

## Drug Resistance in Veterinary Medicine: A Growing Concern for Animal and Human Health

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### ABSTRACT

Every time a sick animal is given an antibiotic, a small but important battle takes place inside its body. Most of the time, the drug wins and the animal get better. But sometimes a few tough germs survive the treatment. These survivors can multiply, pass their toughness on, and eventually give rise to bacteria that no medicine can easily kill. This problem is known as drug resistance, or more specifically antimicrobial resistance (AMR), and it is quietly becoming one of the biggest challenges in veterinary medicine today.

**Keywords:** AMR, Veterinary Medicine, Animal health

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#### Introduction

Drug resistance happens when bacteria, viruses, fungi, or parasites change over time and stop responding to medicines that used to work against them. In veterinary practice, this is most often seen with antibiotics used to treat infections in livestock, poultry, and pet animals. Once resistance develops, the same illness that could earlier be cured with a simple, low-cost drug may now need stronger, more expensive medicines, longer treatment, or may not be curable at all.

#### How Drug Resistance Develops in Animals

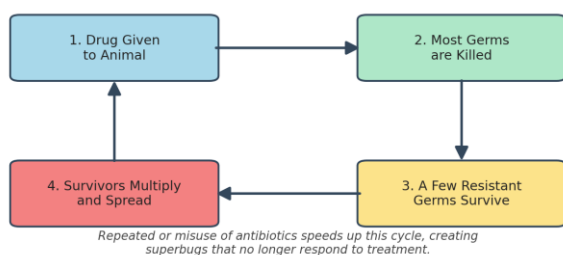


Figure 1: The cycle by which drug-resistant germs develop and spread.

#### Why Should We Worry About It?

Drug resistance in animals does not stay limited to the farm or the clinic. It affects all of us in several connected ways:

- **Animal welfare:** Resistant infections are harder and slower to cure, causing more suffering and higher death rates in livestock and pets.
- **Food security:** Sick or dying livestock mean less meat, milk, and eggs, which raises prices and affects farmers' income.
- **Human health:** Resistant bacteria can move from animals to people through direct contact, food, or the environment, making some human infections harder to treat as well.
- **Economic loss:** Treatment costs rise, export of animal products may be restricted, and overall farm productivity falls.

#### The One Health Triangle

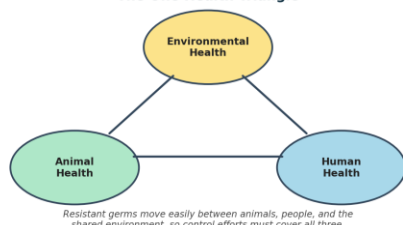


Figure 2: Animal, human, and environmental health are closely linked — this is called the One Health approach.

#### What Is Driving This Problem?

- Overuse of antibiotics for minor or viral illnesses where they are not even needed.
- Using the wrong dose, or stopping treatment too early, which lets the toughest germs survive.
- Routine use of antibiotics in healthy animals simply to promote faster growth.
- Poor hygiene and overcrowding on farms, which helps resistant germs spread quickly.
- Easy, unsupervised access to antibiotics without a veterinarian's prescription in many regions.

#### What Can Be Done About It?

- Use antibiotics only when truly necessary, and always under a qualified veterinarian's guidance.
- Complete the full prescribed course and follow the correct dose.
- Improve hygiene, vaccination, and overall animal management to reduce the need for drugs in the first place.
- Encourage regular testing of farms and clinics to track resistance patterns early.
- Support a One Health approach that brings veterinarians, doctors, and environmental experts together to tackle the issue jointly.

#### A Shared Responsibility

Drug resistance in veterinary medicine is not a distant scientific concern — it touches the food we eat, the pets we love, and the medicines we rely on as a society. The good news is that it is largely preventable. With responsible use of antibiotics, better farm practices, and stronger cooperation between veterinary and human health sectors, we can slow down resistance and protect the effectiveness of these life-saving drugs for generations to come.

#### References

- [1] Algammal, A.M., Mabrok, M., Sivaramasamy, E., et al. (2023). Emerging multi-drug resistance and antibiotic stewardship in veterinary practice. *Frontiers in Veterinary Science*. Available via Google Scholar.
- [2] Bardhan, A. (2023). The use of antibiotics and antimicrobial resistance in veterinary medicine, a complex phenomenon: A narrative review. *Antibiotics*, 12(3), 487. <https://doi.org/10.3390/antibiotics12030487>
- [3] Šimunović, K., et al. (2025). Human and veterinary medicine collaboration: Synergistic approach to address antimicrobial resistance through the lens of planetary health. *Antibiotics*, 14(1), 38. <https://doi.org/10.3390/antibiotics14010038>
- [4] Weese, J.S. (2024). Fighting antimicrobial resistance must include veterinary medicine. *STAT News*.
- [5] Maddock, K., et al. (2024). Current state and future directions for veterinary AMR research. *American Journal of Veterinary Research*, 85(3).
- [6] Tesema, A., & Birhanu, A. (2025). Revisiting antibiotic stewardship: Veterinary contributions to combating AMR globally. *Bulletin of the National Research Centre*, 49, Art. 25. <https://doi.org/10.1186/s42269-025-01317-3>
- [7] WHO, FAO, and WOA. One Health Joint Plan of Action, 2022–2026.