AR Solutions *In Action*
CDC's Investments to Combat Antibiotic Resistance Threats

FISCAL YEAR 2021

MARYLAND
$16,873,263
Funding for AR Activities Fiscal Year 2021

HIGHLIGHTS

- One local CDC AR expert
- Regional Lab for the AR Lab Network (Mid-Atlantic)
- One of 10 sites for the Emerging Infections Program
- CDC Prevention Epicenter

FUNDING TO STATE HEALTH DEPARTMENTS

$2,455,240

AR LABORATORY NETWORK REGIONAL LAB: 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.
In 2021, Maryland provided testing surge capacity for AR outbreaks from other AR Lab Network regional labs overwhelmed by SARS-CoV-2 testing or other issues brought on by the pandemic, such as supply and personnel shortages in the labs. Some states have seen increased transmission of AR pathogens in COVID-19 wards, requiring screening support to identify transmission and inform public health response. By performing AR testing for states outside of their region, Maryland ensured outbreaks were identified and responded to swiftly, maintaining national AR testing capacity. These collaborations further display the flexibility of the AR Lab Network and how CDC's investments can be adapted during a crisis.

$810,155

RAPID DETECTION & RESPONSE: State, territory, and local public health partners fight AR in healthcare, the community, and food.
Programs use the AR Lab Network to rapidly detect threats and then implement prevention, response, and antibiotic stewardship to stop the spread of resistant germs. Additional resources, appropriated to CDC to fight COVID-19, will also help in the fight against AR by improving infection prevention and control in healthcare facilities.

$129,247

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 *Escherichia coli* and uploads sequence data into PulseNet for nationwide monitoring of outbreaks and trends. In Fiscal Year 2021, Maryland continued monitoring these isolates for resistance genes. When outbreaks are detected, local CDC-supported epidemiologists investigate the cases to stop spread.

$100,481

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 and while reducing unnecessary antibiotic use.

Page 1 of 3

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

COVID-19: coronavirus disease 2019
AR: antibiotic resistance   **HAI:** healthcare-associated infection

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

ARinvestments.cdc.gov

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

MARYLAND AR Investments (cont.)

$58,454

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. Only one treatment option remains for gonorrhea and resistance continues to grow.
The STD Surveillance Network (SSuN) monitors adherence to national gonorrhea treatment guidelines for patients diagnosed and reported with gonorrhea from all provider settings across funded jurisdictions. The Gonococcal Isolate Surveillance Project (GISP) informs national treatment guidelines and monitors how well antibiotics work on laboratory samples collected from sentinel sexually transmitted disease (STD) clinics, which often are the first to detect the threat. Select STD clinics also enhance surveillance by collecting additional gonococcal isolates from women and from extragenital sites.

$1,135,881

EMERGING INFECTIONS PROGRAM (EIP) sites improve public health by translating population-based surveillance and research activities into informed policy and public health practice. This work is also funded in part by resources appropriated to CDC to support its response to COVID-19.
The Maryland EIP performs population-based surveillance for candidemia, *Clostridioides difficile*, invasive *Staphylococcus aureus*, and resistant Gram-negative bacteria; conducts HAI and antibiotic use prevalence surveys; develops and standardizes surveillance and outbreak response for foodborne infections; and collaborates with the CDC Prevention Epicenters. Learn more: www.cdc.gov/hai/eip.

FUNDING TO UNIVERSITIES & HEALTHCARE PARTNERS

$1,368,828

UNIVERSITY OF MARYLAND, BALTIMORE: CDC Prevention Epicenter
The Prevention Epicenters Program is a collaborative network between public health and experts in relevant fields of HAI and AR that responds to research priorities to protect patients. The network conducts research to support the translation of innovative infection control and prevention strategies for preventing HAIs, AR and other adverse events in all healthcare settings. This work is funded by resources appropriated to CDC to support its response to COVID-19. Learn more: www.cdc.gov/hai/epicenters

$1,680,990

JOHNS HOPKINS UNIVERSITY: CDC Prevention Epicenter
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$82,000

UNIVERSITY OF MARYLAND: Innovative Prevention & Tracking
Investigators are studying the antibiotic resistance profiles and mechanisms among targeted bacterial isolates collected from geographically diverse regions of the United States. The collection of bacterial isolates will contribute to improving the knowledge of antibiotic resistance patterns and mechanisms among bacteria causing HAIs.

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MARYLAND AR Investments (cont.)

$4,999,612

JOHNS HOPKINS UNIVERSITY: Innovative Prevention & Tracking
Investigators are applying modeling in public health by building applied modeling capacity and network development for public health institutions to increase a skilled mathematical modeling workforce. This includes assessing the impact of disparities and health equity on infectious diseases and including these identified factors in infectious disease forecasts and transmission models.

$287,501

JOHNS HOPKINS UNIVERSITY: Discovering & Implementing What Works
Experts are working in Guatemala, Panama, Ecuador, and Argentina to assess current infection prevention and control (IPC) practices, evaluate the healthcare worker perspective on IPC, and identify challenges to implementing effective IPC in hospitals, informing a future toolkit to help other countries facing similar challenges.

$578,874

JOHNS HOPKINS UNIVERSITY: Discovering & Implementing What Works
Experts are evaluating current antibiotic stewardship practices, needs, and implementation successes and challenges in healthcare facilities in Latin America, South and Southeast Asia, and Southeast Africa, identifying gaps and context-specific factors associated with implementation to improve antibiotic use.

$1,119,000

JOHNS HOPKINS UNIVERSITY: Global Expertise & Capacity Enhancements
CDC's global work to combat AR prevents the importation of AR threats into the United States. Experts will conduct a multifaceted assessment of IPC activities in Latin America.

$1,200,000

JOHNS HOPKINS UNIVERSITY & JHPIEGO: Global Expertise & Capacity Enhancements
CDC's global work to combat AR prevents the importation of AR threats into the United States. Experts are training healthcare workers in Pakistan on COVID-19 triage and supervising improvements. Experts are also evaluating the effectiveness of CDC's Best Practices for Environmental Cleaning in Low-Resource Settings Toolkit in Southern Africa by measuring antibiotic use and AR infections changes in southern Africa and South America as well as enhancements to healthcare worker COVID-19 symptom monitoring and reporting in central and east Africa.

$867,000

JOHNS HOPKINS UNIVERSITY: Global Expertise & Capacity Enhancements
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