Antibiotic Resistant Bacteria in Animals and Unnecessary Human Health Risk

Antibiotics on the Farm
In the United States, food animals - poultry, swine, and cattle - are routinely treated with antibiotics for disease prevention and growth promotion. Recently, major increases in antibiotic-resistant bacterial infections in human populations have led to public health concerns regarding antibiotic use for non-therapeutic purposes (i.e., not used to treat disease) in animals destined for food production.¹

Bacteria are able to develop antibiotic resistance when exposed to low doses of drugs over long periods of time. To promote growth and weight gain, entire herds or flocks of farm animals are routinely fed antibiotics at low levels in their feed or water – a practice that has been identified as a major contributor to antibiotic resistance.² In addition, the crowded and often unhygienic conditions of many industrial farms facilitate transfer of bacteria and infection, increasing the need for antibiotic use in the hopes of preventing diseases that might arise from these conditions.

Because there are currently minimal regulations in place requiring drug manufacturers or food animal producers to report how antibiotics are marketed and used in food animal production, the scale of antibiotic use in food animals is unknown. Estimates vary greatly on the amount of antibiotics fed to farm animals, but range from 30 to 70 percent of all antibiotics used in the U.S.³ Poor data on animal drug production, distribution, and resistance all unnecessarily contribute to the risks associated with developing resistant diseases in animals and humans.

Evidence of Human Health Impacts
During the late 1990s, the same resistant strains of Campylobacter bacteria, one of the most common causes of diarrheal illnesses in humans, were discovered in chickens and humans.⁴ Both kinds of bacteria were resistant to fluoroquinolones – a class of antibiotics of important use in human medicine.

² For more information on antibiotic resistance, please see Pew’s factsheet titled: “Antibiotic Resistance and the Industrial Animal Farm.”
³ The Animal Health Institute, a trade association representing drug manufacturers, uses the 30% figure. The Union of Concerned Scientists estimates use as closer to 70%.
Prior to 2005, farmers also used fluoroquinolones on chicken flocks for prevention and treatment of respiratory disease. Often, whole flocks received the antibiotics indiscriminately through drinking water, which quickly led to the development of resistant bacteria. Through molecular subtyping, researchers were able to trace the resistant bacteria found in humans back to poultry.

Earlier studies in the 1980s linked multi-drug resistant salmonella infections in humans to exposure to cattle on dairy farms. Further studies and molecular subtyping found rapidly growing, widespread emergence of resistance in salmonella infections in humans in the United States, which researchers concluded were likely from food animals.

**Unnecessary Risk; Little Gain**

Although the use of fluoroquinolones in poultry was banned in the U.S. in 2005, the vast array of antibiotics that are still used in food animals continue to pose a threat to human health. A joint report by the U.N. Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE), and the World Health Organization (WHO) found that the use of antibiotics in humans and animals places individuals at increased risk for infection, higher numbers of treatment failures, and increased severity of illness.

These impacts on human health can result in both higher frequency and longer duration of hospitalizations, raising the cost of healthcare. Estimates of the extra costs to the U.S. healthcare

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Broiler chickens (left) and laying hens (right) are conventionally kept in crowded sheds or battery cages in conditions which contribute to the rapid spread of contagious diseases.
The overuse of antibiotics in food animals is leading to increased risk of human illness and increased healthcare costs, with little to no agricultural economic benefit. Recent economic analysis of antibiotic use in poultry disputes the myth that using drugs nontherapeutically results in large economic gains. In fact, data show that improving management of farm animals (e.g., cleaning facilities more thoroughly and frequently) achieves the same benefits as nontherapeutic antibiotic use.  

Improving Oversight of Drug Use and Decreasing the Threat to Human Health

Because of poor regulations and oversight of drug use in industrial farm animals, consumers in the U.S. do not know what their food is treated with, or how often. Nor is there a system in place to test meat for dangerous antibiotic-resistant bacteria. In order to limit the development of antibiotic resistance in farm animals, and the unnecessary threat it poses to the public, the use of antibiotic drugs in poultry and livestock must be more carefully regulated and monitored. Congress should begin tackling the problem by reforming reporting and monitoring requirements for drug manufactures and food producers, and by curtailing the nontherapeutic use of antibiotics in animals.

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Legislation to Address the Problem
In August 2008, the President signed legislation passed by Congress to reauthorize and amend the Animal Drug User Fee Act (ADUFA), a law that grants FDA authority to collect fees for animal drug applications. The amendments require drug makers to report at the same time annually the amount, strength, dosage, and intended purpose of antimicrobials used in food animals. This is an important first step in improving data collection on the use of antibiotics in industrial farming. More should now be done to curb nontherapeutic use of the drugs and help improve monitoring and response to human health threats. Two other pieces of legislation in the House and the Senate would go further in reforming antibiotic use on industrial farms. (See also Pew’s fact sheet, “Antibiotics in Food Animal Production: A Comparison of Proposals for Reform.”)

- **STAAR:**
  The Strategies to Address Antimicrobial Resistance Act (STAAR), (H.R. 3697/S. 2313), requires the submission of human and animal drug distribution data to a new Office of Antimicrobial Resistance at the Department of Health and Human Services. Additionally, it requires the establishment of public health network sites to describe and monitor outbreaks of antimicrobial resistant bacteria.

- **PAMTA:**
  The Preservation of Antibiotics for Medical Treatment Act (PAMTA), (H.R. 962 / S. 549), phases out the nontherapeutic use of medically important antibiotics in livestock, unless manufacturers can prove no danger to public health from resistance. New drugs are required to meet the same standard. PAMTA also requires manufacturers to report the amounts of antibiotics they supply for animal use; the animals to which those drugs are given; and the uses for which those drugs are supplied. Lastly, it amends the Farm Security and Rural Investment Act of 2002 to offer grants to colleges and universities for research and demonstration projects to assist in phasing out nontherapeutic use of antibiotics, as well as educating producers in these practices.

PAMTA critically shifts the burden of proof to the drug manufacturers to make sure antibiotics used in farm animal production have no human health impacts. It would also drastically improve our knowledge of antibiotic use in industrial farming, equipping us to make better decisions and more effectively combat the growing problem of antibiotic-resistant bacteria. Congress should consider these essential provisions when addressing food safety and healthcare legislation this year.

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