

Scientists' Statement on Antibiotic Use in Animal Agriculture

August 6, 2012

Resistance to antibiotic drugs is a growing health crisis, fueled by widespread overuse of antibiotics in both agriculture and in human medicine. While the U.S. medical establishment is making strides in reducing unnecessary antibiotic use, the agricultural community is not keeping pace.

Hundreds of scientific research studies and analyses by international scientific bodies support the conclusion that the overuse of critical human drugs in food animal production is linked to human diseases increasingly impervious to antibiotic treatment, putting human lives at unnecessary risk.^{i,ii,iii,iv,v,vi}

The use of antibiotics for whatever purpose over time creates drug-resistant strains of bacteria, thwarting successful treatment of infectious diseases. So, antibiotics should be used *only when necessary*.

Despite wide acceptance of this principle, antibiotics are still routinely added in enormous quantities to the feed and water of most livestock and poultry—not to treat disease, but to promote faster animal growth and stave off diseases caused by poor diets and by raising animals in overcrowded, unsanitary living conditions. Thirty years after the Food and Drug Administration (FDA) determined that the growth promoting uses of penicillin and tetracycline in agriculture were threatening human health, FDA data shows that nearly 80 percent of all antimicrobial drugs sold nationwide are used in animal agriculture.^{vii,viii,ix} The majority of these drugs—many of which are critical in human medicine—are routinely given to animals that are not sick.^x

The extensive routine use of drugs valued in human medicine selects for antibiotic-resistant bacteria that can cause a range of serious human diseases. Those most strongly linked to agricultural overuse of antibiotics include food poisoning caused by resistant *Salmonella* and *Campylobacter*.^{xi} More recently, animal agriculture has also been linked to other resistant human infections including resistant *E. coli* infections and methicillin-resistant *Staphylococcus aureus* (MRSA) infections.^{xii,xiii}

In addition to the human cost, the health care bill for antibiotic resistance is staggering. One study estimated that antibiotic-resistant infections annually cost U.S. hospitals alone more than \$20 billion.^{xiv}

The FDA recently announced a policy calling on the animal drug industry to voluntarily surrender label claims for growth promotion and other production uses of veterinary drugs.^{xv} While we support the effort to renounce drug approvals for injudicious uses, we cannot support a voluntary approach. Too much is at risk to leave public health to the discretion of those whose financial interests run counter to the aim of reducing drug use. Moreover, the voluntary process could take more than five years and even then might not lead to meaningful drug use reduction.

We strongly urge an immediate end to the imprudent use of antibiotics in animal agriculture and call on the FDA and Congress to work together to make that happen.

If our society continues to overuse antibiotics, more and more patients will face a time when these vital drugs are no longer effective against serious infectious diseases. Margaret Chan, director general of the World Health Organization, recently stated that “things as common as strep throat or a child’s scratched knee could once again kill.” Turning the clock back to the days before penicillin will leave many lives at risk. That disaster can be avoided only by acting aggressively to curb needless antibiotic use in agriculture as well as human medicine.

Signed,

Donald Kennedy, PhD
President Emeritus, Stanford University
Editor-in-Chief, *Science*, 2000-2008

Stuart B. Levy, M.D.
Distinguished Professor of Molecular Biology and Microbiology, Distinguished Professor of Medicine,
Director of the Center for Adaptation Genetics and Drug Resistance, Tufts University School of Medicine
President, Alliance for the Prudent Use of Antibiotics

Tara C. Smith, PhD
Associate Professor, Department of Epidemiology, University of Iowa

Lance B. Price, PhD
Associate Professor, Translational Genomics Research Institute (TGen)
Director, TGen Center for Food Microbiology and Environmental Health

ⁱ Collignon, P. et al., 2009. World Health Organization Ranking of Antimicrobials According to Their Importance in Human Medicine: A Critical Step for Developing Risk Management Strategies for the Use of Antimicrobials in Food Production Animals. *Clin. Infect. Dis.* 49: 132-141.

ⁱⁱ Dutil et al., January 2010, “Ceftiofur Resistance in *Salmonella enterica* Serovar Heidelberg from Chicken Meat and Humans, Canada,” *Emerg. Infect Dis.* 16(1):48-54.

ⁱⁱⁱ Folster et al., January 2010, “Characterization of Extended-Spectrum Cephalosporin–Resistant *Salmonella enterica* Serovar Heidelberg Isolated from Humans in the United States,” *Foodborne Pathogens and Disease*. Vol. 7, No. 2: 181-187.

^{iv} Zhao et al, August 2008, “Antimicrobial Resistance in *Salmonella enterica* Serovar Heidelberg Isolates from Retail Meats, Including Poultry, from 2002 to 2006,” *Appl. Environ. Microbiol.* 2008, 74(21):6656. DOI: 10.1128/AEM.01249-08.

^v Landers, T.F., et al. 2012. *A review of antibiotic use in food animals: perspective, policy, and potential*. Public Health Rep. 2012 Jan-Feb;127(1):4-22.

^{vi} Marshall, M.M., and S.B. Levy, 2011. “Food Animals and Antimicrobials: Impacts on Human Health,” *Clin. Micro. Reviews*, 24: 718-33.

-
- ^{vii} 42 *Fed. Reg.* 43772 (August 30, 1977); 42 *Fed. Reg.* 56264 (October 21, 1977).
- ^{viii} U.S. Food and Drug Administration to Rep. Louise Slaughter, letter, April 2011, http://www.louise.house.gov/images/stories/FDA_Response_to_Rep._Slaughter.pdf
- ^{ix} U.S. Food and Drug Administration, 2009. "Summary Report on *Antimicrobials Sold or Distributed for Use in Food-Producing Animals*" 2010 Accessed June 18, 2012, at <http://www.fda.gov/downloads/ForIndustry/UserFees/AnimalDrugUserFeeActADUFA/UCM231851.pdf>, Department of Health and Human Services Public Health Service, Food and Drug Administration Center for Drug Evaluation and Research Office of Surveillance and Epidemiology, memorandum of November 30, 2012, accessed June 18, 2012 at <http://www.fda.gov/downloads/Drugs/DrugSafety/InformationbyDrugClass/UCM261174.pdf>, and Loglisi, Ralph, "New FDA Numbers Reveal Food Animals Consume Lion's Share of Antibiotics," Accessed online June 18, 2012 at <http://www.livablefutureblog.com/2010/12/new-fda-numbers-reveal-food-animals-consume-lion%E2%80%99s-share-of-antibiotics>.
- ^x Mellon, Margaret, Charles Benbrook, and Karen Lutz Benbrook. *Hogging It!: Estimates of Antimicrobial Abuse in Livestock*. Union of Concerned Scientists, Cambridge, 109 p.
- ^{xi} Swartz, M. 2002. Human diseases caused by foodborne pathogens of animal origin, *Clinical Infectious Diseases*, 34:S111-S122.
- ^{xii} Vieira et al. 2011. Association between antimicrobial resistance in *Escherichia coli* isolates from food animals and blood stream isolates from humans in Europe: an ecological study. *Foodborne Pathogens and Disease* 8(12):1295-301.
- ^{xiii} Vanderhaeghen et al. 2010. Methicillin-resistant *Staphylococcus aureus* (MRSA) in food production animals. *Epidemiology and Infection*. 138(5):606-25.
- ^{xiv} BioMérieux and the Alliance for Prudent Use of Antibiotics, News Release, October 19, 2009, "*Antibiotic-Resistant Infections Cost the U.S. in Excess of 20 Billion Annually*." Costs extrapolated from Roberts, R.R., Hota B., Ahmad I. et al. 2009. "*Hospital and societal costs of antimicrobial-resistant infections in a Chicago teaching hospital*. *Clin. Infect. Dis.* 49:1175-84.
- ^{xv} 77 *Fed. Reg.* 22328 (April 13, 2012); 77 *Fed. Reg.* 22377 (April 13, 2012).