

Antimicrobial Resistance: Facts, Concerns and Solutions

Antimicrobials are products that are designed to kill or slow the spread of microorganisms such as bacteria and fungi such as mold and mildew. Antibiotics are a kind of antimicrobial used to fight bacterial infections.

Antimicrobials are critical in the treatment of patients most at risk of infections. For example, [chemotherapy](#), [organ transplants and C-sections](#) are just some of the procedures that pose the most risk of life-threatening infections where antimicrobials are needed. However, while antimicrobials have revolutionized infectious disease prevention and treatment and saved millions of lives worldwide, rising levels of resistance to antimicrobials is a serious threat to public health, food safety, and global security. Each year in the U.S., approximately 2,868,700 million people get an antimicrobial-resistant (AMR) infection, and at least 35,900 people die as a result, as estimated by the Centers for Disease Control and Prevention (CDC). The World Health Organization (WHO) warned in 2014 that if we do not act urgently, we will face a post-antibiotic era in which lifesaving medical interventions such as chemotherapy or surgeries are too risky due to the potential for infection. For many patients who have extremely difficult to treat infections, we have already entered that era.

Key Findings

- The World Health Organization has named **Antimicrobial resistance** as one of the [top ten threats to global health](#).
- CDC just released new numbers for the [top 18 antibiotic resistant threats in the United States](#) including urgent threats such as *Candida auris* and drug-resistant gonorrhea.
- Without effective antibiotics, [the success of advances in modern medicine like major surgery and cancer chemotherapy could be compromised](#).
- Antibiotics are becoming less effective in part due to [over-prescription](#) and inappropriate use, [which increase the need for antibiotic stewardship and surveillance programs](#). Antibiotic stewardship refers to efforts in doctors' offices, hospitals, long-term care facilities, and other health care settings to ensure that antibiotics are used only when necessary and appropriate. [That means prescribing the right drug at the right dose at the right time for the right duration](#).
- The [U.S. Department of Agriculture released new data from 2016](#) that showed that more than 95% of swine and 85% of cattle operations use antibiotics. The findings also suggest that many operations may have used numerous antibiotics concurrently, including a substantial number administering three or more of these drugs at once. These antibiotics were not limited to sick animals but given to groups of animals to prevent infection. The concurrent use increases the likelihood of AMR in cattle and swine.
- AMR is starting to complicate the fight against [HIV, Malaria, and Tuberculosis](#).
- [Antibiotics have historically been less profitable than other drugs which has resulted in a dangerously low number of antibiotics in development](#). For example, nearly all major pharmaceutical companies have exited the antibiotics market leaving the critical innovation domain of discovering and developing new antibiotics to small biotech companies with limited budgets and research & development capacity.

Recommendations for Federation Policymakers

Combating antibiotic resistance requires a multipronged approach across healthcare, public health, agriculture, academia and industry. Among the most urgent needs:

- **Significantly increase investments in public health initiatives to combat antimicrobial resistance.** Congress should increase funding for innovative methods of detecting and containing outbreaks supported by the [Antibiotic Resistance Solutions Initiative](#) (ARSI) at CDC. CDC is investing in every state to strengthen antibiotic resistance (AR) lab capacity, track infections across healthcare systems, detect new threats and disrupt pathogens, coordinate prevention strategies, educate healthcare on appropriate antibiotic use and other innovations. These investments have already had an impact, helping contribute to an [18% reduction in deaths from resistant infections](#) since CDC's 2013 Antibiotic Resistance report. However, progress varies across states, and investments of at least [\\$264 million](#) are needed to equip all states with up-to-date tools to combat resistant bacteria. Increases should also support global capacity to prevent and detect resistant infections to combat this national security risk.
- **Create incentives for discovery of new products to fight infections.** There should be robust public/private investment in antibiotic discovery science, diagnostics, early stage product development, and research through the HHS' Biomedical Advanced Research and Development Authority, the global non-profit CARB-X (Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator), and other programs. HHS should explore additional Medicare reimbursement solutions that come closer to covering the cost of new antibiotics for patients who need them without posing hurdles for appropriate prescribing. Stakeholders, including payers, should continue to work toward decoupling antibiotic reimbursement from drug sales so that companies that develop these drugs are incentivized to innovate, despite efforts to conserve antibiotics.
- **Eliminate overuse of antibiotics in agriculture.** The U.S. Food and Drug Administration should enforce rules regarding veterinary oversight and the judicious use of antibiotics in food animals, ensure data collection and publication, promote antibiotic stewardship programs, and track the impact of these policies on resistance patterns. Farmers and the food industry should stop using medically important antibiotics to promote growth and prevent disease in healthy animals, as recommended by the WHO and invest in research to develop and adopt husbandry practices to reduce the need for routine antibiotics.
- **Decrease over-prescription of antibiotics through implementation of antibiotic stewardship and antibiotic use reporting.** CDC estimates that improving prescribing and preventing infections could save [37,000 lives over five years](#). The Centers for Medicare & Medicaid Services (CMS) should finalize, implement, and enforce requirements for all CMS-enrolled facilities to have effective antibiotic stewardship programs that align with the CDC's core elements guidance and work with public health stakeholders to track progress in prescribing rates and resistance patterns. All relevant facilities must drastically improve reporting of antibiotic use and resistance through the National Healthcare Safety Network (NHSN) and should adopt stewardship programs that meet the CDC's Core Elements.