



# Protecting Against Antibiotic Resistance in Livestock Agriculture

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**The Problem** — There is an increasing incidence of antibiotic resistance in the world today. The use of antibiotics for veterinary related purposes accounts for 50% of all antibiotics used globally (1). If the resistance only affected the agriculture industry, it would be a huge problem, but it is also being felt in the human health arena. Hospitals are having problems with Methicillin Resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile*, and AIDS patients are being infected with antibiotic resistant tuberculosis. Antibiotic resistant bacteria from agricultural sources have negative implications on consumers, producers, and the agricultural industry. We need to police ourselves to insure that we are not contributing to the problem.

**Withdrawal Times** — The U.S. Food and Drug Administration (FDA) implements regulations to ensure that antibiotic residues in food animal products are not harmful to human health and to preserve medications commonly used in human medicine (2). Withdrawal times for veterinary drugs is a result of these regulations. A withdrawal time is the time needed after drug administration to a food animal to insure that drug residues may not be found in meat, milk, eggs, or any other edible product marketed from the animal.

**Veterinarian-Client-Patient Relationship** — The responsible use of antibiotics in livestock agriculture requires the establishment of a Veterinarian-Client-Patient relationship as defined in Title 21, Part 530.3 of the Code of Federal Regulations (3). In such a relationship, a veterinarian has assumed the responsibility for making medical judgments regarding the health of an animal or animals. The veterinarian must have enough knowledge of the animal to be able to diagnose its medical condition and must be available if the animal needs further care.

**Extra-label Drug Use (ELDU)** — Due to the limited number of drugs approved for use in food animals, veterinarians are often required to use drugs in an extra-label manner. Extra-label use means using a drug in an animal in a manner that is not in accordance with the approved labeling. This can mean using a drug in a species for which it is not labeled, at a different dosage rate, frequency or route of administration, for diseases other than those on the label, or with a different withdrawal time than that listed. Only a veterinarian can make the necessary determination to use a drug in an extra-label manner.

**Drugs Prohibited for Extra-label Use in Food Animals** — The FDA strictly prohibits some drugs from being used in an extra-label manner (4).

These include:

- (a) Chloramphenicol
- (b) Clenbuterol
- (c) Diethylstilbestrol
- (d) Dimetridazole
- (e) Ipronidazole
- (f) Other nitroimidazoles
- (g) Furazolidone
- (h) Nitrofurazone
- (i) Sulfonamide drugs in lactating dairy cattle (except approved use of sulfadimethoxine, sulfabromomethazine and sulfaethoxy-pyridazine)
- (j) Fluoroquinolones
- (k) Glycopeptides
- (l) Phenybutazone in female dairy cattle 20 months of age or older
- (m) Adamantane and neuraminidase inhibitor classes of drugs that are approved for treating or preventing influenza A are prohibited therapy in chickens, turkeys, and ducks (effective June 20, 2006)

**Proper Use of Antibiotics Can Lead to a Favorable Outcome for Everyone** — Antibiotics are simply a management tool in the same manner that vaccinations and clean housing are. Antibiotic use cannot make up for poor management. Proper antibiotic use can help avoid resistance problems and help us retain the use of antibiotics for the foreseeable future.

### References

- (1) Teuber, M. Veterinary use and antibiotic resistance. *Current Opinion in Microbiology*, Volume 4, Number 5, 1 October 2001, pp. 493–499(7)
- (2) U.S. Food and Drug Administration Center for Veterinary Medicine. 2008 on-line Green Book [http://www.fda.gov/cvm/Green\\_Book/elecgbok.html](http://www.fda.gov/cvm/Green_Book/elecgbok.html)
- (3) GPO Access, Code of Federal Regulations (CFR): Main Page <http://www.gpoaccess.gov/CFR/>
- (4) AVMA, Animal Medicinal Drug Use Clarification Act, Extralabel Drug Use (ELDU). <http://www.avma.org/reference/amduca/amduca1.asp>

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