

# Expanding Antibiotic Stewardship



## The Role of Health Care in Eliminating Antibiotic Overuse in Animal Agriculture

### The Antibiotic Resistance Crisis

Each year, 23,000 Americans die as a result of antibiotic resistant infections.<sup>1</sup> Longer, more expensive hospital stays for treating resistance cost the U.S. health care sector an estimated \$21 to \$34 billion annually and an additional eight million hospital days.<sup>2</sup> Evidence is mounting that these numbers will only grow. In 2013, the Centers for Disease Control and Prevention (CDC) released a report acknowledging that *Carbapenem-resistant Enterobacteriaceae*—a new family of bacteria with high levels of resistance to antibiotics commonly known as “the last resort”—may lead to the death of 50% of infected individuals.<sup>3</sup>

Antibiotic resistance—the ineffectiveness of medical drugs to treat bacterial infections—is now among the CDC’s “top concerns,”<sup>4</sup> and the World Health Organization (WHO) recently stated that it is an “accelerating global health security emergency that is rapidly outpacing available treatment options.”<sup>5</sup> Alexander Fleming, the scientist who discovered penicillin at the beginning of the twentieth century, cautioned against this scenario and concluded his 1945 Nobel Lecture with a warning about misusing antibiotics: “[T]here is the danger that the ignorant man may easily underdose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant.”<sup>6</sup>

“Antibiotic resistance—when bacteria don’t respond to the drugs designed to kill them—threatens to return us to the time when simple infections were often fatal.”

—CDC (2013)

As stewards of antibiotics, doctors have created rigorous new guidelines to curb antibiotic resistance by dispensing antibiotics more carefully in human populations.<sup>7</sup> The general trend in the health care sector is a movement towards the increased monitoring of the administration of antibiotics to patients.<sup>8</sup> However, profound gaps in the monitoring and reporting of antibiotic use remain, and powerful advertising of antibiotics threatens public health. The international Antibiotic Resistance Coalition (ARC) was recently formed to urge leadership and action on a global level to address this catastrophic health issue. One of the key focus areas of ARC’s agenda is the inappropriate use of antibiotics in food animal production.<sup>9</sup>

### Antibiotic Overuse in Animal Agriculture

The vast majority of antibiotics in the U.S. are not used in human medicine—they are used in animal agriculture. According to government estimates, approximately 30 million pounds of antibiotics are sold for use in industrial animal agriculture. This is four times the amount used by the health care sector, and this number is growing. About 70% of these include antibiotics which are also used to treat human infections, such as penicillins, macrolides, sulfas, and tetracyclines. These antibiotics are given routinely to otherwise healthy food animals to compensate for overcrowded and unsanitary living conditions. Most antibiotics are administered through feed and water, where dosing is typically at subtherapeutic levels—that is, not strong enough to kill bacteria—to large numbers of animals for long periods of time.<sup>10</sup> As Fleming foreshadowed less than 100 years ago, these subtherapeutic quantities are the perfect recipe for creating antibiotic resistant bacteria.

## **Antibiotic misuse in animal agriculture is leading to antibiotic resistant infections in humans.**

There are more than 147 scientific studies documenting the transfer of bacterial resistance from farm-based reservoirs to the broader human population. Human exposure to resistant bacteria can occur through multiple pathways. Bacteria can transfer to workers who handle animals, feed, or manure, or via contact with soils or water contaminated by manure.<sup>11</sup>

Consumption of contaminated retail meat is the most recognized exposure pathway. For example, the National Antimicrobial Resistance Monitoring System, a collaboration between the CDC, Food and Drug Administration, and United States Department of Agriculture, recently documented that 81% of turkey, 69% of pork, 55% of beef, and 39% of chicken product samples were contaminated with antibiotic-resistant *Enterococcus faecalis*.<sup>12</sup> An increasing number of additional studies are also demonstrating that outbreaks of multi-drug resistant bacterial infections, such as ones affecting the urinary tract, may in fact be foodborne, and caused by bacteria such as extraintestinal pathogenic *Escherichia coli* (ExPEC).<sup>13</sup>

## **Health experts agree: Antibiotic overuse in food animal production is unnecessary and must stop**

There is strong consensus among independent health experts that the routine use of antibiotics in animal agriculture poses a threat to human health. More than 300 leading medical organizations, including the American Medical Association, the American Public Health Association, and the American Academy of Pediatrics have openly advocated ending the use of non-therapeutic antibiotics in animal agriculture to protect public health and the environment.

Further, experience in Europe demonstrates that the routine use of antibiotics is not necessary for the health of animals or for economically-viable meat production. Denmark—one of the world's largest pork exporters—phased out nearly all feed antibiotics in 1999 for poultry and swine. According to a WHO analysis, this transition resulted in marked public health benefits and occurred with little or no adverse impacts on animal welfare, farmer profits, or consumer meat prices.<sup>14</sup>

## **Expanding Health Care's Stewardship Role**

Just as steps are being taken to reduce overuse of antibiotics in human medicine, it is critical that steps be taken to eliminate overuse in agriculture. Hospitals are on the front lines of treating infections, and with sizable food service budgets, the health care sector is poised to tackle the antibiotic resistance crisis beyond the walls of clinical

practice. Through its purchasing power and moral authority, the health care sector can change both markets and policies to protect antibiotics and prevent their overuse in animal agriculture.

### **Purchasing power:**

Health care food service in the U.S. is a \$12 billion per year industry,<sup>16</sup> and individual hospital food budgets can range from \$3 to \$8 million dollars per annum.<sup>17</sup> With such economic clout,

hospitals can transform markets and food supply chains, change the on-farm practices that cultivate antibiotic-resistant bacteria, and create new markets for sustainable producers. Hospitals can create resolutions and purchasing policies that convey their commitment to stop purchasing meat raised with non-therapeutic

antibiotics, and advocate that stakeholders in the supply chain carry products that meet this criterion. Even small shifts in hospital purchasing can have meaningful impacts in the food system. According to Health Care Without Harm's *Healthy Food in Health Care* program, the collective demand of just 45 California hospitals was close to 2.5 million pounds of beef and poultry in 2012 alone.<sup>18</sup>

### **Moral authority:**

Polls consistently show that health professionals rank as some of the most trusted professionals in the United States.<sup>19</sup> Health professionals can leverage their knowledge about and commitment to protecting public health and influence elected officials to support sustainable food policies. Providing testimonies, participating in letter-writing campaigns, and visiting with policymakers are particularly important given that there is currently little effective federal oversight on how antibiotics are used on farms.

Hospitals can transform markets and supply chains, change the on-farm practices that cultivate antibiotic-resistant bacteria, and create new markets for sustainable producers.

Health professionals can leverage their commitment to protecting public health and influence elected officials to support sustainable food policies.

## Examples of Leadership

In recent years, many hospitals have expanded their roles as stewards of antibiotics, using their purchasing power and authority to support sustainable food policies and farmers who don't misuse these medicines. The examples highlighted here are from the more than 500 hospitals across the country who have signed the Healthy Food in Health Care Pledge.<sup>20</sup>

Hospital	Specific projects	Achievements
Bronson Methodist Hospital (Michigan)	Signed Health Care Without Harm's <i>Balanced Menus Initiative</i> to reduce meat on its menus and invest cost savings in sustainable meat options	Added local and antibiotic- and hormone-free chicken to the menu cycle  Features antibiotic-free meat at indoor hospital winter farmers market
Fletcher Allen Health Care (Vermont)	Created a long-term antibiotics reduction plan	Purchases over 50% of its meat raised without the routine use of antibiotics
Overlake Hospital (Washington)	Created a sustainable food purchasing policy	Purchases over 50% of its meat raised without the routine use of antibiotics
University of California at San Francisco Medical Center (California)	Passed a resolution in the Academic Senate declaring intent to phase out purchases of meat raised with non-therapeutic antibiotics	Reduced meat on its menus by 25%  Convinced a major food distributor to carry a new grass-fed, Animal Welfare Approved, antibiotic-free ground beef product
Union Hospital (Maryland)	Supported state legislation to ban the use of certain antimicrobials in poultry feed  Supports federal legislation to ban the use of medically-important antibiotics in animal agriculture	Maryland banned the use of arsenic in poultry  Procures all beef from a local rancher who raises cattle without the routine use of antibiotics

## Learn More

Through the *Healthy Food in Health Care* program, Health Care Without Harm harnesses the purchasing power and expertise of the health care sector to build a sustainable food system. For more information and a variety of resources on antibiotics in animal agriculture, visit [www.healthyfoodinhealthcare.org](http://www.healthyfoodinhealthcare.org).

## ENDNOTES

1. Centers for Disease Control and Prevention (CDC) 2013. *Antibiotic Resistance Threats in the United States, 2013*. Available at <http://www.cdc.gov/drugresistance/threat-report-2013/>.
2. Infectious Diseases Society of America (IDSA) 2014. *Antimicrobial Resistance*. Available at [http://www.idsociety.org/topic\\_antimicrobial\\_resistance/](http://www.idsociety.org/topic_antimicrobial_resistance/).
3. CDC 2013. *Antibiotic Resistance Threats in the United States, 2013*. Available at <http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf>.
4. CDC 2013. *Antibiotic Resistance Questions & Answers*. Available at <http://www.cdc.gov/getsmart/antibiotic-use/antibiotic-resistance-faqs.html>.
5. World Health Organization (WHO) 2014. *Antimicrobial resistance: global report on surveillance 2014*. Available at <http://www.who.int/drugresistance/documents/surveillance-report/en/>.
6. Fleming, Alexander 1945. Penicillin. Nobel Lecture, December 11, 1945, p. 93.
7. For example, see the American Academy of Pediatrics 2013 guidelines for ear infections in children: <http://www.aap.org/en-us/about-the-aap/aap-press-room/pages/AAP-Issues-New-Guidelines-on-Treating-Ear-Infections-in-Children.aspx#sthash.phy5vpUE.dpuf>
8. In the state of California, for example, acute care hospitals are required by law to develop a process for evaluating the judicious use of antibiotics. Additional documentation of hospital reporting of antibiotic use and development of stewardship programs can be found in: Fridkin, Scott K. and Srinivasan, Arjun 2014. "Implementing a Strategy for Monitoring Inpatient Antimicrobial Use Among Hospitals in the United States." *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America*. Vol. 58, No. 3.
9. The Antibiotic Resistance Coalition's (ARC) declaration text is available at [www.reactgroup.org/arcdeclaration](http://www.reactgroup.org/arcdeclaration).
10. Pew Campaign on Human Health and Industrial Farming 2013. *Record-High Antibiotic Sales for Meat and Poultry Production*. Available at <http://www.pewhealth.org/other-resource/record-high-antibiotic-sales-for-meat-and-poultry-production-85899449119#sthash.fTWHXIJJ.dpuf>
11. Ji, Jenny 2012. No Time To Lose. Institute for Agriculture and Trade Policy. Available at <http://www.iatp.org/documents/no-time-to-lose>.
12. National Antimicrobial Resistance Monitoring System 2013. *2011 Retail Meat Report*. Available at [www.fda.gov/downloads/AnimalVeterinary/SafetyHealth/AntimicrobialResistance/NationalAntimicrobialResistanceMonitoringSystem/UCM334834.pdf](http://www.fda.gov/downloads/AnimalVeterinary/SafetyHealth/AntimicrobialResistance/NationalAntimicrobialResistanceMonitoringSystem/UCM334834.pdf).
13. Bergeron, C.R. et al. 2012. "Chicken as Reservoir for Extraintestinal Pathogenic *Escherichia coli* in Humans, Canada." *Emerging Infectious Diseases*. Vol. 18, No. 3.
14. University of California at San Francisco Medical Center 2013. *Statement on the Non-therapeutic Use of Antibiotics in Agriculture*. Available at [http://senate.ucsf.edu/2012-2013/v6-susttf-04-01-13-agenda-at3\\_285\\_34.pdf](http://senate.ucsf.edu/2012-2013/v6-susttf-04-01-13-agenda-at3_285_34.pdf).
15. WHO 2003. *Impacts of antimicrobial growth promoter termination in Denmark*. Available at [http://whqlibdoc.who.int/hq/2003/WHO\\_CDS\\_CPE\\_ZFK\\_2003.1.pdf](http://whqlibdoc.who.int/hq/2003/WHO_CDS_CPE_ZFK_2003.1.pdf).
16. Association for Healthcare Foodservice (AHF) n.d. *Building a Bright Future for Healthcare Foodservice*. Available at <http://healthcarefoodservice.org/about-us>.
17. FoodService Director Magazine 2011. *2011 Hospital Census*.
18. Results are based on a 2013 survey of 85 hospitals in California conducted by Health Care Without Harm and San Francisco Bay Area Physicians for Social Responsibility. Available at <http://www.sfbaypsr.org/what-we-do/healthy-food-in-health-care/>.
19. Gallup 2014. *Honesty/Ethics in Professions (2013)*. Available at <http://www.gallup.com/poll/1654/honesty-ethics-professions.aspx>.
20. Over 500 hospitals have signed Health Care Without Harm's Healthy Food in Health Care pledge: <https://noharm-uscanada.org/issues/us-canada/healthy-food-pledge-signers>.

May 2014



12355 Sunrise Valley Drive, Suite 680  
Reston, VA 20191 U.S.A.  
Phone: 703-860-9790 • Fax: 703-860-9795  
[www.noharm.org](http://www.noharm.org)  
[www.healthyfoodinhealthcare.org](http://www.healthyfoodinhealthcare.org)  
[info@hcwh.org](mailto:info@hcwh.org)

Health Care without Harm (HCWH) is an international coalition of organizations working to transform the health sector worldwide, without compromising patient safety or care, so that it becomes ecologically sustainable and a leading advocate for environmental health and justice. HCWH's Healthy Food in Health Care (HFHC) Program works with hospitals across the country to build a healthier, more sustainable food system, providing education and resources to make the connection between the food they serve and the health of their patients, staff and community.