WSAVA
Continuing Education
Committee

WORLD SMALL ANIMAL VETERINARY ASSOCIATION

WSAVA Continuing Education 2019

Prof M van Vuuren

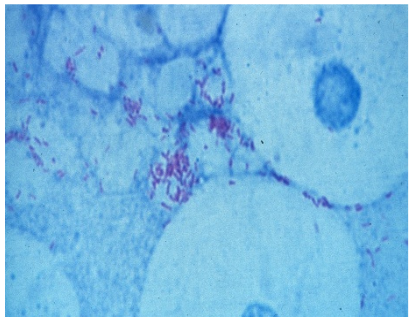
WSAVA
Global Veterinary Community

ANTIBIOTIC STEWARDSHIP – Global trends and international expectations; *responsibilities of food animal producers*

Prof Moritz van Vuuren

WSAVA CE Meeting, 10 June 2019, Malawi

Introductory remarks



Antibiotic stewardship is a collective set of strategies to optimize the appropriate use of all antibiotics to improve human and animal patient outcome, and limit emergence of resistant bacteria whilst ensuring patient safety when implementing interventions

Today the world is not divided on the issue of resistance to antibiotics

There is now general consensus among the international and national organizations that drive these efforts, that the awareness created during the past few decades must now ***translate into action***

Antibiotic Stewardship

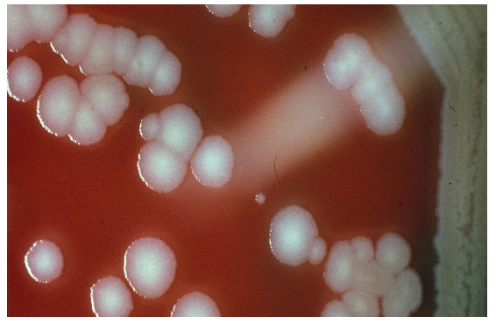
Its most basic recommendation is that everyone should use antibiotics responsibly and only when necessary, both for the benefit of humans and the animals we care for

Any antibiotic use can contribute to antibiotic resistance

Is it high doses of the antibiotic that drives resistance or low or sub-therapeutic doses?

The basic principle of antibiotic use as endorsed by the World Veterinary Association is, that antibiotics used for treatment should be used for as long as needed but for the shortest duration necessary, and at the appropriate dose and dosage intervals

How did we land where we are?



Antibiotic ‘silver bullets’ have become victims of their own success

More attention was paid to other health issues

First world countries have divested from AMR research and new drug development

Other contributing factors

Socio-economic disparity with concomitant sanitation issues in many parts of the world

Poor prescription and dispensing practices

Lack of national antibiotic resistance surveillance networks

Inadequate infection control facilities in many hospitals/animal facilities

The use of antibiotics in feed and water of production animals

A survey of antimicrobial usage in animals in South Africa with specific reference to food animals

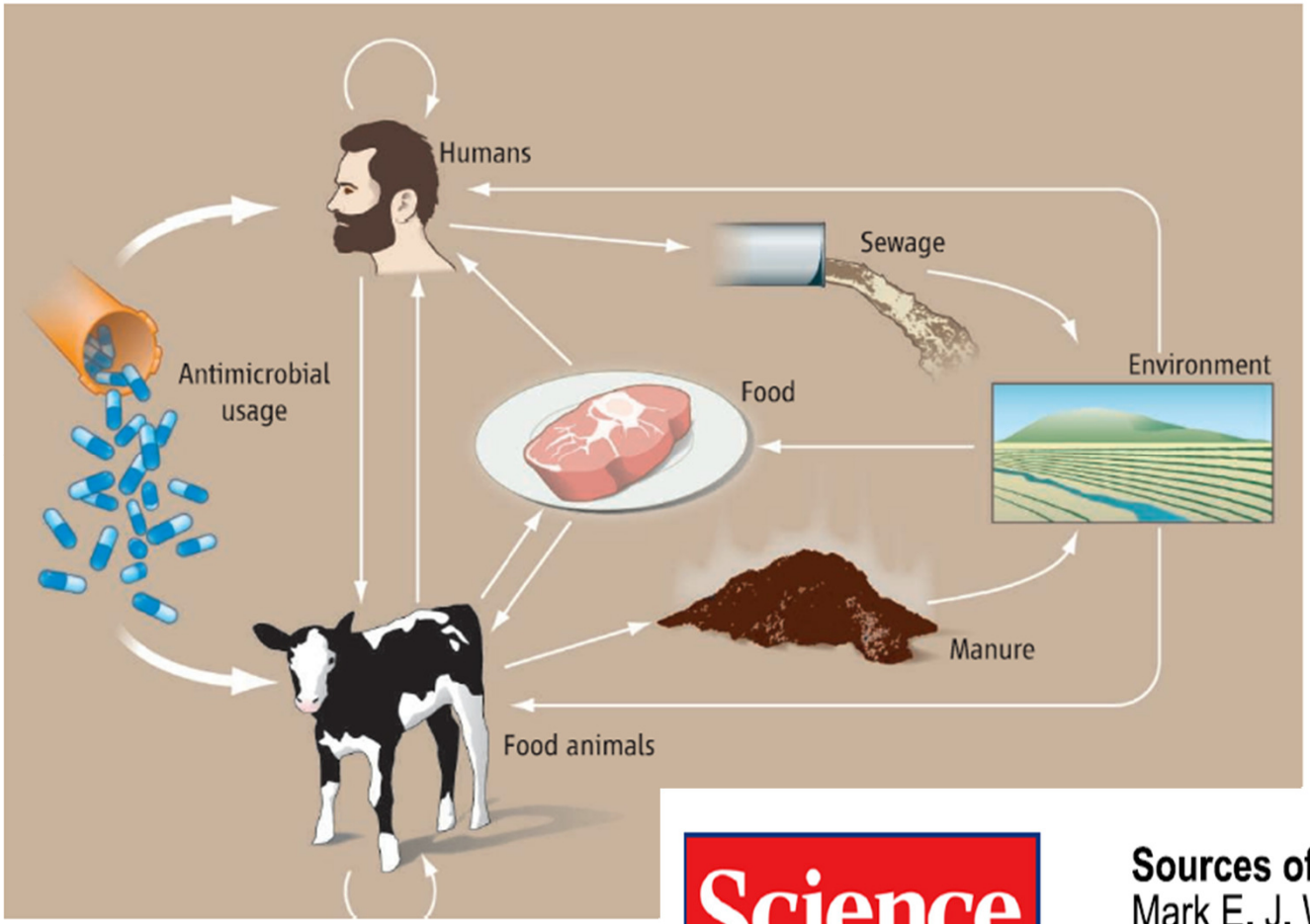
Authors:
Hayley Eagar[1]
Gerry Swan[2]
Moritz van Vuuren[3]

The purpose of this study was to set a benchmark for a monitoring and surveillance programme on the volumes of antimicrobials available and consumed by animals for the benefit of animal health in South Africa. This survey was collated from data available from

Journal of the South African Veterinary Association, 2012: 83(1)

Results showed that 68% of antimicrobials surveyed were administered in feed, and 12% in water

Sources of antimicrobial resistance



Science
AAAS

Sources of Antimicrobial Resistance
Mark E. J. Woolhouse and Melissa J. Ward
Science **341**, 1460 (2013);
DOI: 10.1126/science.1243444

Clinical Microbiology Reviews

Food Animals and Antimicrobials: Impacts on Human Health

Bonnie M. Marshall and Stuart B. Levy
Clin. Microbiol. Rev. 2011, 24(4):718. DOI: 10.1128/CMR.00002-11.

There is limited understanding of the role of agriculture in the transmission of resistance

Research has documented the spill-over of resistance genes and resistant pathogens from food animals into human populations via different pathways:

(1) the release of antimicrobial-resistant bacteria/genes into the environment

(2) resistance transmission through the food chain, water or waste application to farm fields

Antibiotics, bacteria and resistance genes found in dust from feedlots

Environmental Health Perspectives, Feb 2015

Researchers found and documented aerial transmission of antibiotics, feedlot-derived bacteria and DNA sequences encoding resistance

It explains how resistant bacteria could travel long distances into places inhabited by humans

Intensive production farms

These are dynamic, sensitive production units that require immediate action to safeguard the animals and prevent the spread of disease

Production animal veterinarians practice population medicine and have an obligation, ethically, to control diseases at the earliest possible stage

There are particular circumstances that vets can predict what's going to happen because of previous experience with flocks/herds

It is customary in several countries to sell/dispense large quantities of antibiotics to breeders/farms who are *bona fi*de clients of the veterinarian

Free availability of antibiotics

On many farms the increased production has not been accompanied by improvements in biosecurity and management

It results largely from the free availability of antibiotics in many countries where administration does not require veterinary oversight and antibiotics are administered to livestock freely and excessively

Global call for veterinary oversight of antibiotics

Veterinary oversight of the use of antibiotics, and by implication the requirement of prescriptions for all antibiotics used in animal health is a short term objective (2017-2020) of the major international agencies such as OIE, WHO, FAO and EC

They will continue to monitor the progress of all Member States on an annual basis

Frequently asked questions

Why should antibiotics be placed under veterinary oversight?

What are the concerns related to veterinary oversight of antibiotics?

Will antibiotics still be available to farmers?

PNAS

Global trends in antimicrobial use in food animals

Thomas P. Van Boeckel[a,1], Charles Brower[b], Marius Gilbert[c,d], Bryan T. Grenfell[a,e,f], Simon A. Levin[a,g,h,1], Timothy P. Robinson[i], Aude Teillant[a,e], and Ramanan Laxminarayan[b,e,j,1]

[a]Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ 08544; [b]Center for Disease Dynamics, Economics & Policy, Washington, DC 20036; [c]Universite Libre de Bruxelles, B1050 Brussels, Belgium; [d]Fonds National de la Recherche Scientifique, B1000 Brussels, Belgium; [e]Princeton Environmental Institute, Princeton, NJ 08544; [f]Fogarty International Center, National Institutes of Health, Bethesda, MD 20892; [g]Beijer Institute of Ecological Economics, 10405 Stockholm, Sweden; [h]Resources for the Future, Washington, DC 20036; [i]International Livestock Research Institute, 00100 Nairobi, Kenya; and [j]Public Health Foundation of India, New Delhi 110070, India

Contributed by Simon A. Levin, February 18, 2015 (sent for review November 21, 2014; reviewed by Delia Grace and Lance B. Price)

Demand for animal protein for human consumption is rising ... *coli* in pigs, poultry, and cattle. Several works additionally sug-

Consumption for animal production is expected to grow by 99% by 2030 (13% for humans).

Intensification is a given, but the bad parts that lead to overuse/ need for antibiotics must be unravelled

How do you reduce the need for antibiotics in animal husbandry?

By improving animal health through sanitation, on-farm hygiene

Provide access to clean water and nutritional innovations that will benefit animal health and the welfare of the animals

Litter management techniques

Optimize vaccination programmes

Improve infection control in animal facilities (biosecurity)

Part VI. Antibiotic management and resistance in livestock production

Authors: M M Henton, H A Eagar, G E Swan, M van Vuuren

August 2011, Vol. 101, No. 8 SAMJ

Strategies for infection control

Visitor control on farms
Showering and changing of clothes
Disinfection of delivery vehicles
Good fences properly maintained
Quarantine and testing of newly introduced animals
All in, all out system of intensive farming

In the final analysis

Veterinarians and animal producers must make ***behaviour changes*** with respect to the prescription and use of antibiotics

- We all have to use antibiotics more responsibly

- We have to focus on measures to limit transmission of resistance

Proven countermeasures to diminish antibiotic resistance are available for immediate action in animal husbandry