

Losing Our Dear Antibiotics

Walter E Cook*

Wildlife Population Health Veterinarian, Department of Veterinary Pathobiology, College of Veterinary Medicine & Biomedical Sciences, Texas, USA

The public has been getting more concerned about the development of antimicrobial resistance in microorganisms. Since the main concern lies with resistance of bacteria to antibiotics, discussion will focus on these. This developing resistance has been identified as an important public health concern [1]. There are many contributing factors but one that has been especially contentious is the use of “medically important” antibiotics for “production purposes” in food-producing animals, particularly when they are added to animal feed. “Medically important” refers to drugs important for treating human disease [1]; “production purposes” refers to using antibiotics (typically at lower than therapeutic dosages) to promote growth or improve feed efficiency [2]. It has long been known that adding antibiotics to feed enhances growth, although there is dispute about the mechanism [3]. However, recent studies suggest that under modern production systems, improvements in growth may not be as large (or maybe non-existent) as seen under previous production systems [4].

While adding antibiotics may improve feed efficiency or promote growth, it also increases the probability of antibiotic resistance development [5]. The threat posed by feeding antibiotics to food-producing animals is overplayed in the popular press and internet (see “FDA Fails to Protects against Antibiotic Resistance, Guarantees More Needless Death and Suffering”) [6]. Far and away the most common causes of antibiotic resistance occur as a result of the misuse of antibiotics in humans [5]. Indeed one could conclude that the biggest problem with antibiotic resistance in food-producing animals is a perception problem. Nevertheless, it can’t be denied that the widespread use of antibiotics as feed additives for production purposes can lead to antibiotic resistance and that most scientists believe it should be discontinued [2,5]. Furthermore, the vast majority (97%) of medically important antibiotics used in food-producing animals are sold over-the-counter (OTC) [7]. This means there is no veterinary oversight, and the antibiotics may or may not be used for legitimate uses or at proper dosages and time intervals. Improper use of antibiotics only increases the potential for antibiotic resistance.

Due to these concerns, the FDA has released Guidance #213, which urges drug companies to voluntarily discontinue labeling and providing medically important antibiotics in feed and water for production purposes in food animals by the end of 2016 [2]. Once the labels have been changed, it will be illegal to use the antibiotics in this manner, even though the labels were changed voluntarily. Such antibiotics will then no longer be available OTC but will require the oversight of a veterinarian via a Veterinary Feed Directive (VFD) for antibiotics incorporated into feed, or via prescription for those administered through drinking water. The FDA is opting for a voluntary process at this time because the agency believes doing so results in quicker implementation. Regulatory action would require addressing each product individually and would take significantly more time and resources. However, the agency reserves the right to pursue regulatory changes if the voluntary process is deemed unsuccessful [2]. Initial results are encouraging: all 26 drug manufacturers that produce such medications have agreed to “engage in the strategy” to phase out the use of medically important antibiotics in food-producing animals for production purposes and phase in veterinary oversight for therapeutic uses of these drugs. In addition, two labels have been changed, a third is pending, and 31 products

have been voluntarily withdrawn [8]. Possibly some OTC antibiotic feed additives will be available for an extended period, but clearly their overall use will soon decline in food-producing animals.

The question arises: What about wildlife? When individual wild animals are wounded or ill they are often treated with antibiotics [9]. Few people find this objectionable. However, some deer farmers treat pens of deer with feed antibiotics incorporated into feed (or less commonly, water), most often with chlortetracycline. Deer are so treated to prevent some diseases (anthrax and anaplasmosis) or to treat certain conditions (respiratory disease or enteritis), although there is almost nothing in peer-reviewed literature on the effectiveness of this approach in deer. More problematically, some deer are fed antibiotics because the farmer believes it promotes improved weight gain, better body condition, or larger antlers; again there is nothing in peer-reviewed literature to support this notion. Concerns have been raised for over a decade about antibiotics in meat of deer that are hunted and consumed [10]. In the opinion of some veterinarians, antibiotics are becoming less effective in deer. Some of this may be due to indiscriminant use of antibiotics in deer feed.

Should deer and other game animals be included in efforts to eliminate feeding antibiotics to food-producing animals? Are they food-producing animals? The meat from these animals is occasionally consumed by humans. However, in contrast to traditional livestock, the primary purpose for raising game animals is not to produce food but to provide recreational (hunting) opportunities, personal enjoyment, wildlife viewing, and photography. Consumption of the meat is usually a secondary benefit. Furthermore, game meat makes up a minute percentage of the American diet, thus the amount it might contribute to the antibiotic resistance problem is very small.

If deer and other game animals are not included in antibiotic bans, it could become a large public perception problem. Most Americans believe that meat from a wildlife source is more healthful than that from traditional livestock. Concerns may develop that deer and other game animals are being fed antibiotics prohibited for livestock; it could tarnish the industry even though it may not directly impact it economically. But the main reason the game industry should support voluntarily eliminating antibiotics in deer feed for production purposes is that doing so will benefit the industry itself. Anecdotally, veterinarians

*Corresponding author: Walter E Cook, DVM, PhD, DACVPM, Clinical Associate Professor, Wildlife Population Health Veterinarian, Department of Veterinary Pathobiology, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, 4467 TAMU, College Station, TX 77843-4467, USA, Tel: 979-845-5068; E-mail: wcook@cvm.tamu.edu

Received November 06 2014; Accepted November 07, 2014; Published November 14, 2014

Citation: Cook WE (2014) Losing Our Dear Antibiotics. *Poult Fish Wildl Sci* 2: 122. doi:10.4172/2375-446X.1000122

Copyright: © 2014 Cook WE. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

and producers claim that when antibiotics are removed from deer feed, overall production improves.

If the deer and other game industries are not ready to endorse the elimination of antibiotics in their animal feeds, especially for production purposes, they should support scientific efforts to understand the impacts and efficacy of such practices. This would permit decisions to be made based on facts rather than opinion.

References

1. U.S. Department of Health and Human Services (2012) Guidance for Industry # 209: The Judicious Use of Medically important Antimicrobial Drugs in Food-Producing Animals. Food and Drug Administration.
2. U.S. Department of Health and Human Services (2013) Guidance for Industry # 213: New Animal Drugs and New Animal Drug Combination Products Administered in or on Medicated Feed or Drinking Water of Food-Producing Animals: Recommendations for Drug Sponsors for Voluntarily Aligning Product Use Conditions with GFI #209. Food and Drug Administration.
3. Gaskins HR, Collier CT, Anderson DB (2002) Antibiotics as growth promotants: mode of action. *Anim Biotechnol* 13: 29-42.
4. Jacela JY, DeRouchey JM, Tokach MD, Goodband RD, Nelssen JL, et al. (2009) Feed additives for swine: Fact sheets –acidifiers and antibiotics. *J Swine Health Prod* 17: 270-275.
5. U.S. Department of Health and Human Services (2013) Antibiotic Resistance Threats in the United States, 2013. Centre for Disease Control and Prevention.
6. Mercola (2014) FDA Fails to Protects Against Antibiotic Resistance, Guarantees More Needless Death and Suffering.
7. Center for Veterinary Medicine (2014) FDA Annual Summary Report on Antimicrobials Sold or Distributed in 2012 for Use in Food-Producing Animals. Food and Drug Administration.
8. Center for Veterinary Medicine (2014) FDA Secure Full Industry Engagement on Antimicrobial Resistance Strategy. Food and Drug Administration.
9. Kreeger TJ, Arnemo JM (2012) Handbook of Wildlife Chemical Immobilization. (4thedn), Blackwell Publishing, Oxford.
10. Cattet M (2003) A Canadian Cooperative Wildlife Health Technical Bulletin: Drug Residues in Wild Meat-Addressing a Public Health Concern.