

Antimicrobial Resistance (AMR) in Agriculture



Antimicrobial resistance poses serious threats to both human and animal health. The American Society for Microbiology (ASM) supports global efforts to enhance surveillance, stewardship, and innovation in response to the crisis.

Antimicrobials are critical tools for treating common infections in humans, animals, and crops. However, some animal pathogens develop resistance, and it is essential to detect them quickly—approximately two-thirds of human pathogens are of animal origin. Early detection of pathogens at the source can prevent their direct transmission to humans or introduction into the food chain.

Background

Antimicrobial drugs revolutionized the treatment of many diseases in animals when they were introduced into agriculture and veterinary medicine shortly after the Second World War. However, antimicrobial resistance soon followed, emerging in the 1960's and evolving into an ongoing global health crisis. Global antimicrobial use in the agriculture sector is estimated to be over 60,000 tons annually.

Despite the grave public health threat of antimicrobial resistance, antibiotics are still widely used in agriculture

to prevent and treat infections and to promote growth. In addition to food animal production, antimicrobials such as antibiotics and fungicides are also applied to agricultural crops and are used for the production of biofuels byproducts. As we move into an era of antimicrobial stewardship, we will need to balance productivity and innovation with safety. Microbiologists, working together with scientists and engineers across disciplines using a One Health approach, can ensure that we fully understand the farm-to-fork transmission chain and that we are prepared to prevent and respond to outbreaks.

ASM Calls on Congress and the Administration to:



Fully fund and effectively administer the Agriculture and Food Research Initiative at the Department of Agriculture

at the Department of Agriculture, which supports microbiome research that focuses on improving agricultural productivity, the sustainability of agricultural ecosystems, and the safety of the food supply.



Support the National Antimicrobial Resistance Monitoring System

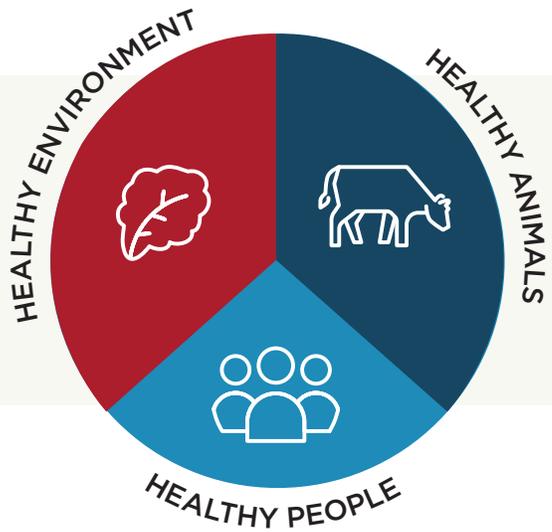
(NARMS) and the National Animal Health Monitoring System (NAHMS). A strong surveillance network of human and animal pathogens, through monitoring and documentation of antimicrobial use in food animals is an essential component of strong antibiotic stewardship and the judicious use of antibiotics in agriculture.



Support efforts to make microbiome data findable, accessible, interoperable, and reusable

through the National Microbiome Data Collaborative.

ASM supports the One Health approach to addressing AMR



The One Health approach recognizes that the health of people, animals, and the environment are interdependent. Increasing threats posed by emerging diseases shared between animals and people, foodborne, vector-borne, and waterborne diseases, and other environmental factors support the need for an integrated effort across multiple

disciplines, including health, science, technology, and engineering. One Health is a collaborative, multi-sectorial, and transdisciplinary approach at all levels (local, national, and global).

Examples of antimicrobial-resistant bacteria and fungi in the food chain:



Drug-resistant **Campylobacter**

Spread from animals to people through raw or undercooked chicken.

Drug-resistant infections per year:
448,400

Estimated deaths per year: 70



Drug-resistant nontyphoidal **Salmonella**

Spread from animals to people through food.

Drug-resistant infections per year:
212,500

Estimated deaths per year: 70



Azole-resistant **Aspergillus fumigatus**

A common fungus that can cause health problems in people with weakened immune systems.

Azole-resistant infections per year:
Unknown

Estimated Aspergillosis-associated hospitalizations per year: 15,000