Prescription For Change

Antibiotics Use in Humans & Animals Amidst Growing Concerns of Doctors

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Executive Summary

A pillar of modern medicine, antibiotics save millions of lives each year. Due to their overuse, however, bacteria that have become immune to these drugs are spreading. While scientists have recognized this potential for decades, according to the World Health Organization (WHO), this phenomenon "has been vastly accelerated and amplified by a number of human practices, human behaviours, and policy failures" and "collectively, the world has failed to handle these fragile cures with appropriate care."[1]

In September 2014, the Consumer Reports National Research Center conducted an online survey of 500 family practice and internal medicine physicians in the U.S. who regularly prescribe antibiotics, using a random sample drawn from a panel of family care and internal medicine doctors managed by M3 Global Research.

The primary objectives of this survey were to: (1) gauge doctors' concerns about multi-drug resistant bacterial infections as a growing problem; (2) find out if doctors are taking actions that will help reduce this problem; and (3) hear doctors' views on administering antibiotics to livestock. Most (378) of the surveyed doctors worked in an outpatient setting primarily, and 22% (108) worked in both inpatient and outpatient settings. Another 3 percent (14) of the surveyed doctors worked in an inpatient setting primarily.

The survey results paint a grim picture of the growing problem of antibiotic-resistant infections that doctors encounter in their patients. The overwhelming majority (85%) of surveyed doctors reported that one or more of their patients had been diagnosed with a presumed or confirmed case of a multi-drug resistant bacterial infection in the past twelve months. Of those, 35% had a patient either die or suffer significant complications as a result of the illness.

Recognizing the severity and frequency of these illnesses in their patients, the vast majority of doctors (97%) expressed concern about the growing problem of multi-drug resistant infections and were taking a series of measures in their own practices to minimize the problem of antibiotic resistance. They are also troubled by antibiotic use in the food animal sector, with 93% expressing concern about the use of antibiotics in livestock production facilities on healthy animals in order to promote growth and prevent disease.

FINDING: 85% of doctors diagnosed one or more of their patients with a multi-drug resistant bacterial infection in the past year; 35% of those had a patient die or suffer significant complications as a result.

1 World Health Organization (WHO), 2011. Combat drug resistance: no action today means no cure tomorrow, statement by WHO Director-General, Dr Margaret Chan.

The Issue for Human Health

While antibiotics today seem a routine part of the lives of most Americans, even the earliest scientists responsible for their discovery warned that overusing these miracle drugs could prove a tragic end to their effectiveness.[2]

FINDING: 97% of doctors are extremely (59%) or fairly (38%) concerned about the growing problem of antibiotic resistant infections. Zero doctors expressed no concern at all.

When bacteria are exposed to an antibiotic, most of them will be susceptible to the drug and die. Some of the organisms, however, possess genes that will allow them to survive the onslaught. Left without competition for food from their more vulnerable counterparts, these resistant 'superbugs' replicate very quickly. Thus, the more antibiotics that are used, the more opportunities bacteria have to develop resistance.[3]

Bacterial resistance to antibiotics is now cited by health experts in the U.S. and across the globe as the most serious health crisis of our time. In April 2014, the U.S. Centers for Disease Control (CDC) recognized the urgency of the problem and reported that that at least two million Americans are sickened by drug-resistant bacteria each year, and 23,000 die.[4] A September 2014 report from the President's Council of Advisors on Science and Technology (PCAST) also stated: "The evolution of antibiotic resistance is now occurring at an alarming rate. This situation threatens patient care, economic growth, public health, agriculture, economic security, and national security."[5]

Patients at especially high risk include children, the elderly, those receiving chemotherapy for cancer, and those undergoing complex surgeries, dialysis, and organ and bone marrow transplants. These patients are much more susceptible to bacterial infections, and treatment often relies on effective antibiotics to ensure recovery. A drug-resistant infection in these cases could cause stress, illness, high financial costs, and sometimes death.[6]

2 Fleming, Alexander, 1945. Penicillin. Nobel Lecture, December 11, 1945.

3 Ochman, Howard, Jeffrey G. Lawrence, and Eduardo A. Groisman, 2000. Lateral gene transfer and the nature of bacterial innovation. Nature, 405, pp. 299-304.

4 U.S. Centers for Disease Control (CDC), 2013. Antibiotic Resistance Threats in the United States, 2013.

5 Executive Office of the President, President's Council of Advisors on Science and Technology, 2014. Report to the President on Combating Antibiotic Resistance, p. 1.

6 CDC, 2013.

Antibiotic Abuse on Factory Farms: A Contributing Source of Resistance

Up to 70% of medically important antibiotics (and 80% of all antibiotics) are sold on an annual basis for use in food animal production in the United States. This is typically done to increase the speed at which animals gain weight or to prevent disease caused by unhealthy and unsanitary living conditions.[7]

Furthermore, recent data released by the U.S. Food and Drug Administration (FDA), suggests an upward trend in use, pointing to a 16 % increase in the sale of medically important antibiotics sold for use in animal agriculture between 2009-2012, the majority of which were purchased over-the-counter.[8]

Many of these antibiotics are identical (or nearly so) to human medicines, such as penicillin. Their routine and massive use in food animal production accelerates the development of drug-resistant bacteria. Once replicated in animals, resistant bacteria can make their way to humans through contaminated food, airborne dust blowing off farms, and water and soil polluted with contaminated feces.[9]

FINDING: 93% of doctors are concerned (with 47% extremely concerned) about the use of antibiotics in livestock production facilities for the purpose of promoting growth and preventing disease in animals that aren't sick

Progress in the Healthcare Sector

The healthcare sector is on the front lines of treating antibiotic resistant infections, which, according to studies cited by the CDC, result in eight million additional days in hospitals, and cost between $21 and $34 billion each year in the United States.[10]

Realizing the severity of the problem, doctors are increasingly cautious about the antibiotics used in their practice. Professional medical associations are creating rigorous new guidelines to encourage physicians to dispense antibiotics more carefully in human populations. The American Academy of Pediatrics, for example, advises doctors to not prescribe antibiotics as a first resort when treating infants and young children for ear infections.[11] Multiple studies indicate that antibiotic prescription rates for human populations are decreasing in pediatric and other hospital settings.[12] [13] More and more hospitals

7 The Pew Charitable Trusts, 2012. Human Health and Industrial Farming 101.

8 Food and Drug Administration (FDA), 2014. SUMMARY REPORT On Antimicrobials Sold or Distributed for Use in Food Producing Animals.

9 CDC, 2014. Antibiotic Resistance from the Farm to the Table.

10 Ibid.

11 The American Academy of Pediatrics, 2013. AAP Issues New Guidelines on Treating Ear Infections in Children.

12 Finkelstein, J.A. et al., 2003. Reduction in Antibiotic Use Among US Children, 1996–2000. Pediatrics, 112(3), pp. 620-627.

13 McCaig, Linda F., Richard E. Besser, and James M. Hughes, 2002. Trends in Antimicrobial Prescribing Rates for Children and Adolescents. The Journal of the American Medical Association, 287(23).

are also creating antimicrobial stewardship programs to evaluate the judicious use of antibiotics within their facilities. Evidence suggests that these programs are successfully improving antibiotic use.[14]

In recognizing the contribution of animal agriculture to the antibiotic resistance crisis, hospitals and health systems are also changing their meat procurement practices to avoid serving meat raised with non-therapeutic antibiotics to their patients, staff, and visitors to their facilities. Several, from the University of California at Los Angeles (UCLA) Medical Center to Fletcher Allen Health Care in Vermont, have passed resolutions and formal purchasing policies in favor of meat raised without the routine use of antibiotics.[15] To date, over 300 hospital facilities across the country have made similar commitments and are creating new markets for producers who are using antibiotics only in the presence of diagnosed disease and with oversight from licensed veterinarians.[16]

These actions align with the views of more than 300 leading medical and public health organizations, including the American Medical Association and the American Public Health Association, that have openly advocated ending the use of non-therapeutic antibiotics in animal agriculture in order to protect public health and the environment.[17]

FINDING: Doctors are taking action in their own practices to minimize the problem of antibiotic resistance, including encouraging patients to take their full course of antibiotics (86%); refusing to prescribe antibiotics that are not medically necessary even when patients ask for them (81%); prescribing the least broad spectrum antibiotic available (72%); and prescribing antibiotics for the shortest duration needed (68%).

FINDING: 80% of doctors agree that their practice, group, or hospital is actively working to minimize inappropriate prescribing of antibiotics.

14 CDC, 2014. Core Elements of Hospital Antibiotic Stewardship Programs.

15 Health Care Without Harm, 2013. Expanding Antibiotic Stewardship: The Role of Health Care in Eliminating Antibiotic Overuse in Animal Agriculture.

16 Health Care Without Harm, 2014. Food Day 2014.

17 The Preservation of Antibiotics for Medical Treatment Act, Sector Based Endorsers List for the 113th Congress, 2013.

Further Action Needed in Animal Agriculture

Despite the dire scientific evidence and outcry from medical professionals, elected officials in the U.S. have yet to fully confront this looming public health crisis.

Legislation to eliminate the use of medically-important antibiotics in food animal production, for example, has stalled in Congress and at state levels. Regulatory agencies have been slow to act as well. In December 2013, the FDA finalized voluntary guidance that aims to eliminate the use of antibiotics in food animal production for growth promotion and require a prescription from a licensed veterinarians when antibiotics are used in feed and water. The guidelines, while taking some action, are unlikely to significantly reduce the use of antibiotics on factory farms because they are voluntary, allow for producers to continue using these medicines routinely for disease prevention so animals can survive unsanitary and stressful conditions, and remain unclear how appropriate veterinary oversight over antibiotic use on farms will occur.

In September 2014, President Obama issued an Executive Order that directed federal agencies to respond to the current crisis of antibiotic resistant bacterial infections. While acknowledging the severity of the problem, however, the Order did not set national targets for the reduction of antibiotic use in agriculture and endorsed FDA's weak approach.

Despite a lack of action from Washington, D.C. to tackle the problem, **large purchasers of meat, such as hospitals, school systems, restaurants and supermarkets, are propelling the market in the right direction by demanding meat raised without antibiotics - and companies are responding.** Perdue Farms, the nation's third largest poultry producer, recently announced that it has eliminated all non-therapeutic use of medically important antibiotics, and now only uses these drugs to treat sick birds (comprising about 5% of their flock).[18] Another major chicken producer, Tyson, also announced recently that it will no longer use antibiotics in its chicken hatcheries.[19]

More marketplace leaders are needed. Currently, Whole Foods is the only national grocery retailer that sources all of its meat from animals raised without antibiotics. A handful of restaurants including Chipotle, Panera, Chick-fil-A and some local chains are leading the way in the restaurant industry.[20] While many retailers and producers are moving in the right direction, more major companies must get on board in order to truly create a meat system that raises poultry and livestock without reliance on the routine use of antibiotics. This move would be supported by the vast majority of consumers, 86% of whom want to be able to buy meat and poultry without antibiotics at their local supermarkets.[21]

18 Perdue Farms, 2014. Perdue Foods reaches milestone in reducing antibiotic use, sets standard for responsible use.

19 Tyson Foods, 2014. Antibiotic Use.

20 Pew Campaign on Human Health and Industrial Farming, 2014. Top Food Companies Moving Away From Overuse of Antibiotics on Industrial Farms.

21 Consumer Reports, 2012. Meat on Drugs.

Policy Recommendations

- Grocery stores, restaurants, hospitals, and other large institutions should adopt a policy to procure and sell only meat that is produced on farms that restrict the use of antibiotics except for animals that are actually sick, for a limited period of time--just as antibiotics are used in humans.
- The FDA should immediately restrict the use of antibiotics in livestock production to only in cases of animal sickness or direct disease exposure, and require proper veterinary oversight when antibiotics are used on farms.
- Congress should pass the Preservation of Antibiotics for Medical Treatment Act (PAMTA) which would prohibit the use of medically important antibiotics in livestock production (except for the treatment of sick animals), thereby protecting the efficacy of these drugs for human use.
- The U.S. Department of Agriculture should fund research and outreach to producers on practices that reduce the need for antibiotics in food animals.
- The U.S. should adopt a robust tracking system to document the sale, use, and impacts of antibiotic use in livestock production.

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