

# A Closer Look at Antibiotic Resistance in Veterinary Medicine

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## Introduction

Antibiotic resistance is one of the most pressing global health threats today and its implications extend beyond human medicine. In veterinary medicine, the overuse and misuse of antibiotics in animals can contribute to the rise of antibiotic-resistant bacteria, which may affect both animal and human health. The increasing prevalence of resistant pathogens in veterinary settings poses significant challenges for disease management, food safety and public health. This article takes a closer look at the role of antibiotics in veterinary medicine, the factors driving resistance and the potential solutions to mitigate its impact on both animals and humans. Antibiotic resistance is a growing and serious concern that has been steadily gaining attention in both human and veterinary medicine. While much of the focus has been on the impact of antibiotic resistance in humans, the role of veterinary medicine in the development and spread of resistant pathogens cannot be overlooked. Overuse and misuse of antibiotics in animals, particularly in food-producing livestock, have contributed to the emergence of resistant bacteria, which not only affect animal health but also pose a significant risk to human health. The transfer of antibiotic-resistant bacteria from animals to humans through direct contact, consumption of contaminated animal products, or environmental contamination is a real and pressing concern. In this article, we take a closer look at the problem of antibiotic resistance in veterinary medicine, its causes, the consequences and the steps being taken to address this issue within the veterinary sector [1].

Antibiotics have long been a cornerstone in veterinary medicine, used to treat bacterial infections, promote growth in livestock and prevent disease in both companion and food-producing animals. However, the widespread and often inappropriate use of antibiotics has led to the emergence of antibiotic-resistant bacteria. These resistant organisms can spread through direct contact between animals and humans, through the food supply and via environmental pathways. Several factors contribute to the development of antibiotic resistance in veterinary settings. Overprescription, self-medication by farmers and the use of antibiotics in animal feed for growth promotion are some of the key contributors. Additionally, a lack of rigorous monitoring and stewardship programs in many regions exacerbates the problem. The resistance of pathogens such as *Escherichia coli*, *Salmonella* and *Campylobacter* not only complicates treatment options but also raises concerns about the potential transfer of these resistant strains to humans, particularly through the consumption of contaminated meat or close contact with animals [2].

## Description

Efforts to address antibiotic resistance in veterinary medicine include the implementation of more stringent regulations on antibiotic use, increased

surveillance of resistant bacteria and the promotion of alternative methods for disease prevention and treatment, such as vaccines and improved farming practices. Collaborative efforts between veterinarians, farmers, regulatory agencies and researchers are essential to combat the growing threat of antibiotic resistance. Antibiotics play a crucial role in veterinary medicine, helping to treat infections, prevent the spread of disease and improve animal welfare. They are used across various animal species, including pets, livestock and poultry and are integral to maintaining animal health. In addition to therapeutic use, antibiotics are sometimes employed prophylactically to prevent disease outbreaks, particularly in intensive farming operations where large numbers of animals are housed in close quarters [3].

However, antibiotics are also used in certain cases for non-therapeutic purposes, such as growth promotion in livestock. In this context, antibiotics are added to animal feed to increase the rate of weight gain and improve feed efficiency. This practice, although controversial, has been common in some parts of the world. While it may lead to economic benefits for farmers, it also contributes to the development of antibiotic resistance, as it exposes bacteria to low levels of antibiotics over extended periods, providing a fertile ground for resistance to evolve. The development of antibiotic resistance in veterinary medicine occurs through the same basic mechanisms as in human medicine. Bacteria exposed to antibiotics can develop genetic mutations that allow them to survive despite the presence of these drugs. These mutations can be passed on to offspring or even shared between different bacterial species through horizontal gene transfer, a process that can rapidly spread resistance within bacterial populations. In veterinary settings, the overuse of antibiotics accelerates this process [4]. Veterinary organizations and regulatory bodies have begun to emphasize the importance of responsible antibiotic use. Stewardship programs aim to reduce the unnecessary or inappropriate use of antibiotics, ensure the correct dosage is prescribed and promote alternatives to antibiotics when possible. In many countries, veterinarians are encouraged to prescribe antibiotics only when necessary and to choose the most appropriate drug for the specific infection. Many countries have implemented or are considering regulations to ban or restrict the use of antibiotics in animal feed for growth promotion. The European Union, for example, has banned the use of antibiotics for growth promotion since 2006 and the United States has taken steps to limit the use of certain antibiotics for non-therapeutic purposes. Enhanced surveillance programs are essential for tracking the prevalence of antibiotic-resistant bacteria in animals and the environment. This includes monitoring the emergence and spread of resistant pathogens, identifying high-risk areas and providing data to guide public health responses. When antibiotics are prescribed unnecessarily or when animals are treated with the wrong antibiotic, resistance can develop. For instance, using broad-spectrum antibiotics for minor infections or viral diseases, which do not respond to antibiotics, can lead to resistance [5].

## Conclusion

Antibiotic resistance in veterinary medicine is a significant and growing concern that has implications for animal health, public health and food security. The overuse and misuse of antibiotics in animals, particularly in food production, have contributed to the emergence of resistant bacteria that can impact both animal and human populations. Addressing this issue requires a multifaceted approach, including responsible antibiotic stewardship, stricter regulations, enhanced surveillance and research into alternative methods of disease prevention and treatment. A coordinated, global effort that involves veterinarians, public health officials, farmers and policymakers is essential to mitigate the spread of antibiotic resistance and protect both animal and

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human health. By embracing a "One Health" approach, we can help ensure the continued effectiveness of antibiotics and safeguard the health of both animals and humans for the future.

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None.

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## Conflict of Interest

None.

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## References

1. Velazquez-Meza, Maria Elena, Miguel Galarde-López and Berta Carrillo-Quiróz, et al. "Antimicrobial resistance: One health approach." *Vet World* 15 (2022): 743–749.
2. Tomas, Ana, Nebojša Pavlović, Nebojša Stilinović and Olga Horvat, et al. "Increase

and change in the pattern of antibiotic use in Serbia (2010–2019)." *Antibiotics* 10 (2021): 397.

3. Aus der Beek, Tim, Frank-Andreas Weber, Axel Bergmann and Silke Hickmann, et al. "Pharmaceuticals in the environment-global occurrences and perspectives." *Environ Toxicol Chem* 35 (2016): 823-835.
4. Murray, Christopher JL, Kevin Shunji Ikuta, Fabrina Sharara and Lucien Swetschinski, et al. "Global burden of bacterial antimicrobial resistance in 2019: A systematic analysis." *Lancet* 399 (2022): 629-655.
5. Zhao, Ling, Yuan Hua Dong and Hui Wang. "Residues of veterinary antibiotics in manures from feedlot livestock in eight provinces of China." *Sci Total Environ* 408 (2010): 1069-1075.

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