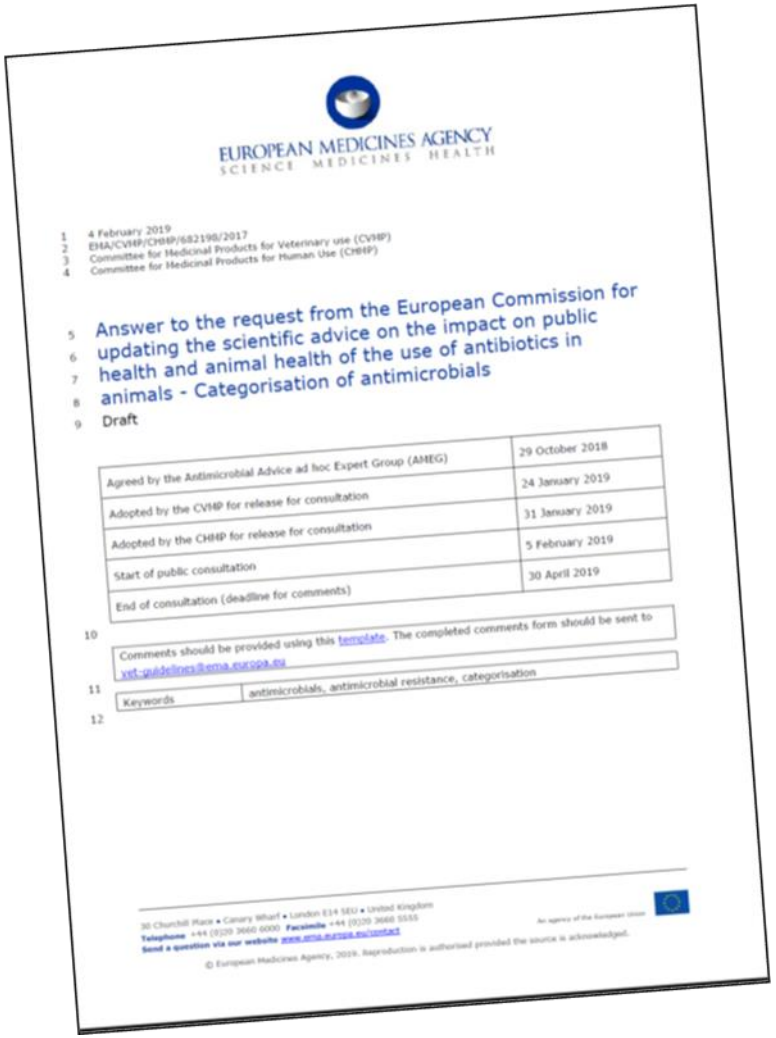
The EU example

- European Commission (EC) requested of the EMA answers on:

1. the impact of the use of antibiotics in animals on public and animal health
2. measures to manage the possible risk to humans

- Report prepared by the Antimicrobial Advice ad hoc Expert Group (AMEG)




EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

4 February 2019
EMA/CVMP/CHMP/682198/2017
Committee for Medicinal Products for Veterinary use (CVMP)
Committee for Medicinal Products for Human Use (CHMP)

Answer to the request from the European Commission for updating the scientific advice on the impact on public health and animal health of the use of antibiotics in animals - Categorisation of antimicrobials

Draft

Agreed by the Antimicrobial Advice ad hoc Expert Group (AMEG)	29 October 2018
Adopted by the CVMP for release for consultation	24 January 2019
Adopted by the CHMP for release for consultation	31 January 2019
Start of public consultation	5 February 2019
End of consultation (deadline for comments)	30 April 2019

Comments should be provided using this template. The completed comments form should be sent to vet-guidelines@ema.europa.eu

Keywords: antimicrobials, antimicrobial resistance, categorisation

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Send a question via our website www.ema.europa.eu/contact

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ZERO DAY EGG WITHDRAWAL

The Mycoplasma Treatment

AIVLOSIN Stay Ahead

2nd EMA/AMEG report

Category A 'Avoid'

- Not authorised as medicines in the EU
- Don't use for livestock
- Only in exceptional circumstances may be used in companion animals

Category B 'Restrict'

- Critically important in human medicine
- Only consider if no antibiotic in Categories C or D may be effective and only with antimicrobial susceptibility testing if possible

3rd/4th generation cephalosporins, FQs & polymixins (colistin)

Category C 'Caution'

- In this group, there are alternatives in human medicine
- For some vet indications, there are no alternatives in Category D
- Should be considered only when there are no alternatives in Category D that could be clinically effective

Aminoglycosides, some Aminopenicillins, Amphenicols, Cephalosporins (1st&2nd gen) and cephamycins, Lincosamides, Macrolides, Pleuromutilins, Rifamycins (rifaximin only)

Category D 'Prudence'

- Should be used 1st-line whenever possible
- Use prudently only when medically needed

Aminoglycosides (spectinomycin only),some Aminopenicillins, Cyclic polypeptides, Nitrofuran derivatives, Nitroimidazoles, Penicillins (some), Steroid antibacterials, Sulfonamides, dihydrofolate reductase inhibitors and combinations, Tetracyclines

Comparison of the reports

	WHO 6th Report (2018)	OIE (2019)	EMA/AMEG 2nd Report (2019)
Antibiotics included	All used in humans	All used in food producing animals	All WHO antibiotics
Categories	Critically Important Highly Important Important	Vet Critically Important Vet Highly Important Vet Important	A: Avoid B: Restrict C: Caution D: Prudence
Macrolide Categorisation	Critically Important	Vet Critically Important	Category C ('Caution')
Pleuromutilins	Important	Vet Highly Important	Category C ('Caution')
Commentary around macrolides	Important in treatment of Campylobacter (which can also develop resistance)	The wide range of applications and the nature of the diseases treated make macrolides extremely important for vet medicine. Macrolides are used to treat Mycoplasma infections in pigs & poultry, haemorrhagic digestive disease in pigs (*L. intracellularis*) and liver abscesses (*F. necrophorum*) in cattle, where they have very few alternatives. This class is also used for respiratory infections in cattle.	Important for treatment of **mycoplasma infections in pigs and poultry**. Newer macrolides are among few alternatives for treatment of respiratory tract infections caused by bacteria that are resistant to alternatives in Category D. Some alternatives are Category B.

EU farming strategy and sustainability

- ‘Farm to Fork Strategy’ adopted 2020
- Will help to enable EU sustainable food systems
- Includes an objective to reduce total EU sales of antimicrobials in livestock (and aquaculture) by 50% by 2030[1]

2006:

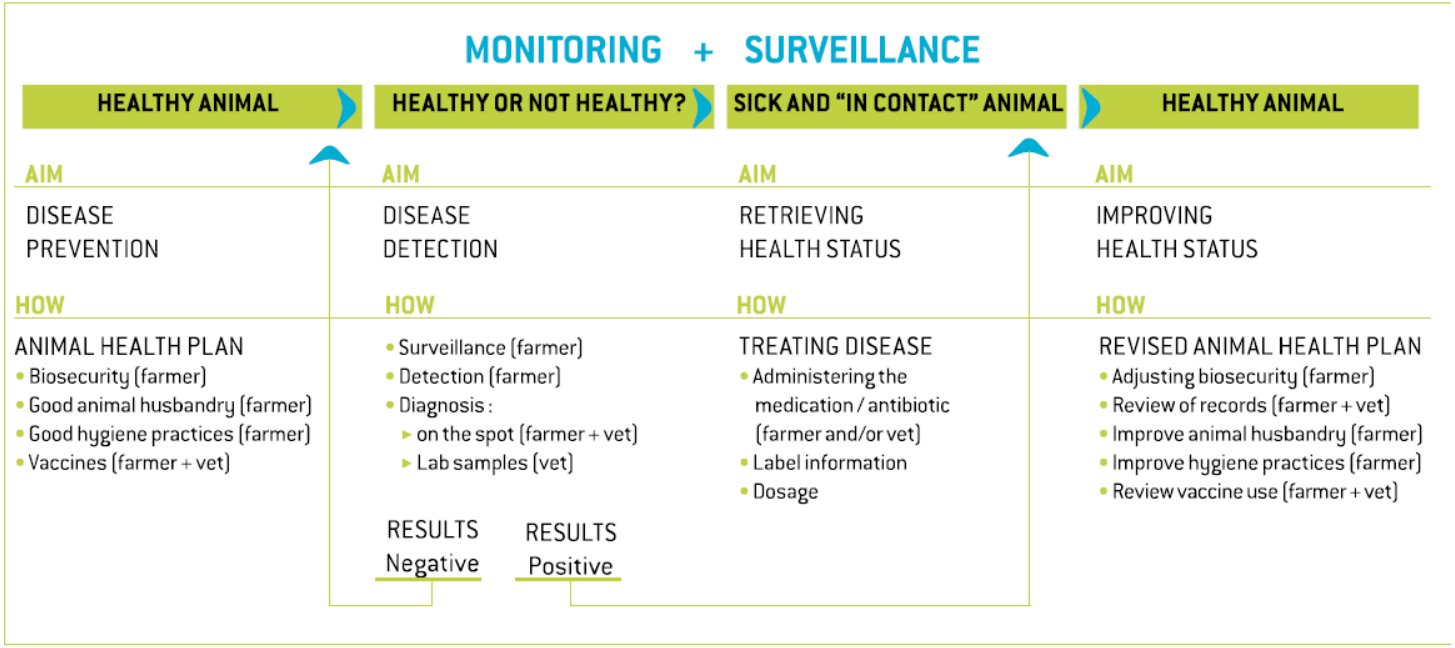
- Antibiotic use for growth promotion banned in Europe

2022 (January):

- Ban on prophylactic use of antibiotics in livestock[1]
- Updated EU Regulations on Veterinary Medicinal Products (VMPs)

Improving health to reduce antimicrobial use

- Link between Antimicrobial Use (AMU) and Antimicrobial Resistance (AMR)
- Ensuring heath of animals through management and vaccines can reduce the need for antibiotics[1]



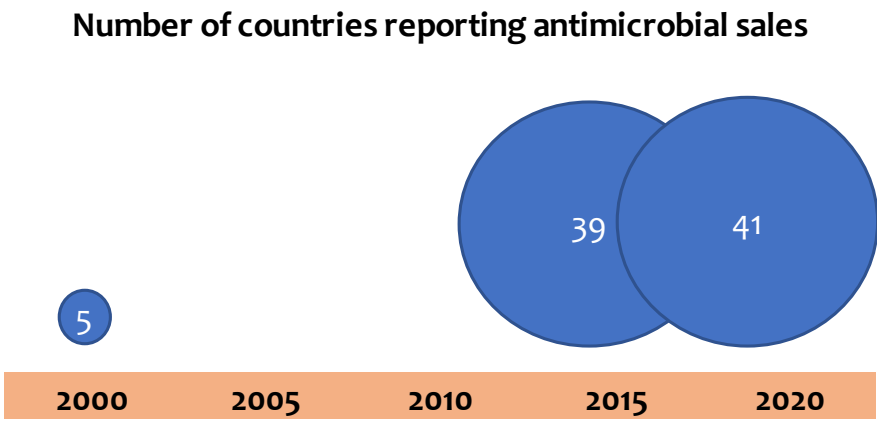
1. EPRUMA AB Next Level- Best Practice Framework for the use of antibiotics in food-producing animals in the EU.

Livestock antimicrobials surveillance programmes

- Surveillance networks for AMU* and AMR* created over past 20 years, but mainly in high income countries[1]

Country	Start	Name	Data Type
Denmark	1996	DANMAP	Sales
Japan	2000*	JVARM	
Canada	2008	CIPARS	Sales
EU	2011	ESVAC	Sales

*1st year of data collection, not when report was 1st published; 1st country in Asia to start reporting



***AMU:** Antimicrobial Use *__AMR:__ Antimicrobial Resistance

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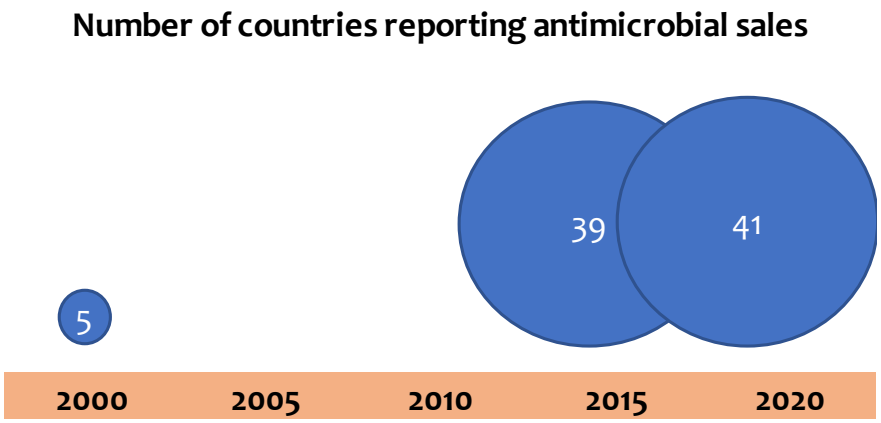

- AMU data can assist policy makers in regulating livestock product imports from different countries & also to restrict imports from countries using antibiotic classes or quantities different from their own[1]

***AMU:** Antimicrobial Use *__AMR:__ Antimicrobial Resistance

1. Tiseo, K *et al*. 2020. Global Trends in Antimicrobial Use in Food Animals from 2017 to 2030. Antibiotics.

EU ESVAC and AMU information

- EC requested a harmonised approach for collection and reporting of AMU data in animals
- EMA developed ESVAC:
  - collects information on how antimicrobial medicines are used in animals across the EU, helping to identify possible risk factors leading to the development and spread of AMR in animals

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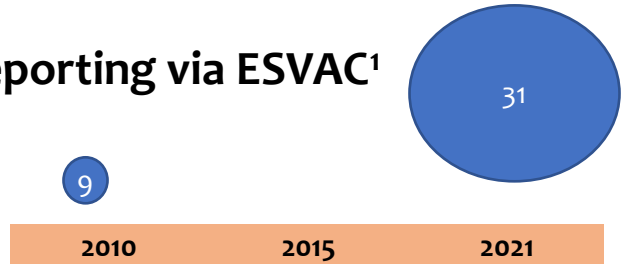
Number of EU countries reporting via ESVAC[1]



1. Antibiotic reduction in EU progressing at different speeds Sept '21

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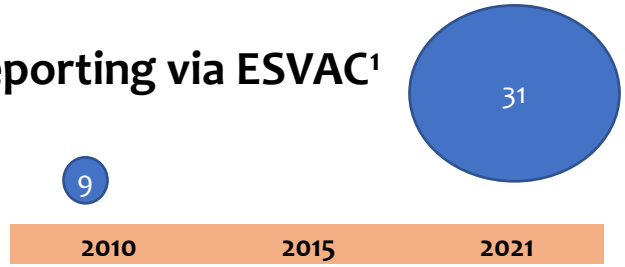


Figure 1 - Antibiotic reduction in The Netherlands.

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	Trends 2010-2017
Netherlands	146.1	113.8	74.9	69.9	68.4	64.4	52.7	56.3	57.5	146.1 … 52.7

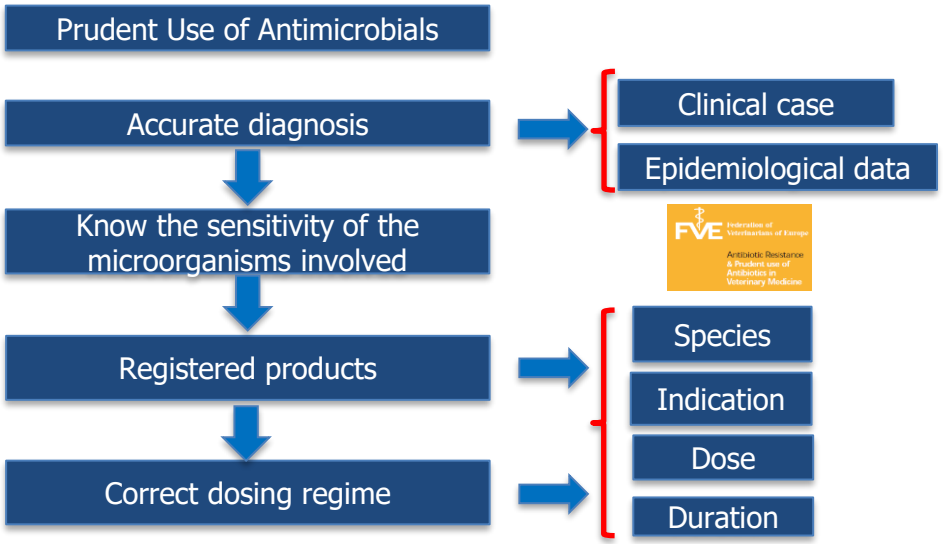
Figure 2 - Antibiotic reduction in Spain.

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	Trends 2010-2017
Spain	259.5	335.8	302.4	317.1	418.8	402.0	362.5	230.5	219.2	418.8 … 230.3

1. Antibiotic reduction in EU progressing at different speeds Sept '21

The Spanish example – prudent use of antimicrobials[1]

- Principles for prudent use is a guide for optimal use of antimicrobials.



1. Courtesy of Dr. Lorenzo Fraile, University of Lleida

The Spanish example – prudent use of antimicrobials[1]

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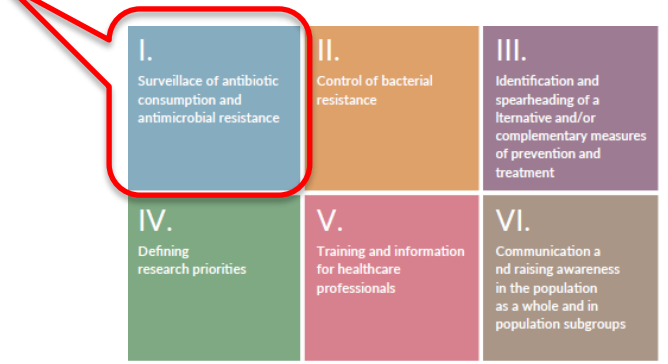
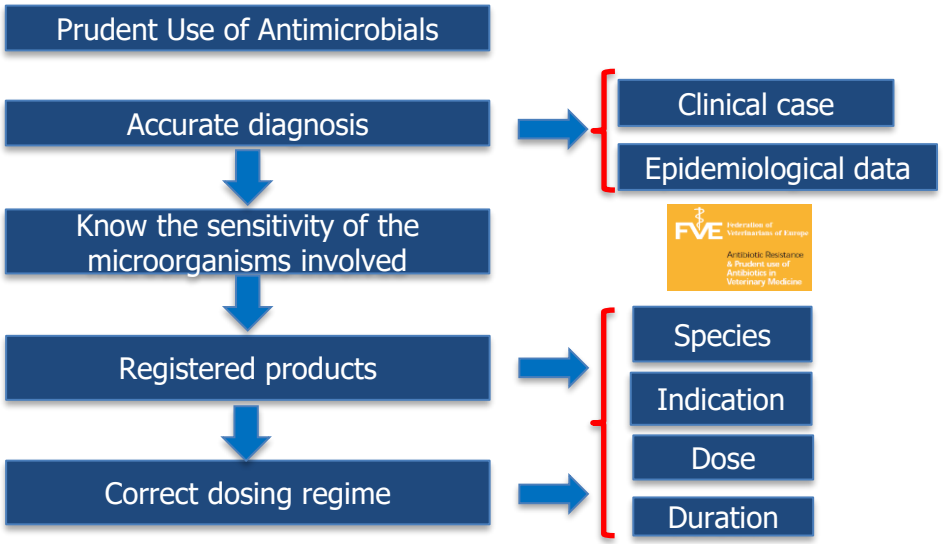
- Six-part Strategic Action Plan to reduce risk of selection and dissemination of AMR

  Part 1: Surveillance of antibiotic consumption and AMR





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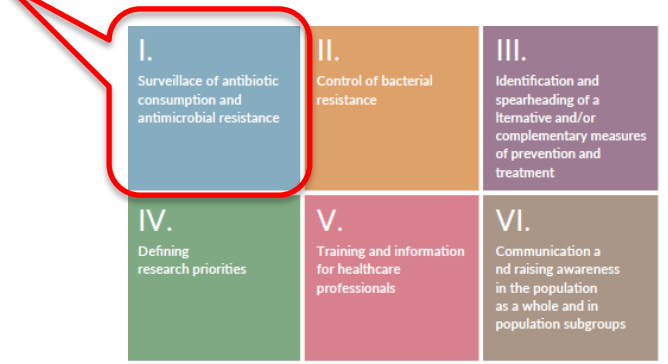
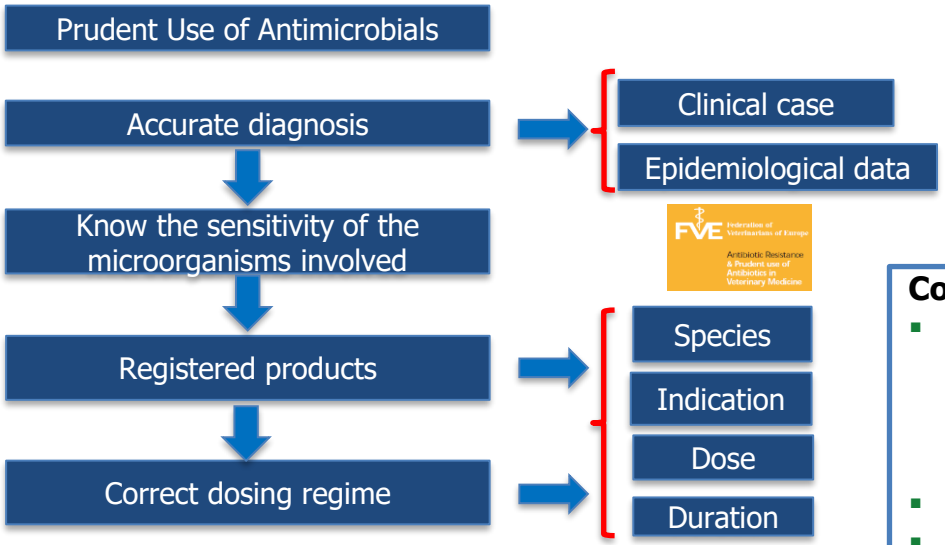




Conclusions:

- The antimicrobial sensitivity of clinical pathogens needs to be monitored:
  - Isolating and diagnosis
  - Determination of antimicrobial susceptibility (pharmacodynamics)
- Prudent use of antimicrobials is possible under field conditions.
- We need to explain and accept the epidemiological criteria when selecting antimicrobials in livestock. It must be known and accepted by:
  - National authorities
  - Veterinarians

1. Courtesy of Dr. Lorenzo Fraile, University of Lleida

Topics

1. Why sustainability and AMR matter

2. Antibiotic classifications and the link to the future

3. The European example

4. **The significance for SE Asia and the poultry industry**

SE Asia is also responding

- Transition by some producers to cage-free eggs in Thailand, Malaysia and Vietnam
- Tesco UK planning for 100% cage-free egg production by 2025 and in Thailand's Tesco Lotus by 2028 – have already begun

TESCO Lotus

'Consumers' concern regarding animal welfare is increasing'
July '21 Vietnam

Thailand's National Strategic Plan on AMR 2017-2021: Goals - By the year 2021:

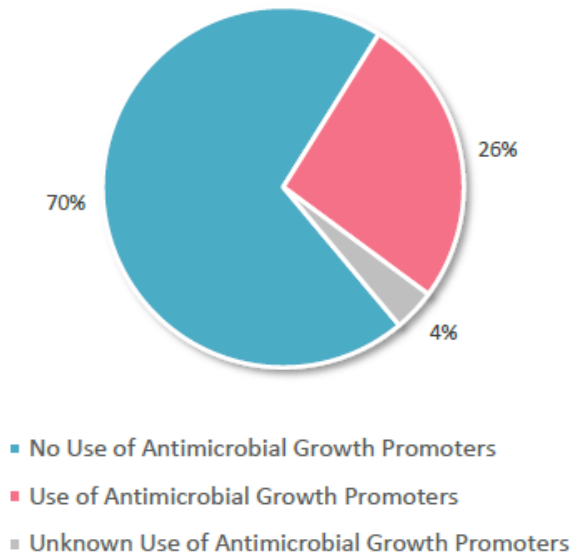
1. 50% reduction in AMR morbidity
2. 20% reduction in antimicrobial consumption in humans
3. **30% reduction in antimicrobial consumption in animals**
4. 20% increase of public knowledge on AMR and awareness of appropriate use of antimicrobials
5. Capacity of the national AMR management system is improved to level 4

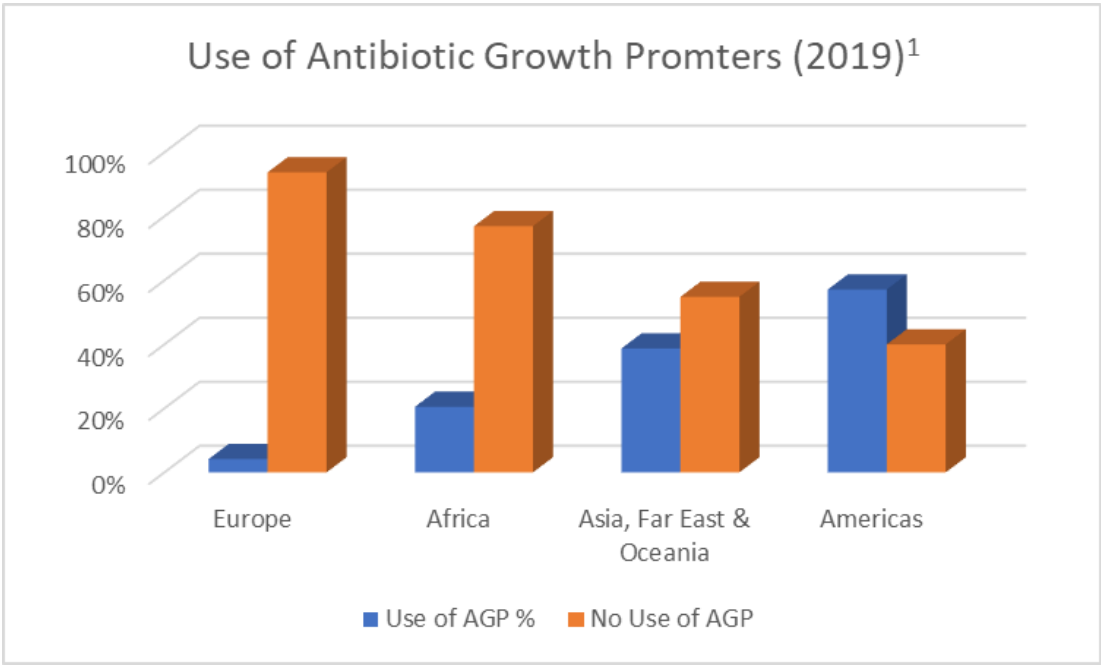
Delivery by 5 Strategies

1. AMR surveillance system using One Health approach	2. Regulation of antimicrobial distribution	3. Infection prevention and control and antimicrobial stewardship in humans	4. AMR prevention and control and antimicrobial stewardship in agriculture and animals	5. Public knowledge on AMR and awareness of appropriate use of antimicrobials

SE Asia is responding rapidly to consumer demand

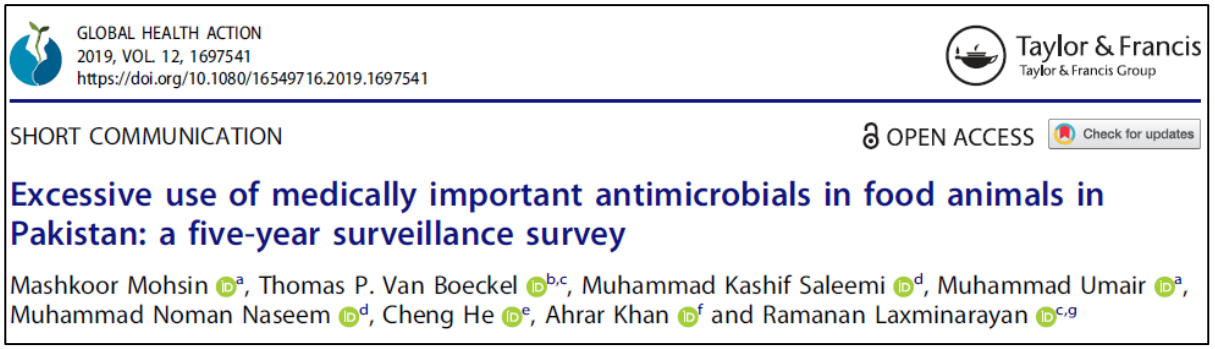
Use of AGPs in 160 Countries in 2019[1]





1. OIE (5th) Annual Report on Antimicrobial Agents intended for use in animals. 2019.

Pakistan could reduce AMU and should phase out CIAs[1]



GLOBAL HEALTH ACTION
2019, VOL. 12, 1697541
https://doi.org/10.1080/16549716.2019.1697541

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SHORT COMMUNICATION

OPEN ACCESS Check for updates

Excessive use of medically important antimicrobials in food animals in Pakistan: a five-year surveillance survey

Mashkoor Mohsin [a], Thomas P. Van Boeckel [b,c], Muhammad Kashif Saleemi [d], Muhammad Umair [a], Muhammad Noman Naseem [d], Cheng He [e], Ahrar Khan [f] and Ramanan Laxminarayan [c,g]

Monitored AMU in 30 flocks from a commercial broiler farm in Punjab between 2013 and 2017 then extrapolated to the national flock

- 'expansion of large commercial (broiler chicken) farms where antimicrobials are used as surrogates for hygiene (and) good nutrition'
- Consumption estimated at 250.84 mg API/kg final flock weight – 2nd highest use after China
- Most frequently used were colistin, tylocin, doxycycline and enrofloxacin
- 'Our findings call for immediate actions to reduce AMU in Pakistan and countries with comparable farming practices' and to phase out use of CIAs

1. Mohsin, M *et al. 2019.* Excessive use of medically important antimicrobials in food animals in Pakistan: a 5-year surveillance survey. Global Health Action.

Challenges and a National Strategy in Bangladesh[1]

antibiotics

MDPI

Review

Antibiotic Usage and Resistance in Food Animal Production: What Have We Learned from Bangladesh?

Sukanta Chowdhury [1,*], Sumon Ghosh [1], Mohammad Abdul Aleem [1,2], Shahana Parveen [1], Md. Ariful Islam [1], Md. Mahbubur Rashid [1], Zubair Akhtar [1] and Fahmida Chowdhury [1]

- Growth of commercial chicken and aquaculture industries to meet protein requirements
- Increased use and misuse of antibiotics in livestock sectors
- Not all farmers aware of the negative impact of 'excessive, irrational, and prophylaxis use of antibiotics in animals'
- '… inadequate vet facilities, insufficient monitoring … of AMU, high occurrence of disease and poor practices by unqualified veterinary healthcare providers (quack, drug sellers, and animal feed dealers)

1. Chowdhury, S. *et al*. Antibiotic Usage and Resistance in Food Animal Production: What Have We Learned from Bangladesh? 2021. Antibiotics.

Challenges and a National Strategy in Bangladesh[1]

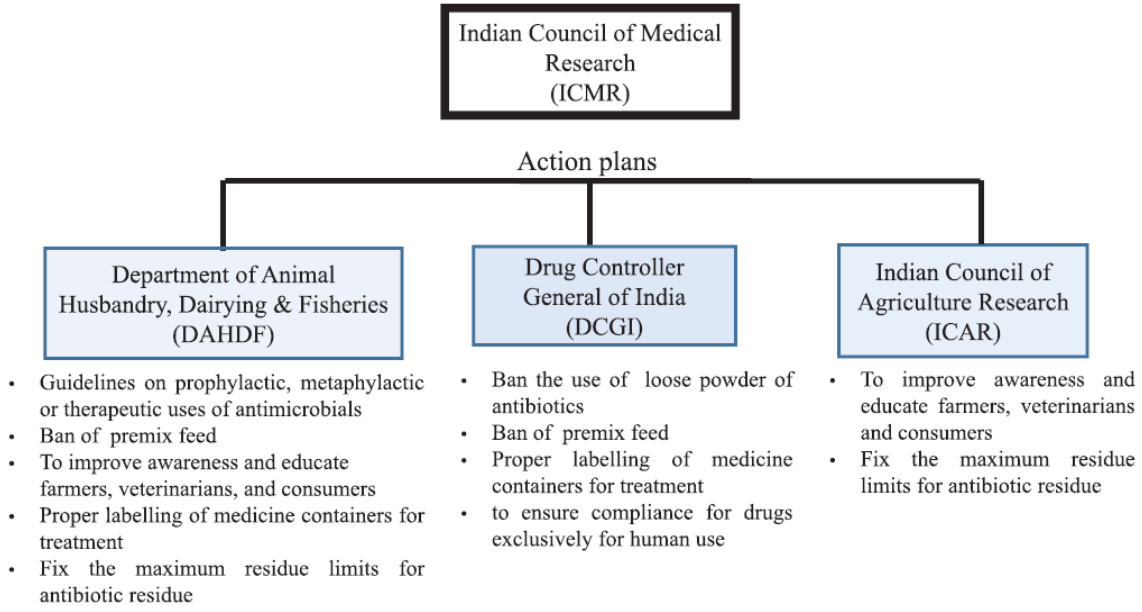
National Strategy for AMR Containment 2017–2021 Objectives:

1. establish a multi–sectoral One Health approach to plan, coordinate, and implement ARC containment activities
2. ensure rational use of antimicrobial agents in humans and animals
3. strengthen infection prevention and control measures
4. strengthen bio-safety and bio-security practices
5. strengthen the surveillance system for AMR and promote operational research
6. strengthen regulatory provisions
7. establish advocacy, communication, and social mobilization

1. Chowdhury, S. *et al*. Antibiotic Usage and Resistance in Food Animal Production: What Have We Learned from Bangladesh? 2021. Antibiotics.

Increased AMU and Action Plans in India

- AMU in livestock expected to double by 2030 (and to triple in poultry), making regulation vital[1]
- One Health initiative for regulation of AMU to be launched[1]
- National livestock vaccination programme to improve health
- Colistin banned for use in livestock[2] in 2019



Action Plans include:3

- Ban premix feed
- Proper labelling of medicine containers
- Fix MRLs
- Ban use of loose powder premixes
- Education and awareness

ECO ANIMAL HEALTH VALOSIN Stay Ahead

1. The Times of India, Feb 2019. 2. The Wire. 2019.
3. Walia K *et al*. 2019.Indian J Med Res.

The Mycoplasma Treatment AIVLOSIN Stay Ahead

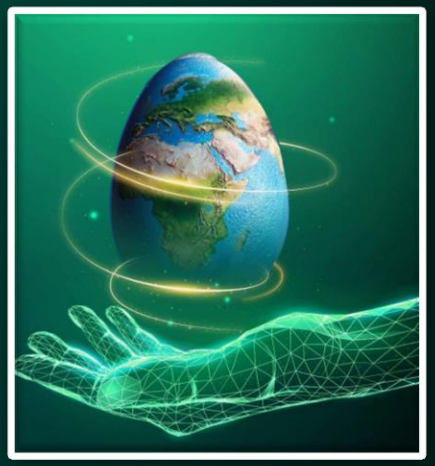
In conclusion

- Livestock protein production and consumption will continue to grow in South-East Asia

- Alignment with local and global consumers and international bodies for continually improving antimicrobial stewardship platforms

- Harnessing the increasing demand for protein and ensuring that egg and poultry protein remains at the forefront, meeting evolving demands

ECO Asia Poultry
Online Conference 2021



Thank you

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