

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Historical Materials from University of  
Nebraska-Lincoln Extension

Extension

---

1988

## G88-883 Managing of Disease to Produce Antibiotic/Residue Free Animal Food Products

Duane Rice

*University of Nebraska - Lincoln*

R. Gene White

*University of Nebraska-Lincoln, rwhite4@unl.edu*

Follow this and additional works at: <https://digitalcommons.unl.edu/extensionhist>



Part of the [Agriculture Commons](#), and the [Curriculum and Instruction Commons](#)

---

Rice, Duane and White, R. Gene, "G88-883 Managing of Disease to Produce Antibiotic/Residue Free Animal Food Products" (1988). *Historical Materials from University of Nebraska-Lincoln Extension*. 234. <https://digitalcommons.unl.edu/extensionhist/234>

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



# Managing of Disease to Produce Antibiotic/Residue Free Animal Food Products

This NebGuide discusses the use of antibiotics in animals, approved drugs and extra-label drugs, and ways to test for drug residue.

---

*Duane Rice, Extension Veterinarian  
R. Gene White, DVM*

---

- [Approved Drugs and Extra-Label \(Unapproved\) Drugs](#)
- [Tests for Residues](#)
- [Conclusion](#)

Infectious diseases in livestock are costly, and prevention is the best approach to minimize such losses. Yet despite good management practices and extensive preventive measures, disease outbreaks do occur, and treatments become necessary.

To obtain antibiotic residue-free products from food animals, knowledgeable decisions regarding the use of medications are necessary.

It is important to realize that antibiotic treatments are used only to eliminate or shorten the duration of existing infections, or to prevent secondary bacterial infections. These infections may reduce performance or threaten the life of the animal if treatment is not provided in a timely fashion.

However, the animal's immune system is the real key to recovery. Antibiotics and other medications in effect "buy time" for the immune system to control or eliminate the cause of illness from the animal and allow recovery.

There are many causes of disease and numerous predisposing factors. A predisposing factor is something that makes the animal more susceptible to infection.

For example: poor facilities increase the chance of exposure to infection in unsanitary housing areas or lots, or inadequately ventilated buildings; a viral infection predisposes a secondary bacterial infection; shipping stress may predispose respiratory infections, etc.

Many diseases have a single cause agent, such as a specific virus or bacteria. Some diseases may have specific predisposing causes while others are due to a microorganism or virus, plus increased animal susceptibility. Treatment selection and procedures for some diseases frequently can be quite simple. In the case of mastitis, respiratory disease and others, however, the story may be quite different.

Diseases due to infectious bacteria are common, and antibiotic treatment is helpful in many situations. There are literally hundreds of agents and causes of infections.

For treatment to be most effective, the cause first must be determined by examination, history, animal signs and specific laboratory tests. But even with accurate diagnosis and selective treatments, results of these treatments can be disappointing.

Poor treatment response may be due to a variety of circumstances, such as chronic infection, bacterial resistance, poor timing of medications, lowered resistance due to environment, impaired immune systems or the wrong diagnosis.

Since disease can be caused by a wide variety of organisms, it is impossible to select a single treatment that is effective against all disease-causing bacteria. An accurate diagnosis is the first step.

To draw useful conclusions, the veterinarian examines available records and evaluates the animal's environment, vaccination status and effectiveness of previous treatments, along with client attitude and other factors. The producer usually observes only the clinical signs such as coughing, loss of appetite or reduced production.

Treating disease without an accurate diagnosis can be risky and expensive, and frequently is non-productive. Animal suffering and delayed treatment in herd outbreaks are the result of selecting the wrong medication, and can create devastating losses.

The severity of disease in the individual animal can vary from completely undetectable by observation (subclinical) to obviously life-threatening. Early recognition and treatment of the disease increases the chances for a favorable response. Signs of disease vary considerably, depending upon the site of infection.

For example, the respiratory system is involved in pneumonia. Since the organism causing the pneumonia is usually unknown at this time, it is difficult to select the best treatment. But, because a contagious disease may spread to other animals and cause great loss, it is important to consult your veterinarian about treatment selection, dosage and administration methods.

Drug activity in various sites of infection may be different for a specific drug used in one type of infection, compared to another type. An accurate diagnosis confirmed with laboratory analysis and antibiotic susceptibility characteristics enhances the ability to select and administer correct medications.

When treating an animal, strict attention should be given to sanitation. There are instances in which severe secondary infections have occurred because a contaminated product was administered in a manner that allowed new infectious agents to be introduced into the animal while it was being treated.

Handle and administer medications in compliance with both the manufacturer's and the veterinarian's recommendations.

## **Approved Drugs and Extra-Label (Unapproved) Drugs**

An *approved* drug means that it is being used *according to the label directions established by the manufacturer of the product*. An *extra-label* (unapproved) drug is one that is being used in a *manner or dosage different from the instructions on the manufacturers label*.

When a drug is used by a producer, whether approved or unapproved, it is the producer's responsibility to withhold the treated animal from slaughter or prevent the sale of milk or meat products until the drug is eliminated from the animal's system or has been reduced to a non-violative level. If the drug is not approved by the manufacturer for use in food animals, specific withholding information is not available, and the drug should be used only as prescribed by a veterinarian.

There are extra-label drugs used in food animals. Veterinarians are responsible only for drugs they prescribe "off- label" (prescription drugs), and they legally are bound to advise the animal's owner about the pharmacology of those drugs. Their advice includes dosage, routes of administration, dosage interval and drug clearance times (withdrawal time) for both meat and milk producing animals.

Since extra-label drugs do not have manufacturer's withdrawal times established, veterinarians use their knowledge of excretion time considering the dosage used; condition of the animal; and the route of administration to estimate the clearance times. As veterinarians are responsible, they will add several extra days of withholding to positively assure clearance of the drug from the animal. On-farm tests to detect residues are available and recommended.

Why do veterinarians recommend unapproved drugs at all? Because sometimes the response to an approved drug at the recommended dosage is poor or does not occur.

In attempting to improve the outcome of the treatment and prevent loss of the animal, some drugs are needed at higher dosage for extended days of treatment. Veterinarians are within the law if the drug is legal, a valid client/patient relationship exists, animal identification is established and the animal's owner is informed of all ramifications involving the drug.

Specific emphasis is necessary concerning residue withdrawal time, or any factor that could jeopardize human health.

The Food and Drug Administration (FDA) policy, which relates to extra-label use of drugs in food producing animals, states that:

"Although it has been and remains the policy of the FDA not to interpose itself into the practice of veterinary medicine, this policy does not extend to situations where the public health may be adversely affected. Both producers and veterinarians may be subject to prosecution under the Food, Drug and Cosmetic Act for such extra-label use, particularly when it results in violative residues in edible products of treated animals."

Consumers, the Food Safety Inspection Service (FSIS) (USDA), and the Food and Drug Administration (FDA) increasingly are concerned about what appears to be a rather widespread use of extra-label drugs. Producers and veterinarians must work together to address their concerns, but the ultimate responsibility lies with the producer. Following label instructions explicitly and using approved drugs are important and necessary.

## **Tests for Residues**

The STOP Test (Swab Test On Premises) detects antibiotic residues after slaughter and has been used by

Food Safety and Inspection Service (FSIS) for years. When violative residues are found, the carcass or milk product is condemned. Condemnation is costly to the producer, as no payment is made for contaminated carcasses or milk products. The producer also is subject to a fine, and may be prevented from marketing food products.

The LAST (Live Animal Swab Test) now is available and is a good tool for on-the-farm use in screening individual animals for antibiotic residues before they are slaughtered. LAST is a urine test that indicates whether or not all antibiotics have been excreted from the live animal. If the urine has cleared, tissue levels also have cleared to a level for safe marketing. This test can be performed by veterinarians or producers.

New sensitive tests are available or presently being developed to detect other types of contaminants (sulfonamides and others). These will be utilized by FDA in the near future, so prevention is the key.

### **Conclusion**

Antibiotics alone are not a cure-all or even the best approach to control animal disease. They are, however, one of the tools that aid in reducing the duration of infection to allow time for the immune system to protect the animal.

A total herd health program and the advice of a veterinarian is important in determining animal drug selection. The veterinarian is aware of drug activity, residue complexities and the prevention thereof.

Treating disease properly is much more than a simple injection, and the producer must realize this to produce quality meat and milk. Ultimately, it is the producer's responsibility at the farm level.

Quality, residue-free food animal products are necessary to ensure consumer confidence, and the producer can provide this quality. Nebraska producers must be aware of the complexities of disease, medications and the adverse effects thereof, and should use their knowledge in the production of residue-free animal products.

---

***File G883 under: ANIMALS, GENERAL***

***A-1, Feeding and Nutrition***

***Issued June 1988; 12,000 printed.***

*Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.*

*University of Nebraska Cooperative Extension educational programs abide with the non-discrimination policies of the University of Nebraska-Lincoln and the United States Department of Agriculture.*