"From Awareness to Action: Tackling Antimicrobial Resistance in Livestock Farming"

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(Livestock extensionists should prioritize efforts in effectively communicating, educating, and training to improve understanding and awareness of AMR.

ABSTRACT

Using antimicrobial drugs in animals is crucial for their well-being and productivity, ensuring improved food security, safety, and animal welfare. However, there's a growing concern about antimicrobial resistance (AMR), posing a threat to these advantages. Resistance, originating in one location or species, can easily spread globally, affecting both developed and developing nations. The issue of antimicrobial resistance has not received sufficient attention in South Asia, including India, and there's surprisingly little knowledge about antibiotic use in animal husbandry. Currently, AMR is a global concern demanding immediate attention. It's crucial to focus on the optimal use of antimicrobials following prescribed guidelines and action plans.

INTRODUCTION

India faces a significant challenge in providing safe and nutritious food to its vast population of over 1.4 billion people. This challenge is exacerbated by factors such as shrinking land, reduced labor, diminishing natural resources, climate change, and the migration of farming communities to urban areas. The livestock sector is crucial in addressing this demand, but there's a substantial gap between the production and demand for milk, meat, and eggs. To meet this demand, the livestock industry currently relies heavily on excessive use of antimicrobial agents in food-producing animals. This practice, aimed at rapid growth and disease prevention, poses long-term risks by contributing to bacterial resistance in humans. The presence of antibiotic residues in final food products leads to chronic exposure, fostering antimicrobial resistance (AMR), which adversely impacts human, animal, and plant health systems. This growing global AMR issue not only compromises medical treatments but also undermines food safety and environmental health. Moreover, the reliance on antimicrobials diminishes the economic value of livestock products, resulting in export losses for farmers in international trade and consumer confidence, especially in in competitive global markets with post-WTO era regulations and sanitary measures.

Antimicrobial resistance in livestock and food animals is inadequately documented in South Asian countries, including India. Limited sporadic studies exist, with a lack of national-level evidence. There is no surveillance system tracking antibiotic use in the livestock sector, and India lacks comprehensive regulations for non-therapeutic antibiotic use, with weak enforcement protocols (Inter-Ministerial Review Meeting on Antimicrobial Resistance 2016, MoH&FW).

Antibiotic use in livestock serves various purposes:

1.Therapeutic use: To cure diseases, prevent livestock deaths, and restore production (milk and meat).
2.Metaphylactic use: Controls infection spread to healthy animals when 10 to 15% of a group is ill.
3.Prophylactic use: Administering sub-therapeutic doses to prevent potential illness when infection signs are suspected.

4.Growth promotion: Enhances growth rate and productivity of animals (Chandron and Brugere 2014).

Major reasons for the presence of veterinary antibiotic residues in livestock products include the need for rapid on-farm productivity, oversight of drug withdrawal periods, extra-label and indiscriminate use, and over-the-counter antibiotic purchases by livestock owners. Factors like low-quality medicines, incorrect prescriptions, inadequate infection prevention and control, and the lack of enforcement of restrictive legislation contribute to the development and spread of drug resistance. The incidence of antimicrobial residues

Extension Intervention Cases:

1. **Khatun et al. (2016) in Bangladesh:** Conducted a training program in Joypurhat and Bogra districts, focusing on the proper use of drugs, maintaining hygienic poultry farms, and the adverse effects of excessive drug use on human health. After training, technical services were strengthened, and performance was monitored. Results showed a significant reduction in indiscriminate drug use among trained farmers (86% in Joypurhat, 56% in Bogra) compared to non-trained farmers (90-100%).

2. Lam et al. (2017) in the Netherlands: Applied the RESET Model to alter the mindset of dairy farmers and veterinarians, resulting in a substantial decrease in antibiotic use in dairy cattle. The success was attributed to collaboration among key stakeholders, effective communication, and the application of the RESET Mindset Model.

Way Forward:

1. Strengthen surveillance at the field level for antibiotic use in animals and enhance information management.

2. Emphasize proper treatment protocols for antimicrobial use by field veterinarians, urging farmers to strictly adhere to withdrawal periods.

3. Address financial losses to farmers during withdrawal periods through a dedicated policy under the National Action Plan on AMR.

4. Focus extension programs on raising awareness among livestock owners about judicious antimicrobial use.

5. Address the impact of AMR on human and animal health, and promote consumer awareness through educational programs, blogs, newsletters, mass media, and ICT tools.

6. Encourage farmers to adopt Good Farm Management Practices for effective disease prevention and control.

7. Allocate sufficient human resources, finance, and policy guidelines for AMR initiatives within the State Animal Husbandry Department.

8. Implement controls on over-the-counter antibiotic purchases by livestock owners from veterinary pharmacies and input dealers.

9. Adopt a multi-sectorial and multi-dimensional approach involving state animal husbandry departments, NGOs, animal welfare associations, and veterinary universities to effectively combat AMR.

10. Integrate AMR topics into the veterinary curriculum to enhance awareness among undergraduates.