AR Solutions In Action
CDC’s Investments to Combat Antimicrobial Resistance Threats

FISCAL YEAR 2022

AR & COVID-19 Funding Help Stop the Spread of Emerging Threats

Fiscal Year 2022
Sampling of Shared Activities

Many of the nation’s efforts to prevent the spread of SARS-CoV-2 will also help in the fight against antimicrobial resistance, including investments in IPC, training, surveillance, and public health personnel. The following represent many of those shared CDC public health activities funded by COVID-19 supplemental appropriations, such as the American Rescue Plan Act or the CARES Act.

In the United States

Supporting state, territorial, and local health departments: Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC)

CDC is investing American Rescue Plan funding to strengthen and equip state, local, and territorial public health departments with the resources needed to better fight infections in U.S. healthcare facilities, including COVID-19. Funding includes $500 million from the Centers for Medicare and Medicaid Services to staff, train, and deploy strike teams to assist long-term care facilities with known or suspected COVID-19 outbreaks. The remaining funds will help health departments strengthen five critical areas: capacity to prevent, detect, and contain infectious disease threats; build laboratory capacity through the AR Lab Network; support implementation of Project Firstline; increase data and monitoring through NHSN; and improve antibiotic prescribing.

Strengthening surveillance for COVID-19 and related conditions in healthcare personnel and facilities: Emerging Infections Program (EIP)

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 infectious diseases. Several EIP sites are completing a project on SARS-CoV-2 infections in healthcare personnel.

Preventing transmission in healthcare settings: Prevention Epicenters

The Prevention Epicenters Program is a collaborative network of 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 IPC strategies for preventing HAIs, AR, and other adverse events in all healthcare settings. Prevention Epicenters have led studies on preventing COVID-19 transmission in health care and COVID-19’s impact on HAIs and antibiotic use.

Infectious disease modeling to support prevention and response

CDC supported Washington State University and the Georgia Institute of Technology to analyze the impacts of testing and behavioral interventions on sustainable control of SARS-CoV-2 at the population scale to describe the dynamics of COVID-19 outbreaks in rural areas during the transition from widespread to sporadic outbreaks.

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

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Infectious disease modeling to support prevention and response
A new CDC cooperative agreement, Building Mathematical Modeling Workforce Capacity to Support Infectious Disease and Healthcare Research, supports pre-doctoral fellows’ research to develop and apply computational tools and mathematical methods for modeling the spread of pathogens in healthcare. Awardees will use existing or simulated datasets and real-time information to conduct analyses and build models relevant to combating HAIs and AR.

Implementing research and innovative prevention strategies in healthcare settings: The Safety and Healthcare Epidemiology Prevention Research Development (SHEPheRD) Program
Investigators are implementing a broad range of research efforts in the U.S. and around the world, including work to improve antibiotic stewardship; better understand self-contamination from personal protective equipment; implement wastewater surveillance in U.S. healthcare settings; launch a Nursing Home Public Health Response Network; and reduce HAIs and AR in low- and middle-income country healthcare settings.

Providing unique expertise for CDC AR programs: Intergovernmental Personnel Act Agreements
Through Intergovernmental Personnel Act (IPA) Agreements, experts from institutions across the U.S. work together with CDC investigators to combat AR and prevent the spread of HAIs and other infectious disease threats. Expertise is provided in many areas, including sepsis, antibiotic stewardship, clinical trials support, prevention of transmission in long-term care, and advanced molecular detection.

Preventing SARS-CoV-2 transmission among dialysis patients
The American Society of Nephrology provides IPC support for kidney care clinicians and dialysis facilities. Activities include engagement with partners to maintain connections with the kidney care community and development of an educational platform to bring together dialysis clinicians, CDC dialysis clinical care and IPC experts, and professional societies to help mitigate challenges related to COVID-19 and IPC practices in dialysis.

Improving appropriate antibiotic use in U.S. healthcare: Antibiotic stewardship
CDC supports national partners to improve appropriate antibiotic use in the U.S. by improving treatment of patients with COVID-19 and sepsis; developing plans and research priorities for assessing healthcare quality and antibiotic use; increasing clinician awareness of the appropriate treatment of patients with COVID-19; updating resources related to antibiotic use for dental health professionals; and improve the implementation of best practices for antibiotic prescribing.

Building healthcare worker infection control capacity: Project Firstline
CDC’s Project Firstline is a collaborative of partners that provides innovative and effective IPC training for U.S. healthcare workers and the public health workforce. It offers resources in a variety of formats to meet the diverse learning needs and preferences of the healthcare workforce. Partners host events, create tools, and publish resources to support frontline healthcare workers better understand and apply IPC correctly. Learn more: www.cdc.gov/infectioncontrol/projectfirstline/index.html

New domestic healthcare IPC cooperative agreement: Strengthening Healthcare Infection Prevention and Control and Improving Patient Safety in the United States
Through a new cooperative agreement, Strengthening Healthcare IPC and Improving Patient Safety in the United States, CDC partners protect Americans by improving the safety and quality of healthcare. This includes supporting IPC implementation; enhancing healthcare facility design and IPC materials and device use; improving approaches to healthcare worker training and competency assessment; and strengthening health department support of healthcare IPC and outbreak response.
Expanding the reach of CDC’s COVID-19 response and HAI/AR prevention and response: Partnership with national organizations

CDC supports national partner organizations to lead efforts to support fellows for IPC activities; strengthen IPC and HAI/AR prevention and response capacity at the state and local levels; strengthen the public health-healthcare connection; and establish a Living Learning Network for U.S. health systems and facilities to share HAI/AR and COVID-19 response lessons learned and promising practices.

Providing healthcare surveillance: National Healthcare Safety Network

Through supplemental funding, CDC ensures that NHSN continues to make critical contributions to improve the nation’s health through prevention and surveillance. CDC will modernize its technology and enhance customer service support services to be the nation’s trusted surveillance system for healthcare. This will ensure that HAIs, AR, and antibiotic use data are available and timely by leveraging interoperability standards when reporting such data, resulting in improved quality and completeness of data submitted to NHSN electronically and manually. The coordination and electronic surveillance activities with state and local health department efforts will also advance electronic reporting of these data. NHSN will continue to provide the data needed to identify problem areas, measure progress of prevention efforts, and ultimately eliminate healthcare-associated infections.

Around the World

AFRICAN FIELD EPIDEMIOLOGY NETWORK - HEADQUARTERS: Developing national IPC programs across Africa

Experts develop and coordinate national IPC programs across Africa in collaboration with the Africa Centres for Disease Control and Prevention (Africa CDC) and the Infection Control Africa Network. This project also supports Africa CDC in hiring IPC and AR technical officers and in developing continent-wide IPC and AR guidance, policies, and trainings.

AFRICAN FIELD EPIDEMIOLOGY NETWORK - NIGERIA: Delivering IPC training and implementing IPC interventions in Nigeria

Experts work with the College of Medicine, University of Lagos (CMUL) to deliver and evaluate CMUL’s IPC Training Program, a six-month supervised training program for healthcare professionals during which trainees acquire in-depth knowledge and practical experience in IPC. This project also supports CMUL in implementing environmental cleaning and hand hygiene interventions at the Lagos University Teaching Hospital.

ALL INDIA INSTITUTE OF MEDICAL SCIENCES: Strengthening HAI surveillance and improving IPC capacity across India

Experts strengthen HAI surveillance in India. Thirty-nine sites conduct HAI surveillance for bloodstream infections, urinary tract infections, and surgical site infections and report them through an online portal. Experts also support IPC, training, quality improvement methodology, and improved use of antibiotics.

AMERICAN SOCIETY FOR MICROBIOLOGY: Improving understanding of the health and economic impacts of AR in India

Through the project Antibiotic Resistance in Communities and Hospitals (ARCH), experts conduct studies to understand the burden and risk factors for colonization with resistant bacteria and assess the health and economic impacts. In addition, experts support the National Center for Disease Control in India in coordinating collaborations nationally and at the state level on COVID-19 and other health security activities.
CDC provides critical support in the U.S. and abroad to protect people from antimicrobial resistance.

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**ETHIOPIAN PUBLIC HEALTH INSTITUTE:** Strengthening AR surveillance in Ethiopia
Experts support and strengthen the AR surveillance system in Ethiopia.

$125,000

**ETHIOPIA FEDERAL MINISTRY OF HEALTH:** Supporting the National IPC Unit in Ethiopia
CDC supports two staff in the National IPC Unit in Ethiopia. The National IPC unit has accomplished several key IPC capacity-building activities, holds key national IPC review meetings, and provides ongoing support to the Regional Health Bureaus.

$150,000

**FOUNDATION FOR SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT IN HEALTH (FIOTEC):** Strengthening AR surveillance across Brazil
Experts strengthen AR laboratory surveillance for phenotypic and genotypic characterization across Brazil. This includes training and validation of tests; standardization of methods; implementation of whole-genome sequencing; and creation of data platforms for compilation and report generation. Two hospitals will institute IPC bundles on units with high rates of resistant bacterial infections or colonization. This work is part of CDC’s Global AR Lab & Response Network efforts.

$1,284,615

**GENERAL SECRETARIAT OF THE CENTRAL AMERICAN INTEGRATION SYSTEM:** Building IPC capacity across Central America
Experts support selected facilities in Central America to conduct IPC and hand hygiene assessments, develop improvement plans, host national workshops for IPC capacity building, and establish communities of practice within each country.

$100,000

**GEORGIA NATIONAL CENTER FOR DISEASE CONTROL:** Strengthening AR surveillance and laboratory capacity in Georgia
Experts are establishing a national AR surveillance system in Georgia, strengthening the national external quality assessment (EQA) program, and supporting the National Reference Laboratory to become an accredited EQA provider for AR.

$75,000

**HEALTH SECURITY PARTNERS:** Evaluating the impact of the COVID-19 pandemic on AR in Brazil, Indonesia, and the Philippines
Experts work in Brazil, Indonesia, and the Philippines as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.

$2,600,000

**ICAP AT COLUMBIA UNIVERSITY:** Implementing an advanced IPC certificate course in Sierra Leone
Experts are implementing an Advanced IPC Certificate Course in Sierra Leone.

$100,000

**icddr,b (previously INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH):** Enhancing IPC and AR stewardship programs in Bangladesh
Experts enhance IPC and antimicrobial stewardship programs in a network of hospitals in metropolitan Dhaka, Bangladesh.

$200,000
INFECTIONIOUS DISEASE INSTITUTE LIMITED: Strengthening hospital capacity to implement HAI surveillance and AR detection in Uganda

Experts support the development of a network of five regional referral hospitals across Uganda to strengthen structures for implementing HAI surveillance and identifying antimicrobial-resistant organisms. Objectives include using surveillance data to inform the implementation of interventions to monitor and prevent HAIs and for the identification of and response to antimicrobial-resistant threats.

$800,000

INSTITUTE OF HUMAN VIROLOGY, NIGERIA: Strengthening IPC capacity at healthcare facilities in Nigeria

Experts are establishing patient and healthcare worker screening programs for COVID-19 and tuberculosis at thirty health facilities in Nasarawa State and the Federal Capital Territory, Nigeria. Experts have also provided IPC and quality improvement training to IPC focal persons at these health facilities.

$250,000

INTEGRATED QUALITY LABORATORY SERVICES: Improving laboratory practices to improve AR data around the world

Experts developed the Laboratory Assessment of Antibiotic Resistance Testing Capacity (LAARC), a tool that helps clinical bacteriology laboratories in resource-limited settings identify and correct laboratory practices that contribute to inaccurate AR data. The tool is available on CDC’s website in English, French, Spanish, and Portuguese. LAARC generates numerical indicators in real-time heatmaps and provides guidance for improvement.

$75,000

INTERNATIONAL ASSOCIATION OF NATIONAL PUBLIC HEALTH INSTITUTES: Supporting the National Public Health Organization of Greece to detect and prevent AR

Experts support the National Public Health Organization of Greece, the Greek national public health institute with the mission of protecting and improving the population’s health through detecting, monitoring, and reporting of communicable diseases, including detection and prevention of HAIs and antimicrobial-resistant infections.

$100,000

JHPIEGO: Evaluating the impact of the COVID-19 pandemic on AR in multiple countries

Experts describe SARS-CoV-2 infection in healthcare workers in Ethiopia after the COVID-19 vaccine rollout and enhance IPC policy, training, and capacity at provincial, district, and facility levels in Pakistan. Experts are evaluating the impact of the COVID-19 pandemic on antibiotic use and AR in Argentina, Brazil, and Chile, and evaluating immunochromatography for direct colonization screening in Brazil.

$1,288,006

JOHNS HOPKINS UNIVERSITY: Analyzing impacts of the healthcare environment on AR

Investigators identify and characterize contamination of the healthcare environment with multidrug-resistant organisms (MDROs) and study the role environmental reservoirs may play in the transmission of high-priority MDROs to and between patients in intensive care units in low- and middle-income countries.

$849,069

JOHNS HOPKINS UNIVERSITY: Implementing the Global Action in Healthcare Network in India

Experts work in India as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.

$2,284,616

KENYA MINISTRY OF PUBLIC HEALTH AND SANITATION: Establishing national IPC and AR indicators, strengthening AR stewardship capacity, and developing a national IPC monitoring and evaluation system in Kenya

Experts in Kenya are establishing national IPC and AR indicators, codified within the National Hospital Insurance Fund as key accreditation requirements for health facilities; strengthening antimicrobial stewardship teams; supporting county antimicrobial stewardship committees; and developing a national IPC monitoring and evaluation system.

$50,000
MAKERERE UNIVERSITY SCHOOL OF PUBLIC HEALTH: Developing a national IPC monitoring system in Uganda
Experts are developing a national IPC monitoring system in Uganda, including the development of IPC indicators, a dashboard, and data quality assessments.

$175,000

MAKERERE UNIVERSITY SCHOOL OF PUBLIC HEALTH: Developing a national post-graduate IPC certificate curriculum and national community of practice in Uganda
Experts in Uganda are developing a national post-graduate IPC certificate course curriculum and establishing a national community of practice for IPC.

$300,000

NIGERIA CENTRE FOR DISEASE CONTROL: Establishing IPC centers of excellence in Nigeria
Experts are establishing and expanding the Orange Network, a network of tertiary public health facilities in Nigeria that receive training and mentorship to become IPC centers of excellence. Experts are piloting a protocol for surgical site infection surveillance, strengthening hand hygiene compliance, and implementing a diagnostic stewardship program in select health facilities.

$250,000

PAN AMERICAN HEALTH ORGANIZATION: Implementing the Global Action in Healthcare Network in multiple countries
Experts work in Argentina, Belize, Chile, Costa Rica, Uruguay, and Ecuador as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.

$1,718,934

PATH: Strengthening IPC capacity and AR detection in Vietnam
Experts enhance IPC best practices; implement quality improvement in IPC and AR prevention; expand national surveillance for HAIs and AR; and improve laboratory detection for AR in Vietnam.

$450,000

RESEARCH TRIANGLE INSTITUTE: Investigating the impacts of HAIs on health systems and patients in limited-resource settings
Investigators estimate the frequency and economic burden associated with surgical site infections (SSI) in Pakistan following Caesarean section at both the health system and patient levels in limited-resource settings to inform the justification for the resources and efforts required for effective SSI prevention activities.

$497,519

TANZANIA MINISTRY OF HEALTH AND SOCIAL WELFARE: Strengthening IPC and implementing a national IPC monitoring and evaluation system in Tanzania
Experts in Tanzania strengthen the capacity of IPC focal points and healthcare workers and facilitate the implementation of a national monitoring and evaluation system and subsequent data quality assurance activities.

$100,000

THAILAND MINISTRY OF PUBLIC HEALTH: Enhancing AR surveillance, prevention, and response in Thailand
Experts in Thailand implement AR surveillance and isolate referral for detection of new and emerging AR pathogens. Experts are also conducting enhanced prevention and response to AR pathogens.

$400,000

THE OHIO STATE UNIVERSITY: Implementing the Global Action in Healthcare Network in Ethiopia
Experts work in Ethiopia as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.

$1,173,786

This data represents CDC’s largest funding categories for AR. It shows extramural funding that supports AR activities from multiple funding lines. Some work received full or partial funding from COVID-19 supplemental appropriations, such as the American Rescue Plan Act or the CARES Act.
TRAINING PROGRAMS IN EPIDEMIOLOGY AND PUBLIC HEALTH INTERVENTIONS NETWORK: Enhancing IPC capacity in hospitals in Brazil
Experts support projects with the University of Sao Paulo in Brazil, including PREVCOVID-BR, to enhance IPC to respond to COVID-19 in 10 hospitals with assessments of facility IPC capacity, continuous quality improvement (CQI), and a community of practice (CoP). A Cesarean section (CS) surgical site infection (SSI) project will strengthen CS-SSI through the incorporation of post-discharge surveillance and data validation, as well as CQI and a CoP.

TRAINING PROGRAMS IN EPIDEMIOLOGY AND PUBLIC HEALTH INTERVENTIONS NETWORK: Assessing IPC policies and practices in Chile and Colombia
Experts conduct a mixed-methods assessment of IPC in 30 long-term care facilities in Chile; a mixed-methods assessment of the implementation of COVID-19 IPC policies and practices in hospitals in Colombia; and a study to understand risks of bloodstream infections among COVID-19 patients in Colombia.

UNIVERSIDAD DEL DESARROLLO: Improving understanding of the health and economic impacts of AR in Chile
Experts implement activities as part of the Antibiotic Resistance in Communities and Hospitals (ARCH) program, conducting studies to understand the burden and risk factors for colonization with resistant bacteria in Chile. Experts are also assessing health and economic impacts of colonization with resistant bacteria. This work is part of CDC’s Global AR Lab & Response Network efforts.

UNIVERSITY OF PENNSYLVANIA: Improving understanding of the health and economic impacts of AR in Botswana
Experts implement activities as part of the Antibiotic Resistance in Communities and Hospitals (ARCH) program, conducting studies to understand the burden and risk factors for colonization with resistant bacteria in Botswana. Experts are also assessing health and economic impacts of colonization with resistant bacteria. This work is part of CDC’s Global AR Lab & Response Network efforts.

UNIVERSITY OF PENNSYLVANIA: Developing and evaluating a decolonization protocol for healthcare facilities in low- and middle-income countries
Investigators are working in Botswana to develop a low-cost, standardized protocol for chlorhexidine gluconate bathing for patients in low- and middle-income countries in intensive care units. In addition, they will assess the protocol’s efficacy in reducing bacterial colonization and HAIs in hospitalized patients.

UNIVERSITY OF WASHINGTON (ITECH): Strengthening IPC and HAI surveillance in Kenya
Experts strengthen Kenya’s ability to prevent, detect, and respond to infectious disease outbreaks through partnerships with the Kenya Ministry of Health and other stakeholders. The experts’ work focuses on strengthening IPC for COVID-19 at selected hospitals and developing and implementing Cesarean section surgical site surveillance and quality improvement projects at selected hospitals.

U.S. CIVILIAN RESEARCH AND DEVELOPMENT FOUNDATION (CRDF GLOBAL): Strengthening surveillance and IPC in Jordan
Experts work in Jordan as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.
U.S. CIVILIAN RESEARCH AND DEVELOPMENT FOUNDATION (CRDF GLOBAL): Evaluating detection, containment, and response capacity across the Middle East
Experts assess detection, containment, and response capacity in the Middle East for carbapenem-resistant organisms (CROs) and, specifically, for carbapenemase-producing CROs. Two CROs are listed as Urgent Threats in CDC’s 2019 AR Threats Report: www.cdc.gov/drugresistance/biggest-threats.html.

VANDERBILT UNIVERSITY MEDICAL CENTER: Implementing the Global Action in Healthcare Network in Greece
Experts work in Greece as part of the Global Action in Healthcare Network (GAIHN), developing a global network to address emerging infectious diseases threats in healthcare facilities through rapid detection and collaborative surveillance, prevention, and response. GAIHN works as part of CDC’s Global AR Lab & Response Network to address priority AR healthcare pathogens.

VIETNAM ADMINISTRATION FOR MEDICAL SERVICES: Strengthening IPC and enhancing HAI and AR prevention and detection in Vietnam
Experts in Vietnam enhance IPC best practices; develop national guidelines and standards for IPC, HAIs, AR prevention; and expand national surveillance for HAIs and AR.

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