

# JUDICIOUS USE OF ANTIMICROBIALS IN VETERINARY PRACTICE

- Take stock of the relevant facts and figures like, species wise /animal sector wise antimicrobial usage, type of antimicrobial use (therapeutic/ non-therapeutic), number of animal treated, seasonality and disease conditions etc. that will provide tangible inputs to modify treatment strategies and to monitor changes in antimicrobial treatment practices over time.
- Document and report the incidences of lack of response due to antimicrobial resistance (AMR) for a particular or class of antimicrobials if any, to the concerned authority.
- Assist in promoting alternative methods of infectious disease management such as vaccination, environmental sanitation, disease containment and managerial practices like appropriate herd size/ stocking density, housing, climate control etc. which in turn reduce the incidence for antimicrobial usage.
- Strengthen co-operation with all relevant stakeholders like veterinarians, regulatory authorities, pharmaceutical industry, feed manufacturers, and food-animal producers, to have a concerted approach in prudent use of antimicrobials.
- Participate in capacity building programmes to update knowledge and skill on antimicrobial usage regulations, antimicrobial susceptibility testing methods, AMR monitoring protocols.
- Promote good veterinary practices (GVP), ensuring compliance with OIE (office international des epizooties) and Codex Alimentarius standards to minimise development and spread of AMR and to contain the antimicrobial residue level below the statutory prescriptions.



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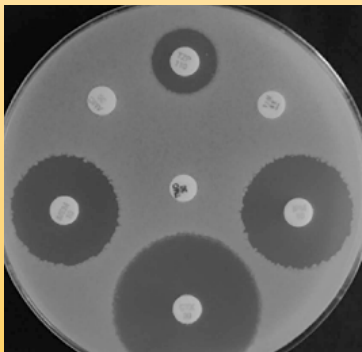
## Introduction

Time and again it is claimed that, antimicrobial resistance (AMR) associated with the use of antimicrobials for therapeutic and non-therapeutic purposes has led to emergence and dissemination of antimicrobial resistant microorganisms with a resulting loss of therapeutic efficacy of the available antimicrobial agents in animal and human medicine. This is a concern of public health importance that cannot be simply wished away. Therefore, responsible and prudent use of antimicrobials in food animals is a must to promote animal health and to ensure food safety. On that front, veterinarians who is holding the prescription decision, very much indeed play a crucial role in the mission for attainment of judicious use of antimicrobials in food producing animals.

## Strategies to achieve judicious use of antimicrobial in food animals:

- Prescribe antimicrobial agents only when necessary (bacterial infections). Choose the appropriate antimicrobial agent. Therapeutic judgment should be based on laboratory test (pathogenic agent isolation, identification and antibiogram) and clinical experience. Right antimicrobial at right time with a right dose and completion of full course of treatment to achieve a positive outcome.
- Comply with the withdrawal (WTD) time of the antimicrobial to protect consumers from violative level exposure in foods of animal origin. It should be borne in mind that antimicrobials after completion of therapy, may remain in tissues for varying times depending on drug elimination kinetics and pharmaceutical formulation.

- Avoid off-label use or extra-label use of antimicrobials. Strictly follow the label indications for target animal species, route of administration, indications etc.
- Stick on to the label regarding the storage and safe disposal of expired antimicrobial agents.
- Ensure rational use of antimicrobials by optimising the dosage regimen (dose, dosing interval and duration of treatment).
- Ascertain the pharmacodynamics (PD) of the target antimicrobials in order to know its spectrum of activity, mode of action, minimum inhibitory concentration (MIC), bactericidal concentration, whether it has time dependent or concentration dependent activity or co-dependency and to access its activity at the site of action.
- Figure out the pharmacokinetic (PK) property of the individual antimicrobial agent to judge its bioavailability at the site of infection, tissue distribution and excretion etc. to make precise therapeutic judgements. In-depth insight and understanding on PK and PD is pretty much needed for a rational drug prescribing decision and to optimise antimicrobial therapy.
- Combine only those antimicrobials which has synergistic effect to increase therapeutic efficacy or to broaden the spectrum of activity.
- Know the incompatibilities and interactions of your antimicrobial of choice with other drugs co-administered and contraindications if any.

The image shows the packaging for Doxycycline for Injection, USP 100 mg per vial. The box is white with orange and black text. It includes the NDC number 0069-0104-01, storage instructions (Store at 20° to 25°C), and a detailed Usual Dosage and Reconstitution Instruction. The text specifies that the vial contains 100 mg of doxycycline hyclate equivalent, along with 480 mg of ascorbic acid and 300 mg of mannitol. It is preservative-free, lyophilized, and made in India. The packaging also features a QR code, a barcode, and the Pfizer logo.

NDC 0069-0104-01

**DOXYCYCLINE FOR INJECTION, USP**  
**100 mg per vial**

STERILE  
FOR IV INFUSION ONLY  
MUST DILUTE  
RECONSTITUTED SOLUTION Rx only

Storage: Store at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature]. PROTECT FROM LIGHT. Retain in carton until time of use. Protect solutions from direct sunlight during infusion.

Usual Dosage and Reconstitution Instruction: See package Insert.  
Constitute to 10 mg/mL with 10 mL of Sterile Water for Injection.

Each vial contains doxycycline hyclate equivalent to 100 mg of doxycycline, ascorbic acid 480 mg, mannitol 300 mg.

Preservative Free Code No.: KR/DRUGS/KTK/28/280/95  
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