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Use of Animal Drugs in Livestock Management

How to handle antibiotics and other drugs to prevent residues in meat while maintaining an effective animal health program.

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Use of animal drugs in food animal production must be accepted as a responsibility rather than a right when trying to improve animal health. Drugs should be used to enhance a health program and not as a substitute for good management.

Disease prevention is based on good nutritional and environmental factors, sanitation, and the use of a complete herd health program. Use of vaccines for common diseases and in some cases segregation or culling of infected animals is important. Good management practices improve environment, prevent animal stress that leads to disease, and generally reduce the need for drugs.

The medication to be used as an adjunct to good management must be chosen carefully with regard for the specific disease problem (causes, diagnosis, and prevention).

After medication selection, correct dosage and method of administration is important to comply with label excretion time (withdrawal time). By not adhering to all guidelines, adverse effects on food safety could occur.

Occasionally some medications can actually compromise the patient's well being. Seeking a qualified veterinarian's advice and supervision is highly recommended regarding drug use in any food animal.

Producers should consider and fully understand the following questions regarding health management and drug usage:

1. Has the Food & Drug Administration (FDA) approved this drug for use in this species?
2. Might the animal respond to care without drug use?
3. Is a residue problem from using this drug likely?

4. What is the correct dosage and route of administration?
5. Is the animal lactating/dry/or a meat animal?
6. Can this drug be used in combination with other drugs?
7. Is this drug being used as labeled?
8. Is use of this drug cost effective?
9. Is the drug still in date, effective, sterile, and safe?
10. Does the drug have possible adverse side effects?
11. Can the animal be tested to determine if all residues are eliminated?
12. Are you prepared to respond to allergic reactions if they occur?
13. Are there management plans to prevent future disease?

Inability to answer the above questions is associated with indiscriminate use of drugs and may harm an animal and/or cause residues. Frequently, veterinarians must help producers understand the appropriate use of drugs and provide recommendations on a specific problem.

Recently the FDA has issued more stringent guidelines for the use of drugs. This includes a decrease in the drug tolerance level for any extra-label use, especially if the possibility of development of residues exist.

On-farm inspections by state/federal regulatory officials can reveal violations that can severely penalize the producer. These inspections are not new. However, a greater emphasis now is placed on drug identification, its source, and other specific data related to prevention of residues.

The FDA also has classified and defined terms regarding animal drugs and their usage. Producers must comply with guidelines as they are indicated on labels attached to the drug container.

Producers and veterinarians should understand the importance of proper labeling, and guidelines to follow, when it comes to animal drugs.

Drug Labeling Terms

Label: A display of written, printed, or graphic matter attached to the immediate container of the article (drug).

Over-the-counter drug (OTC): A drug that can be purchased and used by a producer without supervision of a veterinarian. The label of an OTC drug must bear adequate directions for use by the producer and be written to be understood by the producer. When used by a producer in the absence of a veterinarian's order, an OTC drug **must** be used to comply with the labeling.

Veterinary prescription drug (R_x): A drug for which adequate directions for layman use cannot be written because of toxicity, or possible harmful effects, and as such, requires the supervision and knowledge of a veterinarian to ensure its safe and effective use.

All veterinary prescription drugs are required to bear the statement: "**CAUTION: Federal Law restricts this drug to use by or on the order of a licensed veterinarian.**"

Extra-label use: The use of a drug (OTC and/or) in a manner other than that listed on its label constitutes extra-label use. This can occur, for example, when a product is used at a different dosage, by a different route of administration, for a different species of animals, or an unlabeled disease condition. **Extra-label use by a producer is illegal.** Extra-label use criteria:

1. A careful medical diagnosis is made by an attending veterinarian within the context of a valid veterinarian-client-patient relationship.
2. A determination is made that (a) there is no marketed drug specifically labeled to treat the condition diagnosed, or (b) drug therapy at the dosage recommended by the labeling has been found clinically ineffective in the animals to be treated.
3. Procedures are instituted to assure that identity of the treated animals is carefully maintained.
4. A significantly extended time period is assigned for drug withdrawal prior to marketing meat, milk; steps are taken to assure that the assigned time frames are met, and no illegal residues occur.

Veterinarian-Client Patient Relationship (VCPR): "An appropriate veterinarian-client-patient relationship will exist when:

1. The veterinarian has assumed the responsibility for making medical judgments regarding the health of the animal(s) and the need for medical treatment, and the client (owner or caretaker) has agreed to follow the instructions of the veterinarian; and when
2. There is sufficient knowledge of the animal(s) by the veterinarian 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), and/or by medically appropriate and timely visits to the premises where the animal(s) are kept; and when
3. The practicing veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy."

In compliance with the preceding guidelines, both **Over-The-Counter (OTC) and Prescription (R_x)** drugs may be used on an extra-labeled basis, as long as the new label contains the following information:

1. Veterinarian's name and address.
2. Client's name.
3. Date.
4. Animal's ID.
5. Drug name.
6. Dosage and route of administration.
7. Withdrawal times for meat and milk even if zero.
8. Storage temperature and category (i.e., age and physiologic status: lactating or dry cow).
9. Expiration date.
10. Name of manufacturer.
11. Active ingredient.

Supervision

Drug use should be supervised by one specific person on the premises, and that person must interact with all personnel involved in use of the drug.

Misunderstanding and poor communication are major reasons for poor management of drugs and/or animals that have received treatment. The following recommendations are encouraged:

1. Store each drug to comply with safety, temperature, and label guidelines.
2. Keep an inventory of all drug purchases.
3. Record usage of each dose of every drug.

4. Identify all treated animals.
5. Follow all withdrawal directions.
6. Know where to seek help to conduct residue tests.

A properly labeled drug for food animals sometimes can produce residues beyond the withholding period, particularly when:

1. Excessive dosages are administered relative to animal weight (high doses may be required, on occasion, to save an animal's life, but administration should be supervised by a veterinarian and that drug must be on a prescription label).
2. Abnormal drug administration routes are used (i.e., injecting a drug in muscle instead of subcutaneously).
3. Combinations of drugs are used for treatment.
4. Drugs approved for one animal species are used in another.
5. The animal is critically ill causing normal drug clearance time to increase.

The large number and variety of drugs mandate maintenance and use of good records, in addition to better management and identification of treated animals. Many of these must be used in an extra-label manner as FDA approval of the drug does not allow other usage.

Summary of Drug Types

Following is a summary of the general drug types used in food animal production.

1. Drugs to treat infectious diseases such as mastitis, foot rot, pneumonias, etc: a) antibiotics (penicillin, tetracyclines, infusion tubes, etc.); b) anti-inflammatory drugs (steroids and others); c) supportive therapy (electrolytes, vitamins, etc); d) milk let-down and parturition drugs; e) sedative/pain reducers; f) digestive stimulants; g) teat dips and sanitizing agents.
2. Drugs used for non-infectious disease such as nutrient deficiencies, indigestion, metabolic problems: a) vitamins; b) minerals; c) calcium/magnesium/propylene glycol etc. for milk fever, tetany, ketosis; d) energy additives; e) digestive stimulants.
3. Drugs for reproductive management are those that may: a) induce calving (certain steroids and others); b) produce uterine contractions to evacuate the uterus (oxytocin, ergonovine); c) control reproductive infections - (antibiotics and others); d) induce estrus and heat synchronization (prostaglandins, estrogens & progesterone); e) treat various types of ovarian cysts (GnRH, HCG and prostaglandins); f) maintain pregnancy (progesterone); g) produce super ovulation in embryo transfer programs (FSH); h) anesthesia/tranquilizers.
4. Production related drugs: a) BST, (bovine somatotropin) and PST (porcine somatotropin) (in future if FDA approves); b) growth implants -- some cattle; c) Ionophores -- rumensin etc. -- heifer development; d) sodium bicarbonate (buffers).
5. Anesthetics: a) general anesthetics; b) local anesthetics (lidocaine, etc); c) tranquilizers -- (Rompun and others).
6. Internal and External Parasite Drugs: a) dewormers; b) many types of insecticides.
7. Preventive medical compounds: a) vaccines; b) sanitizers in animal environment.
8. Agricultural chemicals and insect preventatives in animal environment.

The extensive list above points out the absolute necessity of professional veterinary service, proper labeling, and record keeping for all agricultural products that may be used in farm management. **READ THE LABEL** and comply with instructions as improper use of many of these products can kill, permanently injure, or render the animal useless as a production unit. All of these reasons are important,

but of even greater significance is the production of **safe** food animal products the consumer can trust and buy with total confidence.

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