

FACTSHEET: **Antibiotic Resistance and Animal Agriculture**

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The Problem: Antibiotic-resistant disease

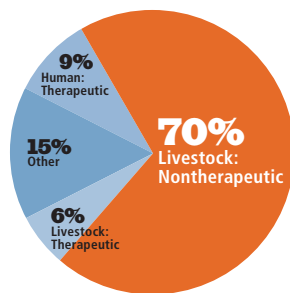
- Antibiotics, one of the medical miracles of the 20th century, are becoming less effective in human medicine due to the rise of resistant bacteria. The U.S. Centers for Disease Control (CDC) has declared antibiotic resistance to be one of its “top concerns.”¹
- An estimated 38 Americans die each day from hospital-acquired antibiotic-resistant infections.²
- Antibiotic-resistant bacteria that are commonly transmitted from food animals to people are associated with more infections, longer and more severe illnesses, more hospital visits, and increased death.³
- An interagency task force recently concluded that if the problem of antibiotic resistance is not addressed, “[d]rug choices for the treatment of common infections will become increasingly limited and expensive—and, in some cases, nonexistent.”⁴
- Effective antibiotics are essential for treating sickness in all people, but they are particularly important for young children, seniors, diabetics, and people with compromised immune systems such as cancer, transplant, and AIDS patients.⁵
- In 1998, the National Academy of Sciences estimated antibiotic-resistant bacteria cost U.S. society at least \$4 to \$5 billion each year.⁶
- There are few new antibiotics on the horizon.⁷

The causes of antibiotic-resistant diseases in humans: “The more you use them, the faster you lose them.”

When bacteria are exposed to antibiotics, the bacteria resistant to these drugs live to reproduce. Thus, while antibiotics are important for disease treatment, their use creates stronger, more-resistant strains of bacteria over time. For this reason, it is important to use antibiotics only when it is absolutely necessary. Still, overuse of antibiotics occurs in both human medicine and animal agriculture.

Overuse in human medicine: Inappropriate prescriptions can elicit antibiotic-resistant bacteria. Patients often request—and doctors prescribe—antibiotics for viral infections such as the common cold, even though antibiotics cannot kill viruses. Failure of patients to complete prescriptions also promotes the survival of antibiotic-resistant bacteria.

Overuse in animal agriculture: While overuse in human medicine is a major part of the problem of antibiotic resistance, meat producers use an estimated 70 percent of all U.S. antibiotics and related drugs nontherapeutically (i.e., as a routine feed additive to promote slightly faster growth and to compensate for unsanitary and crowded conditions).⁸ The amount of antibiotics used nontherapeutically in animal agriculture is eight times greater than the amount used in all of human medicine.



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Furthermore...

- Many of the antibiotics used in animal agriculture are also used in human medicine.
- The nontherapeutic use of antibiotics involves low-level exposure in feed over long periods—an ideal way to encourage bacteria to develop resistance.
- A 2002 analysis of more than 500 scientific articles¹⁰ by the Alliance for the Prudent Use of Antibiotics (APUA), published in the peer-reviewed journal *Clinical Infectious Diseases*, found that “[m]any lines of evidence link antimicrobial-resistant human infections to foodborne pathogens of animal origin.”¹¹ The APUA report concluded that “the elimination of nontherapeutic use of antimicrobials in food animals... will lower the burden of antimicrobial resistance in the environment, with consequent benefits to human and animal health.”¹²
- Antibiotic-resistant bacteria can easily transfer their resistance traits to unrelated bacteria once inside the human body.¹³ Thus, development of resistance in all types of bacteria is of concern, regardless of whether those bacteria themselves cause disease.
- Resistant human diseases strongly linked to the agricultural overuse of antibiotics include food poisoning caused by *Salmonella* or *Campylobacter* and post-surgical infections caused by *Enterococcus*.¹⁴ A recent study has suggested a link between resistant urinary tract infections caused by *Escherichia coli* and food sources.¹⁵

Resistant bacteria can be transferred from animals to humans in three ways:

Via food: Meat in grocery stores is widely contaminated with antibiotic-resistant bacteria. A study in the Washington, DC, area found 20 percent of the sampled meat was contaminated with *Salmonella* and 84 percent of those bacteria were resistant to antibiotics used in human medicine and animal agriculture.¹⁶

Via working with animals: Workers in the livestock industry may pick up resistant bacteria by handling animals, feed, and manure. They can then transfer the bacteria to family and community members.¹⁷

Via the environment: Groundwater, surface water, and soil are contaminated from the nearly two trillion pounds of manure generated in the United States each year.¹⁸ This manure contains resistant bacteria, creating an immense pool of resistance genes available for transfer to bacteria that cause human disease.

The Solution: Reduce the use of antibiotics

Reduce antibiotic overuse in human medicine

The Centers for Disease Control is implementing extensive programs to educate both patients and physicians about reducing antibiotic overuse.¹⁹

Reduce antibiotic overuse in animal agriculture

As noted in a 2003 National Academy of Sciences report, “[a] decrease in antimicrobial use in human medicine alone will have little effect on the current situation. Substantial efforts must be made to decrease inappropriate overuse in animals and agriculture as well.”²⁰

Major reductions in animal use can be achieved by canceling existing approvals of medically important antibiotics for nontherapeutic purposes. Existing approvals can be cancelled by Congress through legislation or by the Food and Drug Administration (FDA) through regulation.

Although FDA acknowledges that antibiotic resistance is a problem, the agency is unable to cancel existing approvals within a reasonable time.

FDA can theoretically cancel drug approvals, yet prior cancellations have taken up to 20 years to complete *per drug class*.²¹ Seven important classes of antibiotics are currently used both in human medicine and as non-therapeutic feed additives.²²

Existing feed-additive approvals were issued decades ago; at that time, resistance was not a prominent public health issue and FDA did not subject drugs to detailed evaluations that considered antibiotic resistance.²³

In 2003, FDA released Guidance #152²⁴ acknowledging that use of antibiotics in animal agriculture is “a contributing factor to the development of [antibiotic] resistance.”²⁵

FDA guidance strengthens the review of antibiotics that are proposed to be marketed in the future, but does not establish any schedule for reviewing or taking action on antibiotics already on the market.

Congress must pass new legislation to curb antibiotic resistance because FDA cannot solve this problem in a reasonable time.

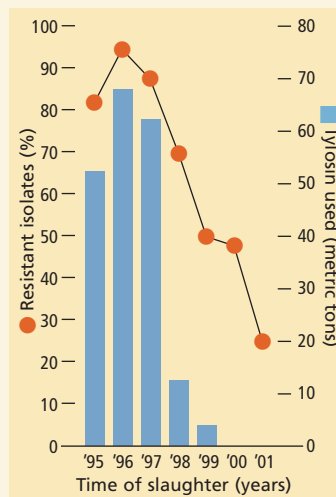
Legislation Recently Considered by Congress.³⁰

- Phases out nontherapeutic use of seven specific classes of antibiotics as feed additives after two years, *unless* FDA concludes that continued use of a drug will not contribute to resistance affecting humans.
- Has been endorsed by more than 300 groups including the American Medical Association, the American Public Health Association, and 80 other health-related organizations.³¹
- Covers only antibiotics that are used in human medicine or have human-use equivalents, including penicillins, tetracyclines, macrolides (including but not limited to erythromycin and tylosin), lincomycin, virginiamycin, aminoglycosides, and sulfonamides.
- Does not prevent the use of antibiotics to treat sick animals.
- Authorizes data collection on antibiotic use, transition assistance for farmers, and research and development projects.
- Would have a negligible effect on consumer prices.³²
- Is consistent with FDA Guidance #152.³³ If the Guidance’s criteria were applied to the antibiotics covered by recent legislation, most would presumptively not qualify for approval as nontherapeutic feed additives.
- Saves tax dollars. The bill’s provisions for canceling existing approvals for nontherapeutic use would occur far more quickly and cost effectively than would FDA procedures.

Real world success stories: Examples of antibiotic reduction

- Large companies such as McDonald’s and Bon Appétit have already taken steps to reduce antibiotic use in animal agriculture by their producers.²⁶
- In 1998, Denmark—the world’s largest pork exporter—enacted a ban on antibiotic feed additives. Producers adjusted to this ban by improving hygiene and animal husbandry standards. A study by the World Health Organization concluded that Denmark reduced overall use of antibiotics in agriculture by 54 percent and experienced a “dramatic”

reduction in resistant bacteria in animals, without causing consumer price increases or undermining animal health or food safety.²⁷ A similar ban is now in force in all EU countries.²⁸



- Farmers practicing sustainable agriculture in the United States are already producing premium pork and chicken without antibiotics.

Danish researchers found that reduced tylosin use in pigs correlated with a decline in bacteria resistant to erythromycin—the human medical equivalent of tylosin.²⁹

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- For the latest information on legislation in Congress, visit the Keep Antibiotics Working website at www.keepantibioticsworking.com/new/indepth_usgovt.cfm
- A full list is available on the Keep Antibiotics Working website at www.keepantibioticsworking.com/new/resources_library.cfm?refID=73271.
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Supporters of Legislation to Keep Antibiotics Working:

Academy of Medical-Surgical Nurses
American Academy of Family Physicians
American Academy of Neurology
American College of Preventive Medicine
American Medical Association
American Public Health Association
Breast Cancer Fund
Center for Science in the Public Interest
Consumer Federation of America
Consumers Union
Environmental Defense
Food Animal Concerns Trust
Global Resource Action Center for the Environment
Health Care Without Harm
Humane Society of the United States
Institute for Agriculture and Trade Policy
Leukemia and Lymphoma Society
National Association of County and City Health Officials
National Association of Pediatric Nurse Practitioners
National Association of School Nurses
National Campaign for Sustainable Agriculture
National Catholic Rural Life Conference
Natural Resources Defense Council
Oncology Nursing Society
Physicians for Social Responsibility
Sierra Club
Union of Concerned Scientists
Medical associations/societies of California, Connecticut, District of Columbia, Florida, Idaho, Iowa, Louisiana, Maine, Massachusetts, Minnesota, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Rhode Island, Tennessee, Vermont, Virginia, and Wisconsin

For more information, visit

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Keep Antibiotics Working: The Campaign to End Antibiotic Overuse is a coalition of concerned health, consumer, agricultural, and environmental groups with more than nine million members, working to reduce the growing public health threat of antibiotic resistance.