

Benefits, Risks and Challenges related to the use of antimicrobials

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Presentation outline




- A few words on IFAH
- Benefits of Antibiotics
- Risks of antibiotic use
- Challenges
- Recommendations
- Conclusion

Who is IFAH?



International Federation for Animal Health - IFAH

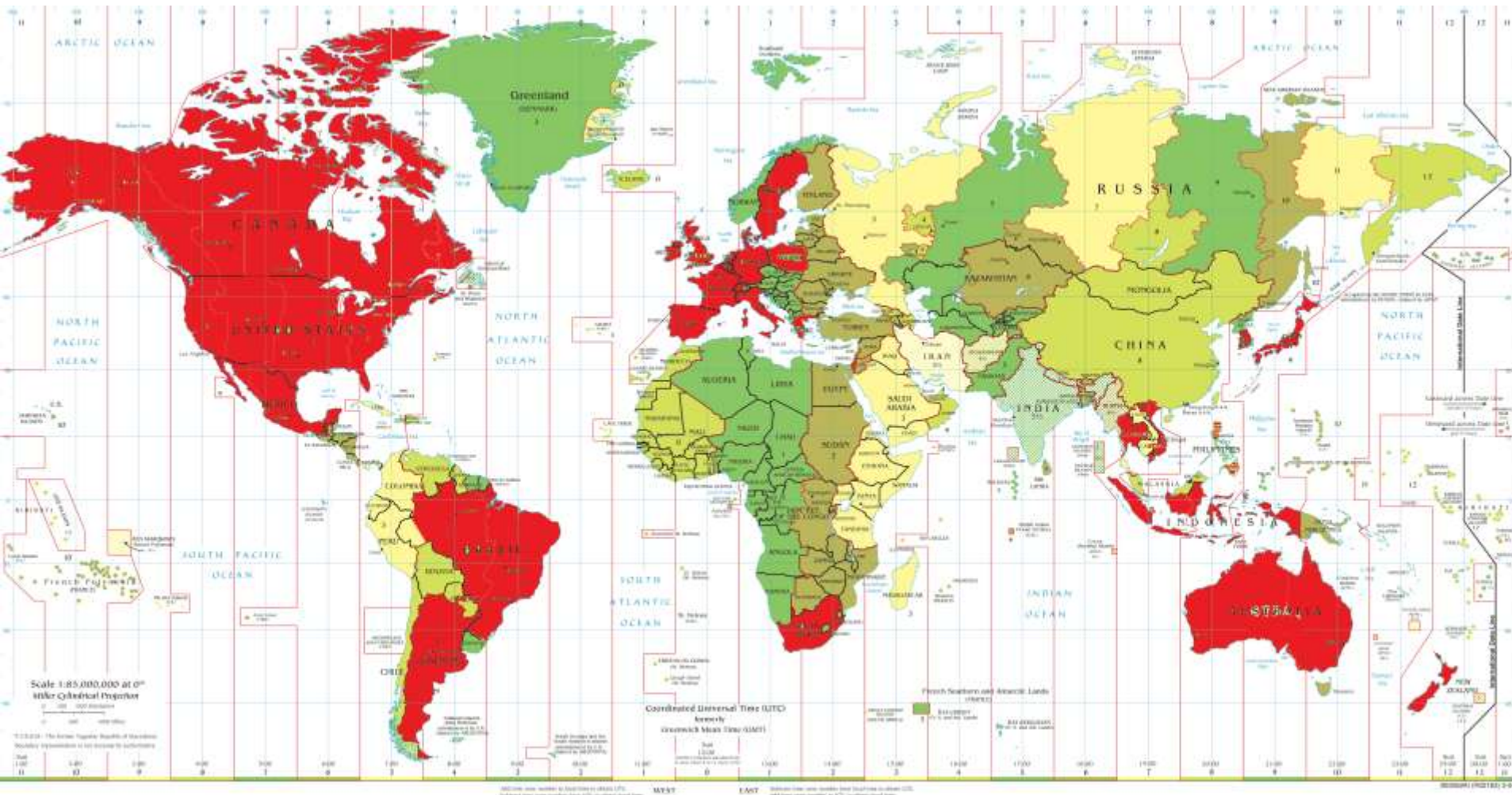


The International Federation for Animal Health (IFAH) is the global representative body of companies engaged in research, development, manufacturing and commercialisation of veterinary medicines, vaccines and other animal health products in both developed and developing countries across the five continents.

Corporate members



Member associations



Member associations



EUROPE

- Europe
- Belgium
- Denmark
- France
- Germany
- Ireland
- Italy
- Netherlands
- Portugal
- Spain

IFAH-Europe
Pharma.be
VIF
SIMV
BfT
APHA
AISA
FIDIN
APIFARMA

VETERINDUST

- RIA
- Sweden
- Switzerland

- United Kingdom

LIF
SGCI Chemie
Pharma Schweiz
NOAH

AFRICA

- South Africa

SAAHA

NORTH AMERICA

- Canada
- Mexico

- United States

CAHI
INFARVET
-CANIFARMA
AHI

CENTRAL & SOUTH AMERICA

- Argentina
- Brazil

CAPROVE
SINDAN

ASIA/PACIFIC

- Australia
- Indonesia
- Israel
- Japan
- Korea
- New Zealand
- South-East Asia
- Thailand

The Alliance
ASOHI
MAI
JVPA
KAHPA
AGCARM
AAHA
Thai AHPA

Why does IFAH exist?



The mission of IFAH is

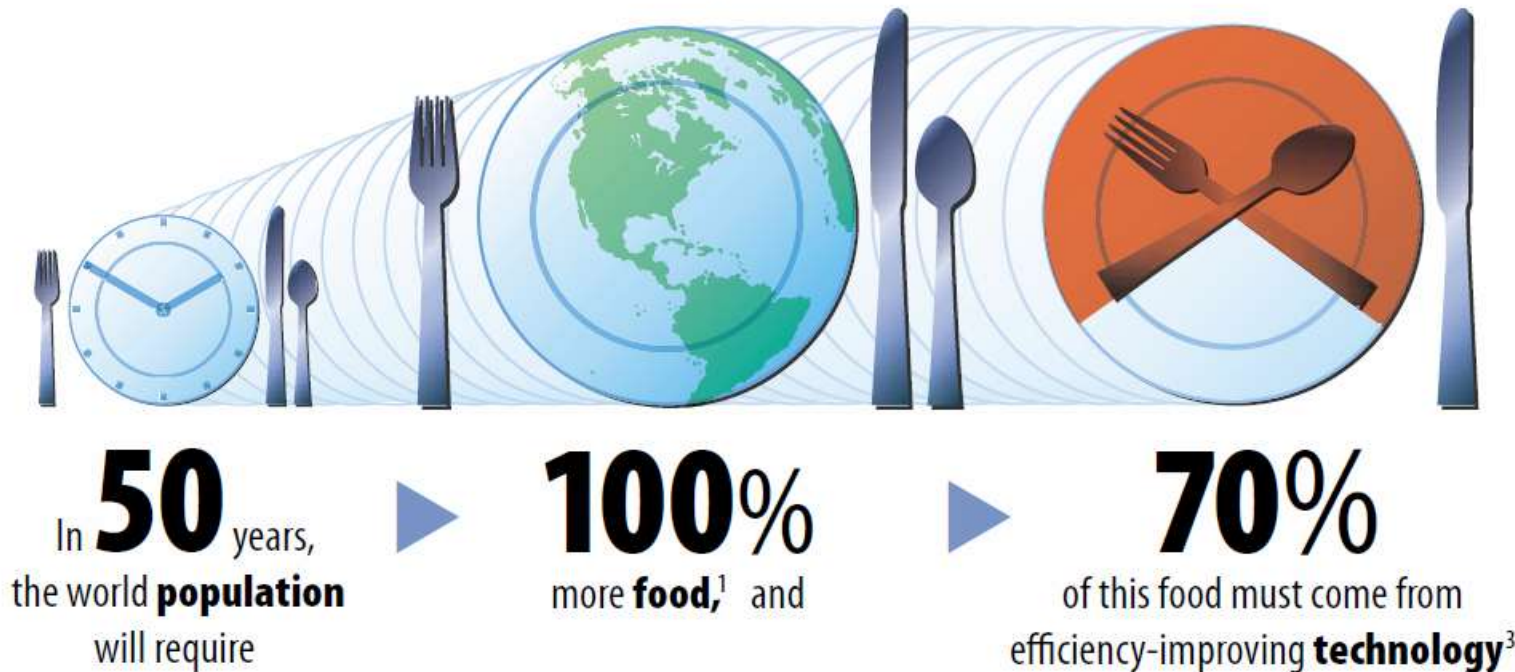
- to foster a greater understanding of animal health matters and
- to promote a predictable, science-based regulatory environment that facilitates the supply of innovative and quality animal medicines, vaccines and other animal health products into a competitive market place.

These products contribute to the health and welfare of animals and importantly provide a safe food supply for people.

Context of antibiotic use in animals (1)

The need to feed a growing population

Key Data



¹ Green, R. et al. January 2005. "Farming and the Fate of Wild Nature." Science 307.5709: 550-555; and Tilman, D. et al. August 2002. "Agricultural sustainability and intensive production practices." Nature 418.6898: 671-677.

² "World Agriculture: toward 2015/2030." 2002. United Nations Food and Agriculture Organization, Rome. Accessed 12/8/08. <ftp://ftp.fao.org/docrep/fao/004/y3557e/y3557e.pdf>.

Source of graphics: Jeff Simmons, Elanco Animal Health, Technology's role in the 21st century White Paper, 2010, www.elanco.com

Context of antibiotic use in animals (2)

Climate change

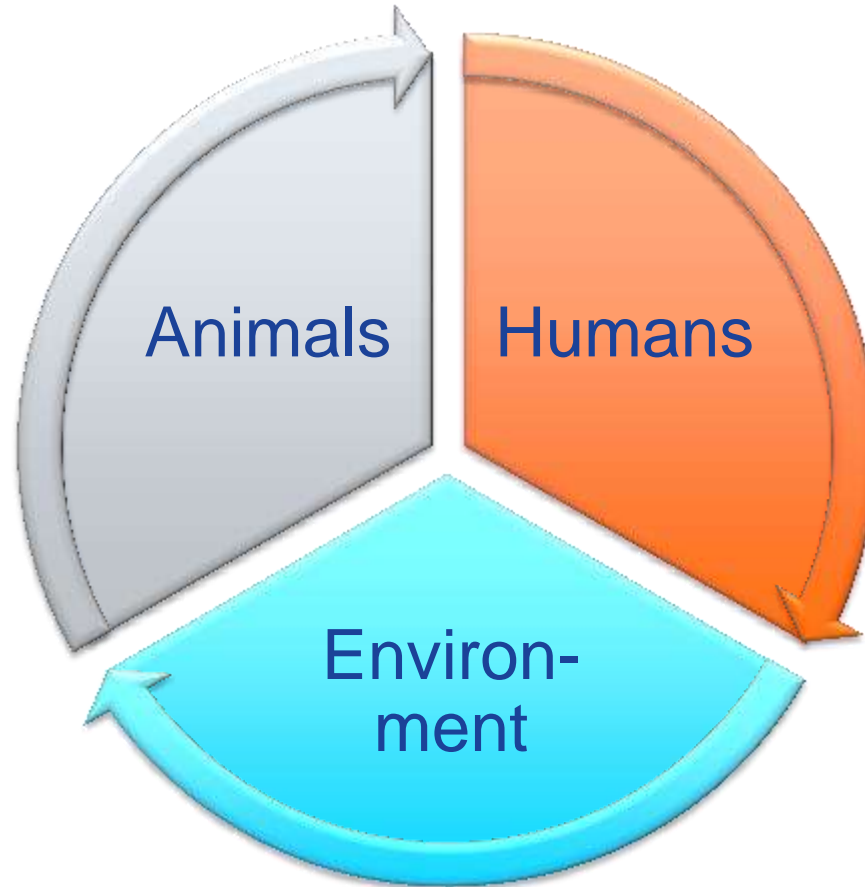
- Need to consider impact of decisions on the environment



Benefits of antibiotics (2)

Antibiotics

– an important of the set of tools available to fight bacterial diseases



Benefits of antibiotics (3)

Healthier animals

- Restore sick animals to health
- Prevent more animals getting sick when a herd is infected
- Prevent clinical signs of selected infections



Benefits of antibiotics (4)

Healthier people

- Prevent transmission of zoonotic bacteria to humans
- Provide the basis for healthy food
- In many parts of the world livestock does not only equate a reliable source of food, but also a source of economic security



Benefits of antibiotics (5)

Healthier world and other considerations

- > 25% production losses due to disease
 - OIE estimate,
- More efficient resource use, better feed conversion rates, i.e., and reduced waste production in healthy animals
 - => more efficient use of resources and reduced impact on the environment for the same amount of food
- May be more executable and economical than other methods of disease control



Risks of antibiotic use (1)

General risks

- Exposure of bacteria to antibiotic agents results in resistance development

New Scientist: Antibiotic resistance predates drugs – by 30,000 years

31 August 2011 by [Bob Holmes](#)

- All kinds of exposure have the potential to cause resistance
 - natural exposure or intentional use
 - use in humans, in animals, on plants or elsewhere in the environment
- **But:** not all resistance and not all bacteria and not all antibiotics are alike
 - Different mechanisms of resistance
 - Different resistance in different bacteria
 - Different modes of resistance dissemination
 - Different types of resistance for different antibiotics
 - Different hosts that can influence bacterial behavior
- A differentiated approach is necessary
- Be sure to measure relevant endpoints



Picture source:

<http://www.usc.edu/hsc/info/pr/hmm/04fall/superbug.html>

Risks of antibiotic use (2)

Risks at the animals-human interface – a complex issue

Note: decreased susceptibility ≠ resistance ≠ treatment failure

Treatment failure in animals through resistance development in target pathogens

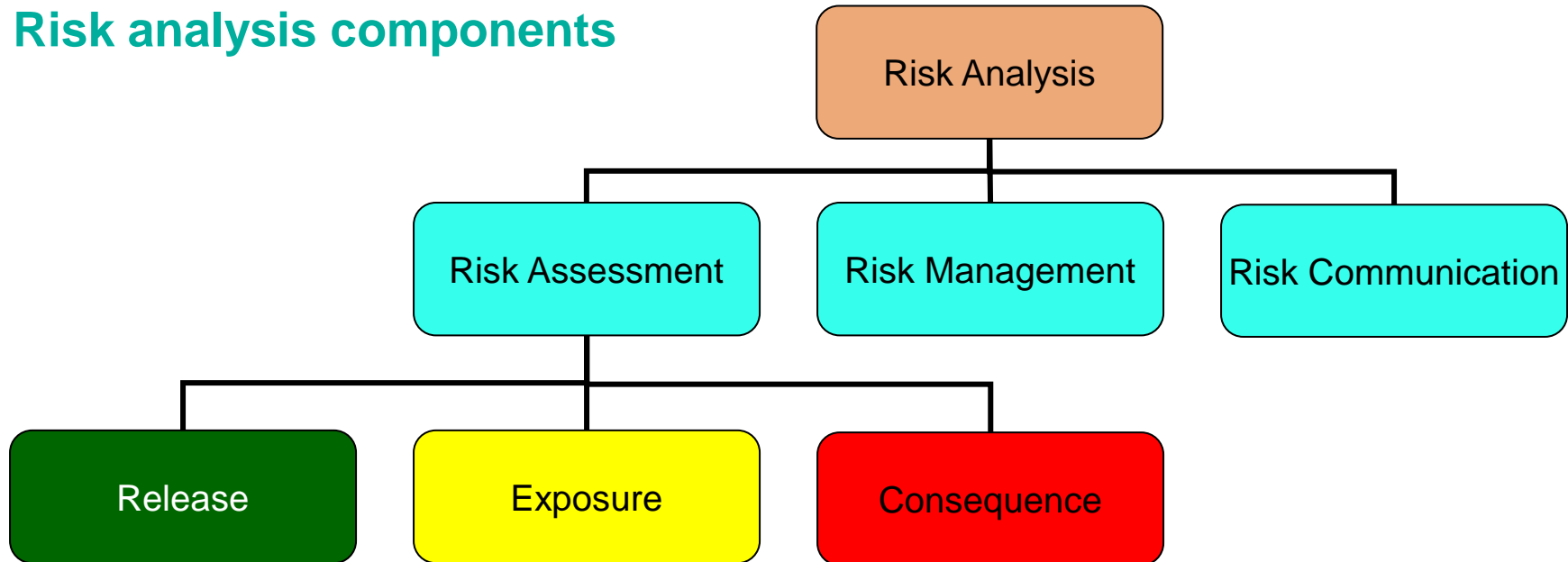
Treatment failure in humans through transfer of resistance from animals to humans

- Transfer through food
 - ➔ showing little risk or none
- Transfer through the environment
 - ➔ lots of unknowns
- Transfer through contact with animal
 - ➔ up to now no major risk shown but concern at development of pools of human strains in animal reservoirs (MRSA in the Netherlands)

Challenges (1)

Dealing with risks appropriately → risk analysis

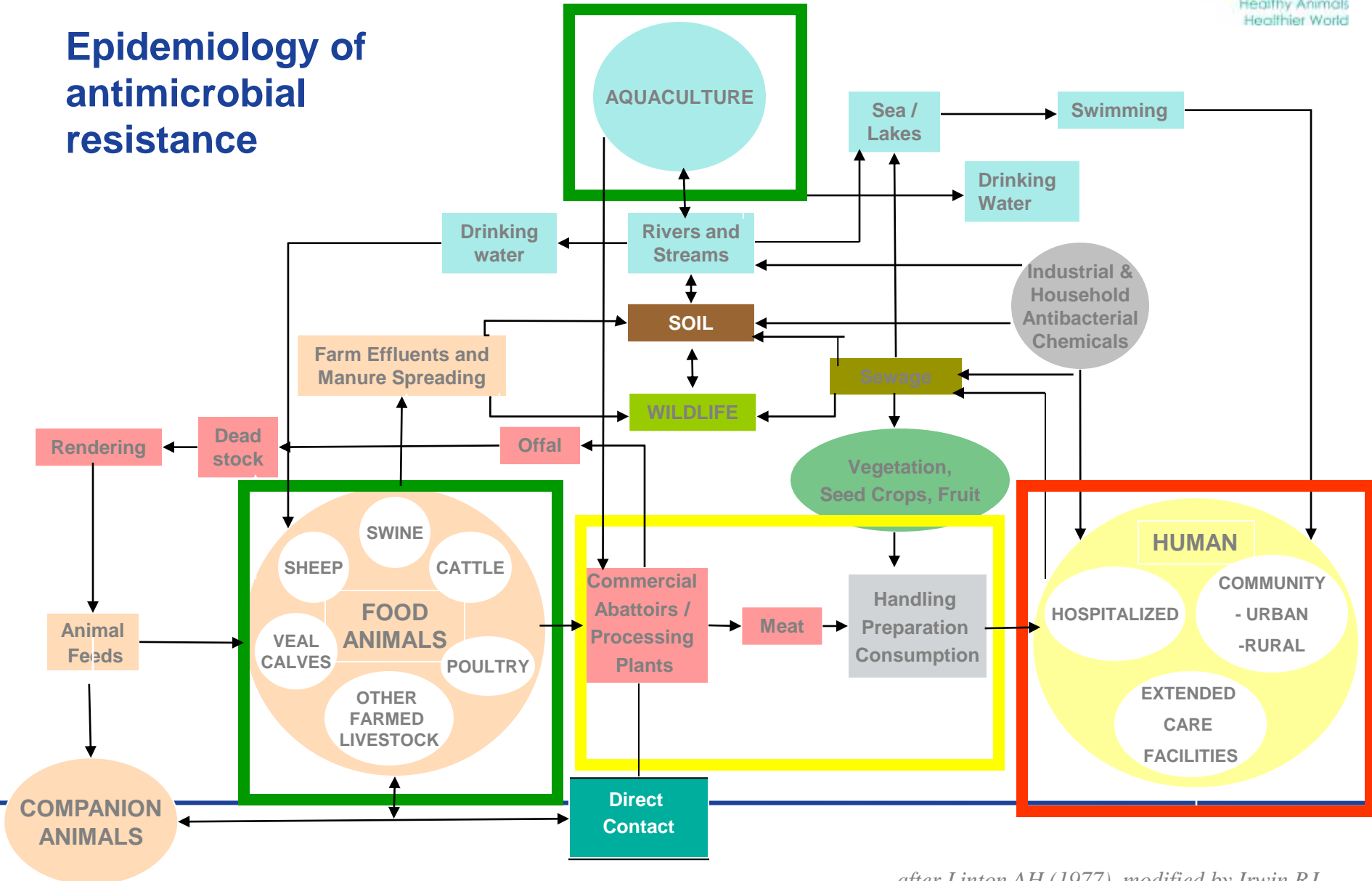
Risk analysis components



- Risk managers make decisions based on risk assessment, requiring risk communication
 - Risk estimate
 - 1 in X million
 - Estimated risk estimate for a given risk management intervention
 - If its 1 in X million now, then it may become 1 in 500,000 for intervention A and 1 in 100,000 for intervention B.

Challenges (2)

Epidemiology of antimicrobial resistance



Challenges (3)

Risk analysis recommendations

- WHO Responsible Use Guidelines (# 18 and 19)
- OIE Terrestrial Code (Chapter 6.11)
- Codex GL61 on Responsible Use
- Codex Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance CAC/GL 77-2011
- US Public Health Action Plan (#49-51)
- US Regulatory risk assessment G152

Challenges (4)

Risk analysis and science-based decisions

- Risk Analysis, and decisions based on science as the cornerstone of regulatory decisions, including checks that risk management measures have the desired result

Monitoring and surveillance

- Monitoring of antibiotic use
 - ➔ sales data easy to obtain and a good measure
- Surveillance of resistance development (target animal pathogens, food-borne bacteria)
 - ➔ harmonized approaches worldwide are key to meaningful information
- Important check points that present a baseline measure today and show effectiveness of risk management measures tomorrow.
- Holistic approach to risk management involving all sectors using antibiotics

Challenges (5)

Availability and responsible use of veterinary antibiotics

- Legislative and regulatory challenges
 - ⇒ Veterinary legislation to guide veterinarians – key to ensuring responsible use
 - ⇒ Ensure a regulatory framework to license veterinary medicines that incorporates risk analysis and science-based decision making – applied to all competitors
 - ⇒ Not enough antibiotics licensed/sold for veterinary use to address the needs of the veterinary profession in the country/region concerned
- Logistical challenges
 - ⇒ Not enough veterinarians to prescribe antibiotics for use in animals
 - ⇒ Not enough trained persons to administer antibiotics to animals in appropriate doses and appropriate duration
 - ⇒ Antibiotics not available sufficiently to ensure sick animals get antibiotics in appropriate doses for appropriate duration
- Few new antibiotics reach the market – even fewer new veterinary antibiotics
 - ⇒ Find new models to encourage research and development of new veterinary antibiotics to increasingly restricted markets

Recommendations

Five cornerstones for veterinary use of antibiotics

- Regulatory systems based on risk analysis, and veterinary legislation in place
- Monitoring of quantities used
- Surveillance of resistance development in veterinary pathogens, food-borne bacteria)
- Ensuring responsible use of antibiotics in animals
 - veterinarians have a key role to play
- Encourage research and innovation for development of new veterinary antibiotics



But – vets can't work in isolation – a holistic approach is needed

Conclusions

Benefits, risks and challenges related to the use of antimicrobials

- Antimicrobials are key tools to return animals to health and ensure animal and human health
- Additional benefits come from the resulting, more efficient use of resources by food producing animals
- Risks in form of treatment failure in animals and humans through resistance development are related to any antimicrobial use
- The challenge is to
 - have systems are in place to ensure regulation is based on risk analysis and science, on sound evaluation identifying the right points of intervention for the intended effect through epidemiology
 - ensure responsible use of antimicrobials - we can do it for the veterinary profession, but it is a true One Health issue
 - check the impact of interventions through monitoring and surveillance
 - encourage research and development of new veterinary antibiotics to meet future health needs

Thank you for your attention



Atomium, Brussels, Belgium