

THE ROLE OF THE PRIVATE VETERINARIAN IN THE FIGHT AGAINST ANTIBIOTIC RESISTANCE

REGIONAL SEMINAR FOR OIE FOCAL POINTS FOR VETERINARY PRODUCTS-3RD CYCLE MAPUTO, MOZAMBIQUE, DECEMBER 2013

James M. Mbaria, Department of Public Health, Pharmacology & Toxicology, Faculty of Veterinary Medicine, P.O. Box 29053-00625 Kangemi, Kenya. Email: james.mbaria@uonbi.ac.ke



OUTLINE



ANTIBIOTICS/ANTIMICROBIALS

ANTIBIOTIC RESISTANCE

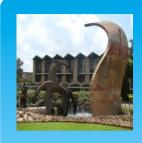
- CONSEQUENCES OF ANTIBIOTIC RESISTANCE
- WHAT SHOULD THE PRIVATE VETERINARIAN DO TO FIGHT ANTIBIOTIC RESISTANCE?
- CONCLUSIONS/RECOMMENDATIONS



ANTIBIOTICS/ANTIMICROBIALS



- Chemotherapy is the treatment of diseases by use of drugs that are toxic to disease causing pathogens.
- These drugs kill or inhibit the growth of the microorganisms.
- Drugs used are referred to as antibiotics/antimicrobial agents.
- The term **antibiotic** is used as a synonym for antibacterial used to treat bacterial infections in people and animals (WHO, 2011).
- Antimicrobials are naturally occurring, semi-synthetic or synthetic substances with in vivo antimicrobial activity (OIE, 2012).



ANTIBIOTIC RESISTANCE



- Antibiotic resistance means insensitivity of bacteria to drugs.
- The resistance may be natural or acquired.
- Naturally, species of micro-organisms are susceptible to some antimicrobial drugs and resistant to others.
- Natural resistance is genetically determined.
- The bacterium does not have a metabolic process or pathway that is affected by the antibiotic in question.
- Clinically, natural resistance is rarely a problem because other drugs are available to which the pathogen is sensitive.
- Incase acquired antibiotic resistance, strains develop resistance to drugs to which they are supposed to be sensitive.
- The fight against antibiotic resistance aim at reducing the prevalence of the acquired antibiotic resistance.



TEST FOR ANTIBIOTIC RESISTANCE



- Laboratory tests are used to test for antibiotic resistance.
- Culture and sensitivity is one of the tests commonly used.





MECHANISMS OF ANTIBIOTIC RESISTANCE



- The development of acquired resistance is an expression of bacterial evolution, with the survival for the fittest.
- Development of resistance involves a stable genetic change that is heritable from generation to generation.
- Antibiotic resistant emerge through:
 - 1) Mutation
 - 2) Adaptation
 - 3) Transfer of genetic material through:
 - Transformation
 - Transduction
 - Conjugation



ANTIBIOTIC RESISTANCE



- All microorganisms have the potential to develop resistance to drugs
- Genes for drug resistance may be associated with either chromosomal DNA, plasmid DNA and transposomes
- All plasmids contain genes (R factors) coding for resistance
- Gram negative bacteria posses a RTF (resistance) transfer factor: sex factor) that determines replication and transfer



CONSEQUENCES OF ANTIBIOTIC RESISTANCE



- Antibiotic resistance is a major medical problem in veterinary and human medicine because it seriously limits the usefulness of antibiotics
- Antibiotic resistance has become a major issue in public health strategies world-wide
- Attention is now being paid to the emergence of micro-organisms that have developed resistance mechanisms that render them almost untreatable with current antibiotics
- Reports indicating high rates of resistance among animal-originated micro-organisms is considerable



WHAT SHOULD THE PRIVATE VETERINARIAN DO TO FIGHT ANTIBIOTIC RESISTANCE?



- Among alleged reasons for resistance is the use of antibiotics in animals.
- Misuse and abuse of antibiotics provoke develop of resistance.
- The private vet should ensure responsible and prudent use of antibiotics.
- The success of any actions to combat antibiotic resistance depends on the cooperation of many entities
- They include: health agencies, universities, professional societies, pharmaceutical companies, health care professionals, agricultural producers, and the public



WHAT SHOULD THE PRIVATE VETERINARIAN DO TO FIGHT ANTIBIOTIC RESISTANCE?



- The private veterinarian should collaborate with these entities in the fight against antibiotic resistance.
- A private vet should equip himself/herself with knowledge on circumstances that lead to development of antibiotic resistance through CPD.
- The vet should disseminated this information to other stakeholders: clients, manufacturers and distributors of antibiotics, researchers, policy makers.
- Scientists and health professionals are generally in agreement that the way to decrease antibiotic resistance is through cautious use of antibiotics and through monitoring outbreaks of drug-resistant infections.
- In Kenya, private vet handle more antibiotics than state vets.



WHAT SHOULD THE PRIVATE VETERINARIAN DO TO FIGHT ANTIBIOTIC RESISTANCE?



- Private vet should fight antibiotic resistance by using drugs only after proper diagnosis is made.
- Many diseases are caused by agents not treated by antibiotics.
- **Compliance:** private veterinarians ensure that antibiotics that they have **prescribed** or **sold** for an infection are administered to animals as directed.
- They should disseminate the information that not doing so increases antibiotic resistance.
- Private vets should always encourage practice of good hygiene in farms and other animal premises to stop the spread of microorganisms hence encouraging others to become resistance.



CONCLUSIONS/RECOMMENDATIONS



- Discovery of antibiotics is one of the most important advances in medicine but because of misuse of these medicines, more and more bacteria are becoming resistant to treatment.
- With very few new antibiotics being developed, the harsh reality is that if we don't change the way we use antibiotics now, by 2030 we could return to the preantibiotic era where many infections were untreatable.
- Private vets should consider fight against antibiotic resistance to be more noble than financial gains



BIBLIOGRAPHY



- WHO, (2011): Tracking antibiotic resistance from a food safety perspective in Europe. Who Regional office for Europe, Copenhagen.
- OIE, (2011). Aquatic Animal Health Code



ACKNOWLEGEMENTS



- Organizers of the seminar
- University of Nairobi



THANK YOU



FOR LISTENING TO ME