IANR NebGuide
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# Guidelines for the Prudent Use of Antibiotics in Food Animals

**Katherine Irwin, Extension Program Assistant**
**David R. Smith, Extension Dairy/Beef Veterinarian**
**Grasso M. Ebako, Extension Poultry Veterinarian**
**Steve Ensley, Extension Beef Veterinarian**
**D. Dee Griffin, Extension Feedlot Veterinarian**
**Arden Wohlers, Extension Beef Veterinarian**

This NebGuide explains why antibiotics must be used with care and how to prudently use antibiotics to treat food animals.

Antibiotics are used to improve animal health and productivity. You, the animal caregiver, make important decisions about how antibiotics are finally used in food producing animals. Antibiotics should be used prudently to ensure they are effective, do not leave residues in food, and will continue to benefit man and animals in the future. Are you prepared to make the best decisions about using antibiotics in animals?

## Why Do We Use Antibiotics in Animal Health?

One of the most easily recognized uses of antibiotics is to relieve illness and suffering caused by bacaterial infection in animals. Antibiotics also are used to prevent infection when bacterial pathogens are suspected or known to be in the animal's environment or when an animal encounters high-stress situations that increase its susceptibility to infection and disease. Under these conditions antibiotics are given as a prophylactic because there is the reasonable expectation disease would occur if no action was taken.

The prudent use of antibiotics in food and companion animals may help minimize transmission of bacterial pathogens to humans. By minimizing bacterial infections in animals, antibiotics may reduce the opportunities for pathogenic bacteria to be transferred to people via direct contact with animals and/or consumption of animal products.

## Why Should We Be Concerned About How We Use Antibiotics?

Because of their importance to health and well-being, antibiotics have become a part of our daily existence. Consequently, animal caregivers may no longer give much thought to their use, and this leads to situations where antibiotics may get misused. When used appropriately anti-biotics are a powerful tool for maintaining healthy animals. However, when antibiotics are used carelessly, the consequences can be serious.

### To Ensure Effectiveness

One reason to use antibiotics prudently is to ensure that their use will benefit the animal being treated. Antibiotics are used to treat bacterial infections; if the condition for which the antibiotic is being administered is not the result of a bacterial infection, the antibiotic will be of little or no use. In addition, even if the conditions are appropriate to use an antibiotic, it won't work as it should if it is used improperly, such as at the wrong dosage or for the wrong duration. It is costly to use an antibiotic inappropriately. The time spent using the wrong treatment delays making a correct diagnosis of the animal's condition and starting the correct therapy. Also, the health status of the animal may not improve, and money will have been wasted on purchasing the drug and the additional labor used to administer it.

### To Prevent Antibiotic Residues in Food

Using antibiotics prudently helps prevent antibiotic residues in marketed livestock and animal products. Failure to follow the directions of a veterinarian or drug label

can result in the animal or its products not being withheld from the market long enough for drug concentrations to disappear. If this occurs, violative residues may result. Extended withdrawal times, especially if the drug use was not warranted, may lead to loss of market options for the producer.

**To Prevent Selection for Antibiotic Resistant Bacteria**

Concern about selecting for antibiotic resistant bacteria is an important reason antibiotics should be used with care. Though not a new problem, concern about antibiotic resistance may affect the availability of animal medications in the future. Antibiotic use selects for bacteria that are resistant to the effects of antibiotics. When antibiotic is administered to an animal, it will kill or inhibit growth of all susceptible bacteria it encounters in the creature, not just those for which the antibiotic was given. Remaining are bacteria more resistant to the drug. These bacteria will no longer have to compete with the susceptible bacteria for space and nutrients within the host, enhancing their ability to survive and multiply. If these bacteria cause disease, the resulting infection may not respond to antibiotic treatment. Resistant bacteria share their resistance to other bacteria. In this way, it is possible for bacteria to gain resistance to an antibiotic it was never exposed to. Also, a bacterium may become resistant to multiple other antibiotics of similar structure or mechanism of action in a manner called cross-resistance. When antibiotics are not used appropriately, the opportunity for resistant bacteria to evolve increases needlessly and can compromise future antibiotic therapy.

**Guidelines for Prudent Antibiotic Use**

The American Veterinary Medical Association (AVMA) and various veterinary practice specialty groups and quality assurance programs have developed guidelines for veterinarians on the prudent use of antibiotics in livestock. These various guidelines are all based on providing the best care for the animal and protecting public health.

> "When the decision is reached to use antimicrobials for therapy, veterinarians should strive to optimize therapeutic efficacy and minimize resistance to antimicrobials to protect public and animal health."
> *—AVMA Position on Judicious Antimicrobial Use, 1998*

Often it is the animal caregiver that decides how antibiotics will be used. Everyone who administers antibiotics to animals should understand and be willing to apply these general concepts of prudent use.

1. **Provide a system of care to prevent common diseases.**
   It is more cost effective to prevent disease than rely upon antibiotics to treat disease once it has developed. Minimizing disease risk is a necessity for any sound production system and is achieved by maintaining sanitation and hygiene, providing high quality feed, providing protection from the elements, implementing biosecurity measures, performing regular health exams, and using vaccines and parasite control.

2. **When animals do get sick, have an accurate diagnosis.**
   This ensures antibiotics will be used to treat the appropriate clinical indications. Diagnosing an animal's condition should be based on clinical signs, history, necropsy results, lab data, and past experience. Your veterinarian can help provide an accurate diagnosis.

3. **Determine that antibiotics are the most appropriate option.**
   Keep in mind the treatment outcomes you want for the animal and what types of therapy will help you achieve them. Will an antibiotic provide the results you want? Will the animal's condition even respond to antibiotics? Does the animal need only supportive therapy? Will using antibiotics be the most economically sound treatment?

4. **Choose the most appropriate antibiotic for the circumstances.**
   Not all antibiotics work the same and each acts against different types of bacterial infections. Culture and susceptibility tests of the causal organism will help determine the type of antibiotic most effective in clearing the infection. Select an antibiotic form that can be easily administered and will result in effective concentrations reaching the site of infection. When appropriate, use local therapy instead of systemic. Use only medications approved for the use you intend.

5. **Work with your veterinarian to enhance therapeutic options.**
   Veterinarians have the knowledge and resources necessary to determine the most effective therapy. Your veterinarian can offer valuable guidance for the prudent use of over-the-counter antibiotics and, within the context of a valid Veterinarian-Client-Patient Relationship (VCPR, *Table I*), can offer enhanced therapy through the use of prescription and extra-label use medications. You must establish a valid VCPR with your veterinarian before receiving drug prescriptions or using an antibiotic any way other than exactly as labeled. Your veterinarian may provide written protocols for diagnosing and treating common disease conditions.

6. **Use antibiotics and other medications as ordered.**
   That's the law. You must use medications at the ordered dosage for the appropriate species and indication. If there is not a suitable product for the condition then consult your veterinarian about using a product extra-label. Follow the new instructions outlined by your veterinarian for the extra-label use, paying particular

attention to revised withdrawal times. These times may be longer than the labeled withdrawal times because of the modified usage of the antibiotic. Pay attention to quality assurance guidelines to protect against drug residues. Train all personnel involved with antibiotic use and animal care on disease indications, dosages, routes of administration, injection site precautions, treatment duration, withdrawal times, storage, handling, record keeping, and accurate diagnosis of diseases common for your operation.

7. **Treat the appropriate animals.**
   Limit therapeutic antibiotic treatment to those animals that are sick or are legitimately at-risk of becoming sick. Avoid prolonged treatment of animals and consider salvage alternatives for chronic cases or those with a poor chance of recovery.

8. **Store antibiotics and other medications appropriately.**
   Drug integrity is maintained by following label and veterinarian instructions for proper handling, storage, and observation of expiration date. Mistakes in administering the wrong medication are less likely if drugs are clearly labeled and stored in the appropriate places.

9. **Minimize environmental contamination.**
   Dispose of outdated medications according to label directions or veterinary advice. Use disposal methods that minimize contamination of soil and water supplies. Provide feed and water medication delivery so that there is minimal spillage into the environment.

10. **Use records to track treatments and evaluate outcomes**.
    Keep accurate, detailed, and current records of antibiotic treatments and outcomes. Identify all animals either by individual, pen, or lot so they may be monitored. Treatment records should include the identity of animals treated, dates treated, drugs administered, who administered the drugs, the amount administered, and withdrawal times.

**Table I. Valid Veterinarian-Client-Patient Relationship.**

A veterinarian may only prescribe or direct extra-label use of antibiotics if a valid veterinarian-client-patient relationship (VCPR) has been established. In order for a valid VCPR to exist the following conditions must be met:

1. The veterinarian has assumed the responsibility for making clinical judgements regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions.

2. The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept.

3. The veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reactions or failure of the treatment regimen.
   *—Animal Medicinal Drug Use Clarification Act, 1996*

**This publication has been peer reviewed.**



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