Antibiotic resistance is one of the most pressing public health concerns facing the world today. The veterinary profession is working together with U.S. and international partners to develop strategies to better protect public and animal health and keep our food supply safe.

Minimizing the threat of antibiotic resistance to human, animal health

Over the past decade, many doctors within the human medical profession have sounded the alarm that they are losing their ability to adequately treat common illnesses in their patients with antibiotics. According to the U.S. Centers for Disease Control and Prevention, drug-resistant bacteria cause about 2 million illnesses and more than 23,000 deaths in the United States each year.

Similarly, the past several years have seen a rise in the number of people taking an active role in learning where their food products are coming from and voicing their concerns about antibiotics being used on farms. From grocery shoppers to chefs to restaurant owners to large food corporations, everyone wants to ensure that not only is the food they are buying safe to eat, but that it will not adversely impact their next check-up at the doctor’s office.

The AVMA, the national professional association for U.S. veterinarians, takes these concerns very seriously. In fact, antibiotic resistance has been an area of concern for the veterinary profession from the first time antibiotics were used on the farm to ensure good animal health and welfare as well as protect our food supply. With more than 10 billion animals raised for food production annually in our country alone and approximately 325 million Americans to feed, our nation’s leaders are looking for answers to keep our food supply safe and plentiful and to protect public and animal health. Veterinarians are uniquely positioned to provide scientific expertise to policymakers because they work at the interface between human, animal and environmental health.

Without safe and effective antibiotics, our country’s doctors and veterinarians will find it increasingly difficult to properly treat and prevent many common illnesses in their human and animal patients, and to provide safe food to eat. This brief paper explains what antibiotic resistance is, what the federal government is doing to address it, and what actions the veterinary profession is taking to ensure that antibiotics are used judiciously on the farm.

Why do we need antibiotics to treat animals?

Antibiotics kill bacteria or keep them from multiplying. They are commonly used to prevent or treat illnesses in humans and animals. For example, a human or animal suffering from a respiratory infection may be prescribed antibiotics to help stop the spread of the illness and allow the patient to get better.

Antibiotics are grouped into "classes" based upon how they kill or suppress the growth of bacteria. The vast majority of antibiotic classes are approved for use in both humans and animals, with only a few exceptions that can only be used in one versus the other. Therefore, the drugs are virtually the same, but there are federal regulations in place that dictate how the drugs can be used in animals, especially food animals. Veterinarians are held to stringent requirements and are required by law to use drug products strictly according to the Food and Drug Administration’s approved drug label, which indicates: the type of animal the drug can be given to; its purpose (which disease or bacteria it will

Key points:

- Antibiotic resistance is a threat that the veterinary profession takes very seriously.
- The nation’s veterinarians are actively working with the FDA and food producers to ensure antibiotics are administered appropriately so that livestock are healthy and our food supply stays safe.
- Including the veterinary profession in the White House’s action plan to address antibiotic resistance is a step in the right direction toward developing a comprehensive One Health approach.
- The AVMA supports the development of scientifically valid methods to better understand antibiotic use practices in animals and the public health impacts of resistant bacteria.
- Antibiotics are, and will remain, an important part of treating and preventing diseases in both humans and animals.
target; the dose (how much to give); and the duration (how long to give the patient the drug). As an example, veterinarians do not have the ability to use a drug in animal feed in any manner that deviates from the FDA’s approved drug label. Furthermore, there are several drug classes that are strictly prohibited from being used in animals (not allowed to be given under any circumstances), which further limits the treatment options for sick animals.

Veterinarians decide which antibiotic to use in their animal patients based upon many factors, including:

- the type of infection;
- the organism causing the infection and its susceptibility to the particular antibiotic (the likelihood that the antibiotic chosen will kill the organism);
- the method by which the antibiotic is given (e.g., whether the animal will best tolerate it orally or by injection);
- whether the antibiotic is approved for use in that animal species;
- the risk of adverse side effects; and
- cost to the client/owner.

Lately, many people have become concerned that if animals are given antibiotics on the farm, then trace levels of those particular antibiotics could make it into the food supply, which in turn would mean humans are consuming meat or dairy products that could potentially be building up their immunity to a particular antibiotic. However, there are multiple layers of protection that are in place to ensure that trace amounts of drugs—often referred to as “drug residues”—do not end up in the food supply so that they might be harmful to human health. For example, the FDA’s approved drug labels dictate “withdrawal times,” which is the period of time during which a food animal cannot enter the food supply after it has been given antibiotics (e.g., milk would not be used from a cow that has been treated with antibiotics until after the proper withdrawal time period has concluded). Once the meat or dairy product has made it into production, federal inspectors conduct checks to ensure food is safe before it heads to the marketplace.

Not only are there many procedures in place along the way to keep food safe during production, but the final step lies with you, the consumer. By properly handling food and cooking it at the appropriate temperature, you have the ability to kill most bacteria—resistant or not—so there is little chance it could impact you or your family’s health. From farm to fork, we can all work together to keep our food supply safe and protect the health of both people and animals.

The FDA develops guidance to limit antimicrobial use on farms

For several years, the FDA has been working diligently to minimize the potential for antibiotic resistance by putting into place federal guidance and regulations that will limit how and when antibiotics are used on the farm. This important work is increasing the role that veterinarians play in overseeing the judicious use of antibiotics in food-producing animals to ensure a safe and healthy food supply.

In April 2012, the FDA released Guidance for Industry No. 209, which explained the agency’s current thinking regarding antibiotic drugs that are medically important in human medicine and used in food-producing animals. Specifically, it provided two recommendations on what constitutes “appropriate” or “judicious use” of medically important antibiotics:

1. limit the use of medically important antibiotics in food-producing animals to those that are considered necessary for assuring animal health; and
2. limit such drugs to uses in food-producing animals that include veterinary oversight or consultation.

This guidance was important because for the first time, it outlined clear veterinary oversight responsibilities for how antibiotics could be used in food-producing animals.

In Dec. 2013, the FDA released Guidance for Industry No. 213, which established a three-year timeframe for drug companies to voluntarily phase out production (i.e., growth promotion) uses of antibiotics important in human medicine and phase in veterinary oversight of such drugs. The change impacted 290 drug approvals used in making 420 products, and required drug manufacturers to:

1. remove the use of antibiotic drugs for production purposes (e.g., growth promotion or feed efficiency);
2. add, where appropriate, scientifically supported disease treatment, control or prevention uses (often referred to as “therapeutic uses”); and
3. change the marketing status from over-the-counter to Veterinary Feed Directive (VFD) for drugs administered through the feed, and to prescription-only status for drugs administered through water, meaning producers could only obtain the drugs after consulting with a veterinarian and obtaining a written order.

In March 2014, 25 companies that manufacture these drugs, representing all drug applications affected, agreed to revise their drug labels. Once fully implemented, producers must fully comply with the new prescription labels to keep their livestock healthy.

The FDA has also recently completed changes to improve the efficiency of its VFD regulations. Established in Jan. 2001, the VFD mandated how certain medicated feeds given to animals can be used or distributed to producers. Historically, all commercially available medicated feeds were available over-the-counter to producers. Now, through the VFD, the federal agency
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requires producers to obtain veterinary approval prior to using some medicated feeds. On June 3, 2015, the FDA finalized its new VFD regulations, which will cement veterinary oversight of medically important antibiotics used in feed for food animals, ensuring the protection of animal health and welfare as well as food safety and public health. The AVMA’s early and ongoing collaboration with the FDA helped ensure that the rule is practical and in the best interests of animal health, public health and the veterinary profession, and applauded the FDA in its release of this final rule.

White House pushes national agenda on antimicrobial resistance

Apart from the FDA, the executive branch has been pushing for more interagency collaboration and research on antibiotic resistance, particularly with how it relates to U.S. animal agriculture.

In Jan. 2015, the president released his fiscal 2016 budget proposal, which nearly doubled the amount of federal funding for combating and preventing antibiotic resistance to more than $1.2 billion. The administration requested the additional funding to help improve antibiotic stewardship; strengthen U.S. antibiotic resistance risk assessment, surveillance and reporting capabilities; and drive research innovation in the human health and agricultural sectors.

Shortly thereafter, the President’s Council of Advisors on Science and Technology (PCAST) released its National Action Plan for Combating Antibiotic Resistant Bacteria. The action plan outlines a comprehensive federal effort to address the threat of antibiotic resistance, which includes measures to:

- slow the emergence of resistant bacteria and prevent the spread of resistant infections;
- strengthen national “One Health” surveillance efforts;
- advance development and use of rapid and innovative diagnostic tests;
- accelerate basic and applied research and development;
- improve international collaboration and capacities.

The plan includes the veterinary profession in its goals and objectives and is a step in the right direction toward a One Health approach, by incorporating data and expertise from many fields of human and animal health to develop appropriate solutions to the threat of antibiotic resistance.

On June 2, 2015, the Obama administration convened a White House Forum on Antibiotic Stewardship to bring together over 150 human and animal health stakeholders involved in antibiotic stewardship. The AVMA participated in the event, reiterating the association’s commitment to enhanced veterinary oversight and responsible therapeutic use of antimicrobials in food animals to help protect the safety of people, animals and the food supply. The association also shared several other commitments it plans to make to meet the federal government’s recommendations on combating antibiotic resistance.

Veterinary profession supports judicious use of antibiotics

Whether we’re talking about people or animals, the nation’s veterinarians support the judicious use of antibiotics to treat, control and prevent diseases. The AVMA believes that veterinarians ought to use good judgment and base their decision to use antibiotics on minimizing the risk of resistance, while maximizing the health benefits to animal patients. If scientific research and risk-based assessments demonstrate that the use of an antibiotic poses significant public health risks, the association supports the restriction or removal of its use.

The AVMA supports the development of scientifically valid methods to better understand antibiotic use in animals and the public health impacts of resistant bacteria. The association also supports efforts to advance the protection of human and animal health through integrated monitoring of antibiotic resistance within the FDA’s food safety program.

Lawmakers are urged to rely upon and support the National Antimicrobial Resistance Monitoring System (NARMS) and the National Animal Health Monitoring System (NAHMS). The NARMS performs research and provides information about antibiotic resistance in humans, animals and retail meats, while the NAHMS, within the USDA’s Animal and Plant Health Inspection Service, conducts national studies on the health and management of U.S. livestock populations.

For more information, visit the AVMA’s web site at: avma.org/antibioticuse.