



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

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# 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.
- In case of acquired antibiotic resistance, strains develop resistance to drugs to which they are supposed to be sensitive.
- The fight against antibiotic resistance aims 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 possess 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 micro-organisms 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 pre-antibiotic era where many infections were untreatable.
- Private vets should consider fight against antibiotic resistance to be more noble than financial gains



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THANK YOU



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