

Infection Prevention News You Can Use

Antimicrobial Resistance

Antimicrobial resistance occurs when bacteria, fungi, or other organisms evolve to withstand the drugs designed to eliminate them. This allows infections to persist and spread, complicating treatment and increasing health risks. In the United States, more than 2.8 million antimicrobial resistant infections occur each year, leading to over 35,000 deaths.

Mechanisms of Resistance

Bacteria and fungi have developed various defense strategies against antibiotics and antifungal medications. These defense strategies are known as resistance mechanisms. Over time, it was discovered that the resistance mechanisms could be shared with other organisms that have never been exposed to antibiotics or antifungals. Below are examples of the resistance mechanisms.

Changes in Target Sites

Bacteria alter the specific structures that antibiotics target, reducing the drug effectiveness.

Chemical Alterations of the Antibiotic Molecule

Enzymes produced by organisms change or inactivate the antibiotics and render the antibiotic unable to interact with its target.

Decreased Permeability

Cell walls adapt to prevent antibiotics from entering the cell and reaching the intracellular targets.

Efflux Pumps

Complex processes where organisms are able to pump antibiotics from the cell.

Global Adaptations

Organisms evolve to survive environmental stressors, including those in the human body.

Improving Antimicrobial Use

Combating antimicrobial resistance requires robust antimicrobial stewardship practices. It is important to promote antibiotic stewardship by improving the way antibiotics are used and reducing unnecessary use. The Centers for Disease Control and Prevention have developed resources to support your organization:

- **CDC Outpatient Treatment Recommendations:** Recommendations for appropriate antibiotic prescribing for [adult](#) and [pediatric](#) patients seeking care in an outpatient setting.
- **CDC Core Elements of Hospital Antibiotic Stewardship Programs:** Key principles intended to provide a framework for healthcare facilities seeking to improve antibiotic use and decrease antibiotic resistance. As there is no “one size fits all” approach to antimicrobial stewardship, a variety of resources have been developed to support different care settings: [Core Elements of Hospital Antibiotic Stewardship Programs](#), [Priorities for Hospital Core Element Implementation](#), [Implementation of Antibiotic Stewardship Core Elements at Small and Critical Access Hospitals](#), [Core Elements of Antibiotic Stewardship Programs in Resource-Limited Settings](#)

Upcoming Events

AHRQ Program for CAUTI Prevention

The Agency for Healthcare Research and Quality (AHRQ) is recruiting adult intensive care units (ICUs) and non-ICUs to participate in a free, nine-month program aimed at reducing catheter-associated urinary tract infection (CAUTI) rates in acute care hospitals. [Click here](#) for more information about the program and to sign up for an upcoming informational webinars.

Champions of Change: Celebrating Stewardship Success

In recognition of U.S. Antibiotic Awareness Week (USAAW), observed from November 18 – 24, IHA will partner with the Illinois Department of Public Health (IDPH) to celebrate antimicrobial achievements across Illinois.

Join us on **Tuesday, November 18 at 12:00pm** for a one-hour webinar that will provide updates around IDPH’s Antimicrobial Stewardship Initiatives, recognize the 2025 Acute Care Antimicrobial Stewardship Honor Roll Awardees, and highlight recipients of the Collaboration Distinction Awards. [Click here to register now!](#)

Resources

- 1) CDC Antimicrobial Resistance: <https://www.cdc.gov/antimicrobial-resistance/about/index.html>
- 2) Continuing Education and Informational Resources: <https://www.cdc.gov/antibiotic-use/hcp/training/index.html>
- 3) [Munita, Jose M, and Cesar A Arias. “Mechanisms of Antibiotic Resistance.” *Microbiology spectrum* vol. 4,2 \(2016\): 10.1128/microbiolspec.VMBF-0016-2015. doi:10.1128/microbiolspec.VMBF-0016-2015](#)

MAPS Patient Safety Organization

IHA’s Midwest Alliance for Patient Safety (MAPS) is leading efforts to prevent medical error through resource sharing, education and data collection/analysis. As a certified Patient Safety Organization (PSO) since 2010, MAPS provides full legal privileges, confidentiality and protections for reported patient events. [Click here](#) to learn more about MAPS benefits and how to become a member today.