AR Solutions *In Action*

CDC's Investments to Combat Antibiotic Resistance Threats

MARYLAND

$6,664,424

Funding for AR Activities
Fiscal Year 2018

HIGHLIGHTS

1 local CDC AR expert and 2 CDC fellows

Regional Lab for the AR Lab Network (Mid-Atlantic)

FUNDING TO STATE HEALTH DEPARTMENTS

$1,494,969

AR LABORATORY NETWORK REGIONAL LABS boost state and local testing capacity and technology to detect, support response to, and prevent AR threats across the nation—and inform new innovations to detect AR.
Maryland is home to one of the AR Lab Network regional labs. When it was discovered that more than 50% of patients on the ventilator unit at a long-term care facility carried a rare type of "nightmare bacteria" CRE, the Maryland regional lab trained the facility's infection preventionist to conduct weekly admission screenings. During these screenings, samples are taken from new patients and sent to the Maryland lab for testing. Patients with positive results are placed on contact precautions to stop the spread of the germ. The facility is considering implementing similar screenings at two new facilities opening soon.

$186,910

RAPID DETECTION AND RESPONSE to novel or high-concern drug-resistant germs is critical to contain the spread of these infections.
With 2017 funding, Maryland responded to a cluster of four patients with fever or sepsis and blood cultures positive for *Burkholderia cepacia.* The investigation revealed that the underlying cause was a nationally-distributed flush syringe product, resulting in the identification of and response to a multistate outbreak.

$943,550

HAI/AR PREVENTION works best when public health and healthcare facilities partner together to implement targeted, coordinated strategies to stop infections and improve antibiotic use.
With 2017 funding, Maryland expanded its training and support for local health departments by updating a training course to include HAI/AR issues and conducting a statewide survey to inform development of educational seminars and toolkits for local health departments.

$420,232

FOOD SAFETY projects protect communities by rapidly identifying drug-resistant foodborne bacteria to stop and solve outbreaks and improve prevention.
Maryland uses whole genome sequencing to track and monitor local outbreaks of *Listeria*, *Salmonella*, *Campylobacter*, and *E. coli* and uploads sequence data into PulseNet for nationwide monitoring of outbreaks and trends. In Fiscal Year 2019, Maryland will begin simultaneously monitoring these isolates for resistance genes. When outbreaks are detected, local CDC-supported epidemiologists investigate the cases to stop spread.

$121,155

FUNGAL DISEASE projects improve our ability to track antifungal resistance and stop it from spreading.
With funding for fungal disease surveillance, Maryland increased their ability to identify fungal diseases, monitor for new and emerging resistance, and implement strategies to prevent its spread in high-risk areas. Improving detection for fungal diseases, like *Candida auris*, means patients receive appropriate treatment while reducing unnecessary antibiotic use.

This data represents CDC's largest funding categories for AR. It shows extramural funding that supports AR activities from multiple funding lines.

AR: antibiotic resistance   **HAI:** healthcare-associated infection

CDC provides critical support in the U.S. and abroad to protect people from antibiotic resistance.

www.cdc.gov/ARinvestments

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

$71,000

GONORRHEA RAPID DETECTION & RESPONSE works with state and local epidemiology and laboratory partners to test for and quickly respond to resistant gonorrhea to stop its spread in high-risk communities.
With 2018 funding, Baltimore, Maryland participates in a sentinel surveillance project, the STD Surveillance Network, monitoring adherence to national gonorrhea treatment guidelines for patients diagnosed and reported with gonorrhea from all provider settings. To help inform national treatment guidelines for gonorrhea, Maryland also participates in the Gonococcal Isolate Surveillance Project (GISP), testing how well antibiotics work on laboratory samples from sentinel STD clinics, which are often the first to detect the threat.

$771,658

EMERGING INFECTIONS PROGRAM (EIP) sites improve public health by translating population-based surveillance and research activities into informed policy and public health practice.
CDC's EIP network is a national resource for surveillance, prevention, and control of emerging infectious diseases—like antibiotic-resistant bacteria and fungi. Learn more: www.cdc.gov/ncezid/dpei/eip.

FUNDING TO UNIVERSITIES & HEALTHCARE PARTNERS

$628,149

JOHNS HOPKINS UNIVERSITY: CDC Prevention Epicenter
CDC collaborates with medical academic investigators to conduct innovative research to protect patients from antibiotic-resistant germs in healthcare settings. Topics include improving testing for *C. difficile* (which can cause deadly diarrhea), evaluating methods for tracking healthcare-associated infections, assessing potential routes for pathogen transmission in long-term care facilities, and evaluating a device that prevents post-surgery infections.
Learn more: www.cdc.gov/hai/epicenters

$657,465

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE: CDC Prevention Epicenter
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$70,000

UNIVERSITY OF MARYLAND: Discovering & Implementing What Works
Through the collection of bacterial isolates, CDC researchers hope to improve knowledge of resistance patterns and mechanisms among bacteria causing health-care associated infections, with a special focus on infections occurring in long-term care facilities.

$518,790

UNIVERSITY OF MARYLAND: Innovative Prevention & Tracking
Researchers will study how antibiotic-resistant bacteria spread from patient to healthcare provider and from healthcare provider to patient. They will also evaluate the effectiveness of barrier precautions such as gloves and gowns.

$293,212

JOHNS HOPKINS UNIVERSITY: Discovering & Implementing What Works
Researchers will develop and implement an antibiotic stewardship toolkit for nurses that focuses on improving assessment of penicillin allergy and culturing practices (urine and respiratory) based upon algorithms.

$487,334

JOHNS HOPKINS UNIVERSITY: Discovering & Implementing What Works
This study will evaluate how nursing home staff handle medical devices used during the care of residents, in order to identify best and most effective practices for minimizing harms from these devices. This research will identify implementation strategies to reduce infections and transmission of multidrug-resistant organisms among residents in skilled nursing facilities.

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