



Strengthening Health Security Across the Globe: Progress and Impact of U.S. Government Investments in the Global Health Security Agenda



Cover photos clockwise:
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Hugo Borges, Mexico/AFP
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Background

Infectious disease threats anywhere — whether natural, accidental, or deliberate — pose significant risks to global health, security, and the economy. The novel coronavirus (SARS-CoV-2/COVID-19) pandemic and recent outbreaks of Ebola in the Democratic Republic of the Congo¹ are poignant reminders that the work to achieve global health security is urgent.

The May 2019 Global Health Security Strategy² highlighted the U.S. Government's determination to advance global health security capacity both at home and abroad, including through an ongoing commitment to the Global Health Security Agenda (GHS). The United States helped launch the GHS in 2014 — initially as a five-year commitment — with a coalition of countries envisioning a world safe and secure from the threat of infectious diseases. The initiative was renewed in 2018 for a second five-year phase from 2019-2024, known as “GHS 2024.” GHS is a multisectoral, multilateral effort of nearly 70 countries in partnership with the private sector, civil society, and international organizations. It works to build countries' capacity to prevent, detect, and respond to infectious disease threats.³ GHS 2024 works to accelerate implementation and compliance of the International Health Regulations (IHR 2005), a legally binding instrument adopted by 194 World Health Organization (WHO) Member States to strengthen country-level capabilities needed to prevent, detect, and respond to public health emergencies for greater global health security.

The United States has served on the GHS Steering Group that has guided the effort since its inception in 2014. Within GHS 2024, the United States leads efforts on sharing our experiences, lessons learned, and technical expertise with partners around the world. In addition, the United States has provided financial resources as part of its commitment to GHS to support partner countries improving their ability to address infectious disease threats.

As noted in the 2019 Global Health Security (GHS) Index,^{1,4} a high-level report by the Global Preparedness Monitoring Board (GPMB),⁵ the World Economic Forum Global Risks Report,⁶ as well as other reports, no country is fully prepared for an infectious disease threat and “the world requires determined political leadership to prepare for health threats at national and global levels.”⁷ The United States is a leader in efforts to strengthen partner country capacities in health security, increase international support for global health security, and ensure a homeland prepared for, and resilient against, health threats.

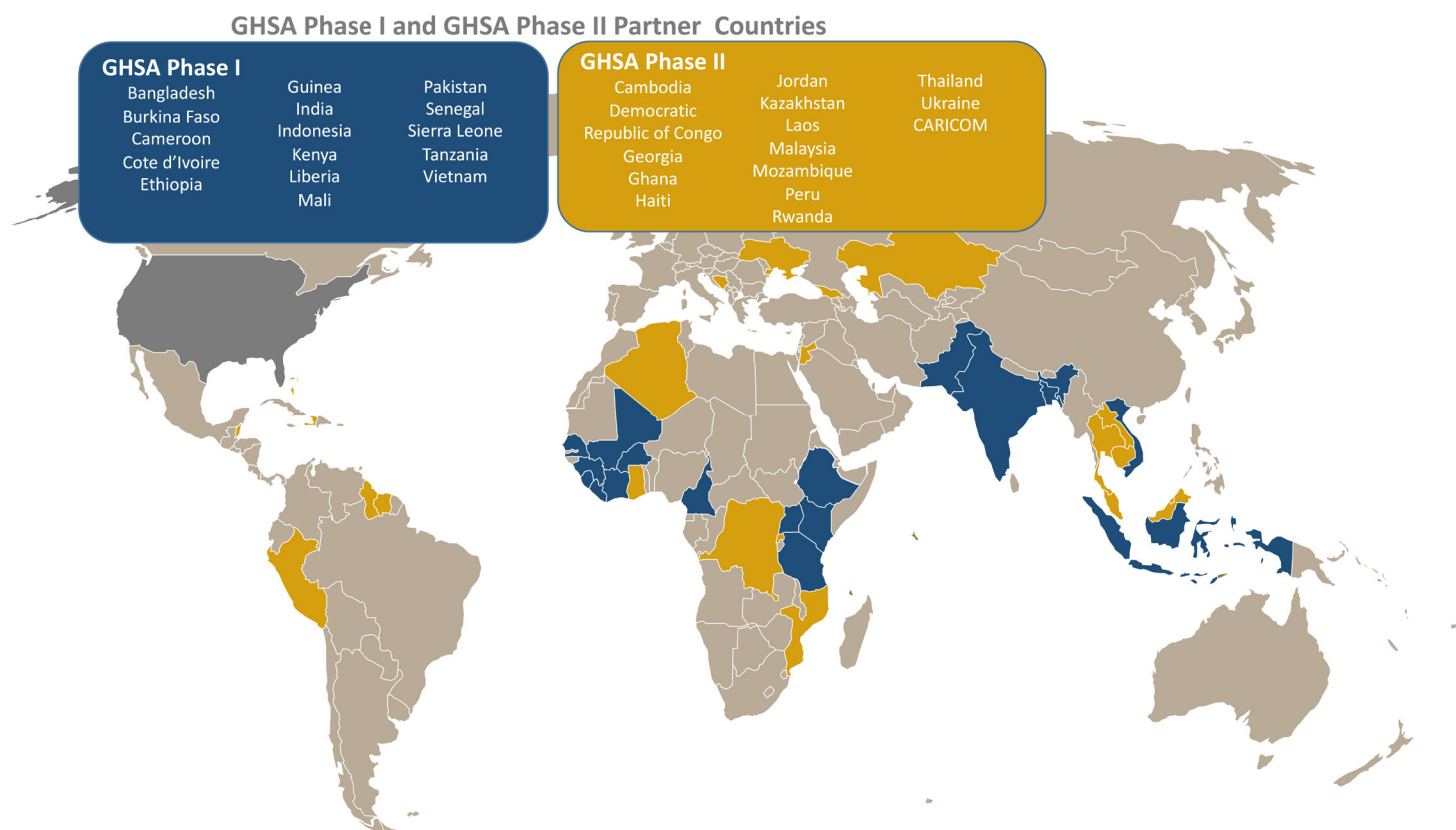
As of August 5, 2020, COVID-19 has killed more than 700,000 people and has infected more than 18 million in 188 countries globally.⁸ As we have seen with the COVID-19 pandemic, disease outbreaks have the ability to overwhelm entire health systems and, in addition to the loss of life, can cause worldwide economic disruptions. While COVID-19's total global economic impact is still to be determined, we know the world economy as a whole lost an estimated \$93-107 billion in productivity, in addition to substantial death and disability from the 2003 SARS and 2014-15 Ebola epidemics.^{9,10,11} These effects highlight the need for every country to prioritize investments in health security and in building capacity to stop infectious disease threats at their source.

Beyond traditional health security risks, additional factors including urbanization; environmental changes; political instability; public activities that involve mass gatherings; travel; trade; and violent conflicts can increase the opportunities for pathogens to spread. These risks, combined with the continued possibility of deliberate or accidental release of pathogens, justify why the global community must adopt a whole-of-society, multisectoral approach to combat these threats.

¹ The GHS Index is a project of the Nuclear Threat Initiative (NTI) and the Johns Hopkins Center for Health Security and was developed with The Economist Intelligence Unit (EIU).

U.S. Government Approach

2015-2019 U.S. GHSA PARTNER COUNTRIES



This report focuses on activities implemented during the fifth year (Fiscal Year 2019) of the initial United States commitment to GHSA. It highlights contributions and impact that have improved partner country capabilities to prevent, detect, and respond to infectious disease outbreaks at their source. Financial and technical assistance from the United States has helped GHSA partner countries design and implement activities that address specific gaps identified in health security assessments — such as the Joint External Evaluation (JEE). These activities support GHSA work plans and/or country-driven National Action Plans for Health Security (NAPHS). Although this report covers progress prior to the COVID-19 pandemic, we acknowledge the strong linkages between GHSA progress and COVID-19 response in the final section of this report.

The U.S. Government employs a whole-of-government, multisectoral approach to strengthening partner country capacities in health security. Under the leadership of the National Security Council (NSC), many U.S. Government agencies play key roles in achieving our goals, including the Department of State, Department of Defense (DOD), Department of Agriculture (USDA), Department of Health and Human Services (DHHS), U.S. Centers for Disease Control and Prevention (CDC), U.S. Agency for International Development (USAID), Department of Homeland Security (DHS), Federal Bureau of Investigation, and others. U.S. Government staff collaborate across agencies — both at headquarters and in-country — to maximize the strengths and capabilities of each agency to improve global health security.

In the first five-year phase of GHSA, the U.S. Government pledged an initial \$1.0 billion for FY2015 – FY2019 via the *Consolidated and Further Continuing Appropriations Act of 2015* toward building capabilities across 11 health security technical areas in 17 Phase I countries. In 15 Phase II countries, the U.S. Government committed to assist with the development of a five-year roadmap to guide implementation and coordinate their health security activities, which was supported by baseline appropriations. As of December 31, 2019, the CDC has obligated \$597 million, and USAID has obligated \$343 million. In FY19, the U.S. Government, through CDC, USAID, and DOD, invested \$228 million towards efforts that strengthen global health security capacity. In FY20, the U.S. Government, through these agencies, is providing more than \$428 million towards these efforts.

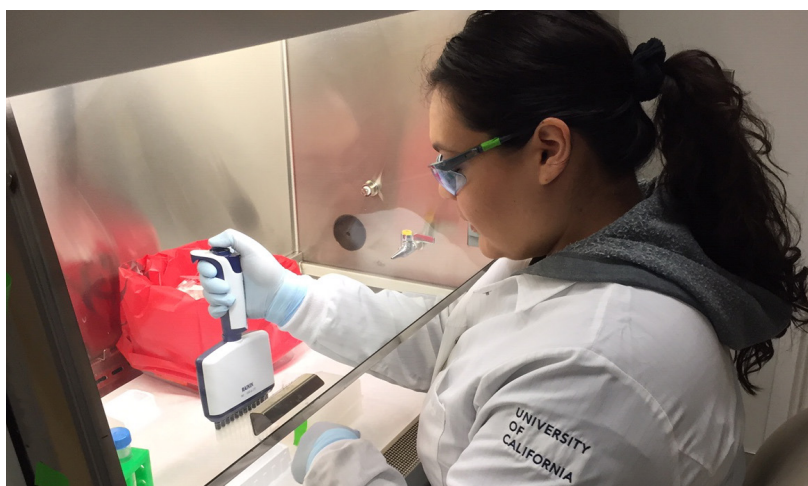
LOOKING FORWARD

In 2019, the United States renewed its commitment to the GHSA (GHSA 2024) for another five years. The United States continues to support GHSA partnerships with select countries determined by the availability of funds; significant health security gaps and risks; the need for continued support to achieve GHSA targets; a demonstrated willingness to strengthen domestic health security; and overall diplomatic and political priorities."

A key target of GHSA 2024 is the transparent and systematic transition to partner country sustainability and ownership of health security capacities. The U.S. Government GHSA Interagency Review Council approved capacity building efforts in 19 intensive partner nations, which include the 17 countries formerly listed as "Phase I," plus 2 additional countries (in italics): Bangladesh, Burkina Faso, Cameroon, Côte d'Ivoire, *Democratic Republic of the Congo (DRC)*, Ethiopia, Guinea, India, Indonesia, Kenya, Liberia, Mali, *Nigeria*, Pakistan, Senegal, Sierra Leone, Tanzania, Uganda, and Vietnam. The United States will work with these 19 partner countries in an intensive fashion — as well as with other nations in a more targeted manner — to prevent, detect, and respond to infectious disease threats at their source. We will continue to publish the annual U.S. Government GHSA Investments Progress Report that highlights numerous examples of life-saving capacity-building work and related progress.

Leading by Example — A Whole-of-Government approach to building health security capacity:

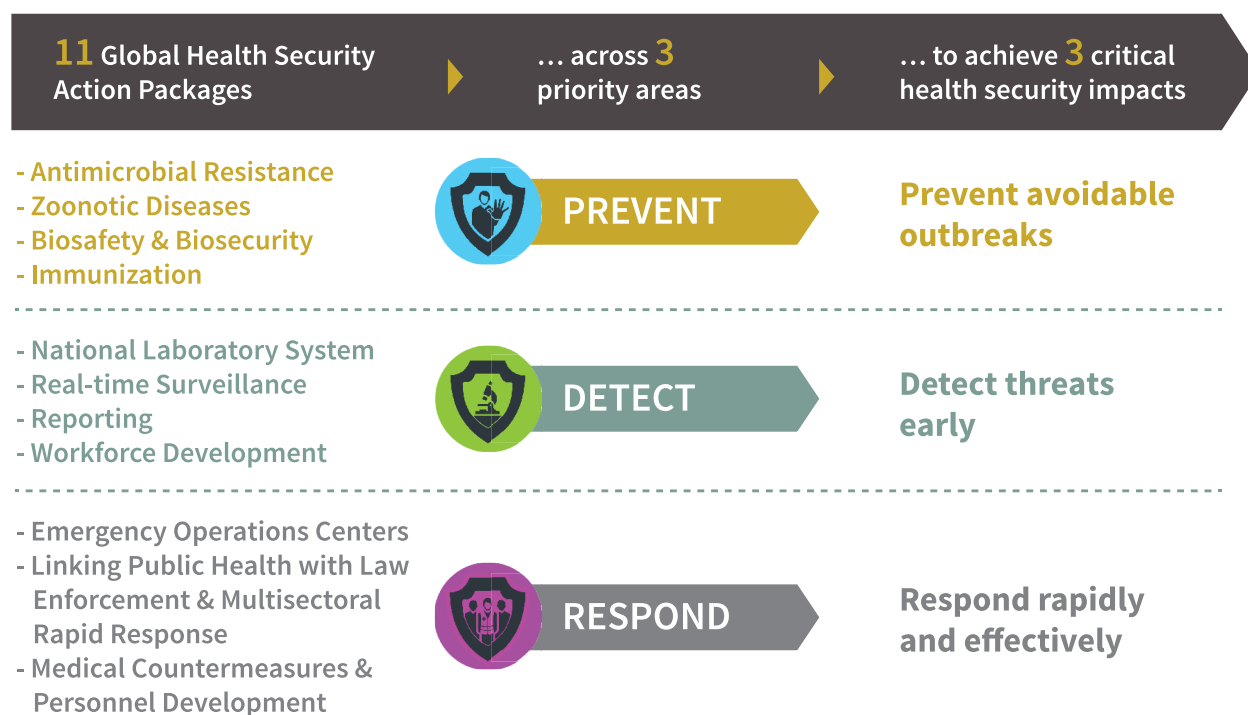
The GHSA emphasizes a whole-of-government approach to address gaps in countries' health security, and the U.S. Government practices this approach in its bilateral work. Each year, staff from across departments and agencies work together to develop a GHSA work plan in each partner country, which is aligned with the priorities outlined in the host government JEE or NAPHS. Our multisectoral teams in countries, under the leadership of U.S. Chiefs of Mission, lead this process supported by staff in Washington, D.C. and Atlanta. These work plans make the U.S. Government's GHSA contributions more effective and efficient and serve as a strong example for other countries looking to adopt their own whole-of-government approach. U.S. Embassies submit bi-annual reports on the life-saving progress in each of the intensive support countries, highlighting the impact of American taxpayer investments and U.S. efforts.



¹¹ Note: For FY19, this total includes \$138 million for USAID in new appropriations and repurposed funds, \$50 million for CDC in new appropriations, and \$39.8 million for DOD in obligated funds. For FY20, this total includes \$100 million for USAID in new appropriations, \$125 million for CDC in new appropriations, and \$203.5 million for DOD in obligated funds

Strategic Vision

GHSA builds capacities across 11 technical areas, or Action Packages, including animal and human health, agriculture, and security.



GHSA 2024 – A MULTILATERAL GLOBAL INITIATIVE

In addition to bilateral U.S. government investments, 2019 was the first year of the new five-year multilateral GHSA 2024 program. The United States worked closely with the GHSA Steering Group and Chair to implement the new program, building on central elements of the initial five-year GHSA program. GHSA 2024 focuses on a commitment to high-level engagement, multi-sector interactions beyond traditional health-related sectors, and achieving measurable progress. It also establishes new elements to enhance effectiveness, such as incorporating multilateral organizations and non-governmental stakeholders as full members; establishing Task Forces; creating a Secretariat function; and updating Action Package Working Groups, including launching a new Action Package Working Group on Sustainable Financing for Preparedness. The United States leads and

actively participates in several of these working groups to provide U.S. expertise, collaborate with GHSA members, and to advance global health security.

The United States is a permanent Steering Group member along with Indonesia, Italy, Kenya, Republic of Korea, Saudi Arabia, Senegal, Thailand, the Global Health Security Agenda Consortium (GHSAC), and the Private Sector Roundtable. Other members of the Steering Group serve on a two-year rotating basis and currently include Argentina, Australia, Canada, Finland, the Netherlands, and the World Bank. To facilitate GHSA alignment with multilateral health security efforts, the GHSA receives advice and guidance from multiple multilateral organizations.

Over GHSA 2024's five-year mandate, partners will collectively work toward a common, overarching target.

GHSA 2024 Initiative Target

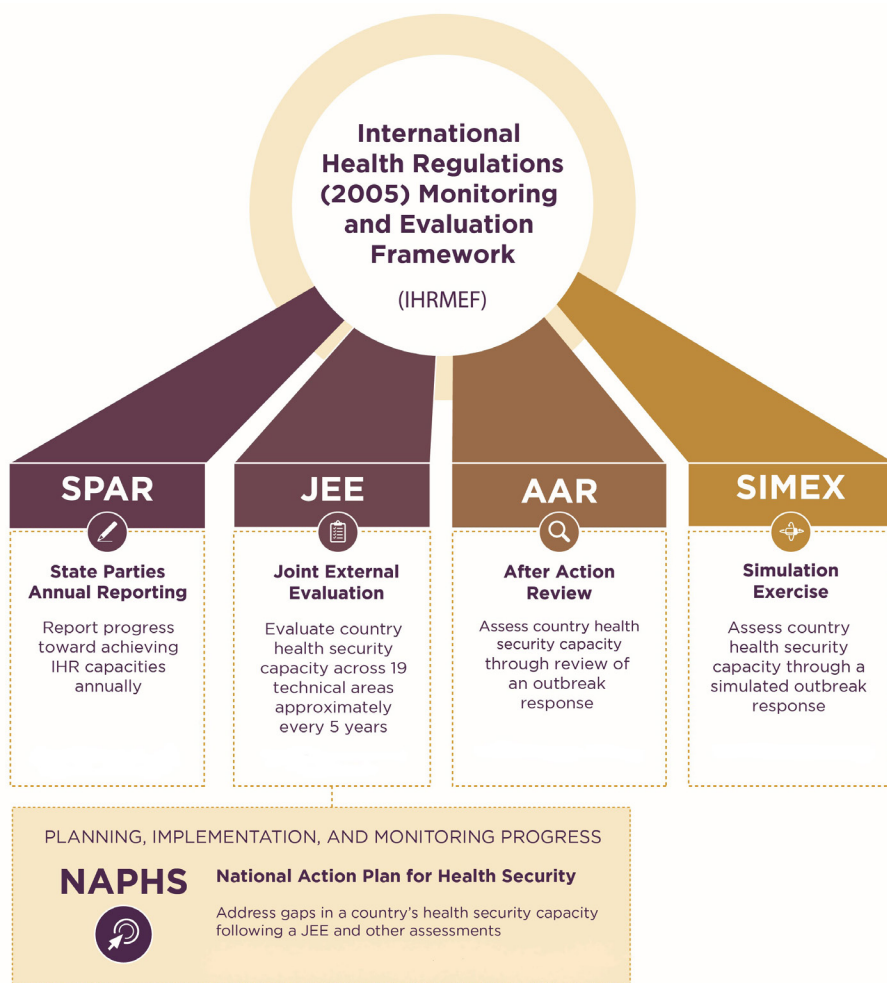
By 2024, more than 100 countries that have completed an evaluation of health security capacity will have undergone planning and resource mobilization to address gaps and will be in the process of implementing activities to achieve impact. These countries will strengthen their capacities and demonstrate improvements in at least five technical areas to a level of “Demonstrated Capacity” or comparable level, as measured by relevant health security assessments conducted within the WHO’s International Health Regulations (IHR) Monitoring and Evaluation Framework (MEF). The Steering Group will work with GHSA members and structures throughout the year to ensure GHSA effectively achieves progress toward its goals and overarching targets.



Implementation of the World Health Organization International Health Regulations (IHR 2005)

TRACKING COUNTRY PROGRESS TOWARD BUILDING HEALTH SECURITY CAPACITY

GHSA and GHSA 2024 were developed to accelerate countries' progress toward reaching compliance with the International Health Regulations (IHR 2005), which set forth a set of core capacities needed to prevent, detect, and respond to infectious disease outbreaks. GHSA has helped guide the development of a set of tools to establish countries' baselines for health security capacity through a whole-of-government approach, while identifying areas that need improvement. These tools make up the IHR Monitoring and Evaluation Framework (MEF) described below.



The first step in improving health security capacity is assessing current capacity and identifying gaps. The United States has been a leader in encouraging countries to conduct IHR assessments. As of publication, 113 countries have completed a JEE; 127 country simulation exercises (SimEx) and 62 after-action reports (AARs) have been completed. JEE results are published online so countries can work in a more coordinated fashion to address health security gaps.

Following a JEE, countries are encouraged to develop a NAPHS to address gaps and mobilize resources required to address those gaps. As a result of U.S. efforts to encourage these assessments, 15 of the 17 U.S. Government-supported “Phase I” countries either have completed or are actively developing a NAPHS. NAPHS help countries to improve their capacity to prevent, detect, and respond to disease threats within their own borders, minimizing international impact. The United States continues to support these processes by participating in JEE missions, assisting countries in developing and implementing their NAPHS, and providing strategic and technical guidance to international organizations.

THE U.S. JEE AND NAPHS

As part of its domestic commitment to improving health security, the United States conducted a JEE assessing its own health security capabilities. Based on the results of the U.S. JEE, completed in May 2016,¹² departments and agencies from across the U.S. Government worked together to develop the U.S. National Action Plan for Health Security.¹³ The plan is publicly available and includes action items to maintain or improve upon U.S. health security capabilities that take into account the recommendations from external evaluators. Under a whole-of-government approach, departments and agencies are working together across sectors to implement the plan and strengthen health security capacities in the United States.





Examples of U.S. Government Support for GHSA Implementation and Country Progress

The JEE is a transparent, external assessment of a country's health security capacity. Each country that completes a JEE receives a score from one to five across indicators that span 19 technical areas, which include the 11 GHSA Action Packages. The United States monitors GHSA country progress in areas of U.S. investment using the JEE scoring system. Twice a year, country health teams at U.S. Embassies estimate the impact of U.S. investments in improving partner countries' abilities to prevent, detect, and respond to infectious disease threats, as measured by the JEE scoring scale. For most indicators, gaining one level of capacity represents a significant accomplishment.

The following sections provide examples of U.S. Government support for GHSA implementation, including shared outcomes of U.S. investments (what U.S. technical and financial support has helped countries and partners to achieve) and evidence of impact (enhanced prevention, detection, and response to new infectious disease threats that decrease the potential for disease and mortality). The number of countries listed represents U.S. Government-supported countries that reported an increase over baseline.

PREVENT



Antimicrobial Resistance (AMR)

15

COUNTRIES

ETHIOPIA'S Ministry of Health finalized the National Infection Prevention and Control (IPC) Guidelines and conducted a training of trainers on IPC for 30 health professionals drawn from all regions. These actions introduced the IPC Guidelines to all health facilities. In 2019, Ethiopia expanded its AMR surveillance network to a total of nine laboratory sites that now have capacity for bacterial testing and AMR reporting.

In **VIETNAM**, U.S. Government-trained local experts led training courses for 32 microbiologists from 16 antimicrobial resistance surveillance labs on bacteria identification. As a result, 3,152 patients were tested in sentinel laboratories for antibiotic-resistant *Neisseria Gonorrhoeae*, one of the top 12 antibiotic resistant priority pathogens.



Zoonotic Diseases

15

COUNTRIES

BURKINA FASO developed integrated surveillance plans for brucellosis, anthrax, and highly pathogenic avian influenza (HPAI) that were validated through a process involving the ministries of public health, animal health, and wildlife.

ETHIOPIA held a two-day One Health Zoonotic Disease Prioritization workshop where participants identified a list of 42 zoonotic diseases, defined the criteria for prioritization of efforts to address the diseases, and determined questions and weights relevant to each criterion. The workshop identified five zoonotic diseases as priorities, which officials later used to develop next steps and action plans to address priority zoonotic diseases.

After two people suffered bites from a stray dog in **GUINEA**, the Ministry of Agriculture collected the dog's cerebral material and transferred it to the central veterinary laboratory, resulting in the first positive rabies case detection at the lab after a decade of inactivity. The Ministry implemented a response plan, including radio messages and vaccination in four at-risk villages.



Biosafety and Biosecurity

10

COUNTRIES

CAMEROON instituted a pathogen inventory system in all laboratories that handle dangerous pathogens. The U.S. Government-trained provided guidance on safe containment and access control measures to the national reference laboratories to help Cameroon keep dangerous pathogens secure.

TANZANIA developed and validated standard operating procedures for laboratory waste management and safe disposal of infectious waste, and completed a mapping of dangerous pathogens, toxins, and chemicals in veterinary laboratories.



Immunization

4

COUNTRIES

LIBERIA conducted a measles vaccination campaign for children ages nine months to 15 years old. The effort resulted in vaccinating a total of 128,897 children in eight out of the 15 counties with an administrative coverage of over 96%, strengthening active case searches, and training healthcare workers across the country.

In **UGANDA**, a national team — supported by the United States and led by WHO's Expanded Programme on Immunization — conducted Ebola viral disease (EVD) vaccinations of 7,900 healthcare workers and contacts as part of national EVD preparedness and response.

DETECT



National Laboratory System

14

COUNTRIES

SIERRA LEONE has developed the capacity to perform confirmatory testing for viral hemorrhagic fevers like Marburg, Lassa, and Ebola viruses at the Central Public Health Reference Laboratory. This enables Sierra Leone to quickly identify and respond to outbreaks in the future.

The national laboratory system in **SENEGAL** can now conduct an array of important diagnostics, including testing for influenza virus and hemorrhagic fevers viruses; virus culture for poliovirus; serology for HIV; microscopy for Mycobacterium tuberculosis; rapid diagnostic testing for malaria; testing for *Vibrio cholera*; and serology for hepatitis.



Real-Time Surveillance

11

COUNTRIES

Disease investigation alerts in **CÔTE D'IVOIRE** increased from 63% to ~80% in three provinces due to a new surveillance program. More than 98% of all cases were investigated in 24 hours or less. As a result, there has been increased detection and reporting of acute flaccid paralysis, yellow fever, and measles cases.

KENYA improved animal disease reporting in 13 counties by introducing a mobile-based disease reporting tool and, from 2017-2019, training 307 frontline disease surveillance officers on the use of the tool. As a result, disease reporting rates improved from 25% to 72% in the 10 counties that adopted the system since 2018.



Reporting

10

COUNTRIES

GUINEA established a mobile phone communication network linking 3,000 community agents and 400 veterinary service agents to facilitate the reporting of priority zoonotic and animal diseases.

CÔTE D'IVOIRE conducted an international simulation exercise on avian influenza and demonstrated capacity to report a potential public health emergency of international concern within 24 hours to WHO and the World Organization for Animal Health (OIE). This effort demonstrated Côte d'Ivoire's capacity to alert international authorities in the event of a real outbreak.

RESPOND



Emergency Response Centers (EOC)

14

COUNTRIES

In response to a dengue fever outbreak in **BURKINA FASO**, health officials trained more than 1,500 providers on WHO's revised dengue case management guidelines in seven regions most affected by the outbreak. Additionally, 25 Ministry of Health officials were trained in intermediate Public Health Emergency Management, equipping the country for the next outbreak.

A test in **GUINEA** resulted in the successful activation of regional EOCs for a simulated Ebola outbreak within two hours of the identification of an emergency. This demonstrated that Guinea continues to make progress in emergency management at the sub-national level.



Medical Countermeasures (MCM) and Personnel Deployment

8

COUNTRIES

SIERRA LEONE improved their health system readiness to send and receive medical and non-medical supplies through the development of an emergency supply chain system for public health emergencies. The emergency supply chain system includes a customized playbook with detailed data on warehouse capacity, disease outbreak thresholds, and corresponding commodities, at the national and regional levels.

In **UGANDA**, 115 districts (575 individuals) and the central logistics team were trained on emergency logistics management. The Uganda National MCM Supply Chain plan was developed to manage supply chain activities during public health events, which will enable the country to respond quickly in the next health emergency to send and receive critical supplies.



Linking Public Health and Security Authorities

8

COUNTRIES

Civilian health leadership in **BANGLADESH** strengthened their working relationships with the military, by training military health officers in field epidemiology, outbreak response, and

public health management. This also effectively increases the response workforce for future outbreak investigations.

Evidence of GHSA Impact in 2019

While the COVID-19 pandemic is central to health security discussions on preparedness and response, there have been many other health security threats in recent years. By strengthening IHR implementation at the country level, GHSA's involvement in addressing these challenges and its efforts to incorporate lessons learned from each emergency into its work have made the world better prepared. In 2019, the global health community responded to numerous outbreaks across the world, including the second-largest Ebola outbreak in human history, located in eastern DRC. In WHO's Africa Regional Office, there were more than 60 reported disease outbreaks since the beginning of 2019, including outbreaks of Ebola, cholera, measles, vaccine-derived poliovirus, Crimean-Congo hemorrhagic fever (CCHF), and dengue. Of these outbreaks, two were classified as a Grade 3 emergency, 13 were classified as Grade 2, two were classified as Grade 1, and 43 were ungraded.

Partner countries' responses to these outbreaks were enhanced using the improved capacities built with the support of GHSA, the U.S. Government, and other partners.

Within the WHO Emergency Response Framework, Grade 3 emergencies require a major international response, Grade 2 emergencies require a moderate international response, and Grade 1 emergencies require a limited international response. A protracted emergency is one that persists longer than six months. Ungraded emergencies are serious events that often involve large numbers of people and substantial multi-sectoral assistance but do not require an operational response by WHO.

The DRC's tenth Ebola outbreak: The DRC's tenth Ebola outbreak, which began in August 2018, required significant effort and resources from the DRC and its partners as it became the second largest Ebola outbreak in history. WHO declared this a Public Health Emergency of International Concern (PHEIC) and a Grade 3 emergency in June 2019, and the outbreak was declared over on June 25, 2020. For the DRC, this coincided with the world's largest measles outbreak, circulating vaccine-derived poliovirus outbreaks, and cholera outbreaks — further straining national response capacity in the DRC. On June 1, DRC announced a new Ebola outbreak, its 11th, occurring in the northwest part of the country which is still active as of August 2020. The United States provided neighboring countries with preparedness assistance to rapidly identify and contain any imported Ebola cases. Graduates from the U.S.-supported Field Epidemiology Training Program played an integral role in the national response

and case investigations. A few cases of confirmed Ebola were rapidly detected and responded to in Uganda. The response — led by the Government of Uganda — successfully contained the outbreak with support from key U.S. Government partners.

Ebola Therapies Save Lives: Clinical research in the DRC during the Ebola outbreak identified two effective therapies. In November 2018, the United States and DRC began a Phase 2/3 clinical trial testing multiple investigational Ebola therapies. The trial — known as PALM (“Pamoja Tulinde Maisha” or “together save lives” in Swahili) — compared mortality among patients who received one of three investigational Ebola drugs. Results from the primary study demonstrated statistically significant reduction in mortality using REGN-EB3 and for mAb114 as compared to alternative therapies. Based on these results, the trial was stopped and the two therapeutics were implemented in the response.



Targeted vaccination helps combat Ebola outbreak in DRC:

Between August 2018 and May 2020, 303,751 people in the DRC received the Merck Recombinant Vesicular Stomatitis Virus (rVSV-ZEBOV) vaccine. Vaccination efforts succeeded despite complications with the outbreak response due to poor infrastructure, longstanding civil conflict in the region, and violent attacks on health workers. Vaccination contributed greatly to preventing further cases and slowing spread of the virus. The vaccine was first investigated for safety and efficacy in trials conducted by the U.S. Government and partners during the 2014-2016 West Africa Ebola outbreak. The first clinical study began in 2015 under a partnership between the United States and the Liberian Ministry of Health—a randomized, controlled trial evaluating the safety and ability of the two leading Ebola vaccine candidates to stimulate a protective immune response. A subsequent trial of the vaccine in Guinea, supported by WHO, found strong evidence of efficacy as well as safety; these West Africa trials also occurred in an emergency situation in places with minimal infrastructure and laid the groundwork for the successful use of the vaccine in DRC. The United States supported distribution of the vaccine to the DRC throughout the North Kivu outbreak. Research during this vaccination campaign produced sufficient evidence of efficacy of the vaccine for licensure by the U.S. Food and Drug Administration in December 2019 and the European Medicines Agency, and prequalification by the WHO.

Stopping the Spread of Ebola into Neighboring Countries:

GHSA investments in Ebola preparedness activities helped to mitigate the impact of the Ebola outbreak in the DRC and prevent further spread into neighboring countries, including Rwanda, Burundi, Uganda, and South Sudan. This includes IPC and health and hygiene promotion for preparedness at individual and community levels, national contingency planning and disease surveillance, and laboratory diagnostics strengthening at the systems level. Burundi built an Ebola treatment center and equipped its national laboratory with the supplies and tools needed to facilitate testing. South Sudan established health screening and prevention activities at 15 points of entry and points of control, allowing officials to screen hundreds of thousands of people for signs and symptoms. In April 2019, the Uganda Ministry of Health — in collaboration with U.S. Government partners — held a nationwide EVD outbreak simulation exercise which included detection of Ebola in three different settings: (1) Entebbe International Airport; (2) Kagando Hospital in Kasese District; and (3) a border crossing in Kasese. Two months later, a confirmed case was reported at Kagando Hospital, and the Ministry of Health activated a network of national- and district-level task forces. Government of Uganda officials point to the April simulation exercise as a key part of their success in a fast and efficient response stopping the spread of Ebola in Uganda.

A Whole-of-Society Response Stops Anthrax

Outbreaks: Anthrax is a zoonotic disease endemic across Africa. In December 2018, a community health worker in a rural area of Burkina Faso initiated a field investigation after reporting strange respiratory symptoms and deaths among local donkeys to the U.S.-supported community event-based surveillance (EBS) system. By January 2019, the mysterious illness had spread to other areas. Burkina Faso's Ministry of Health and Ministry of Animal Resources, with support from the United States, WHO, and the FAO, identified the outbreak as anthrax among donkeys. A team confirmed anthrax in 19 villages where over 75 donkeys had died and control measures were implemented to prevent spillover to humans. Over 1,000 health sector personnel in Burkina Faso have received EBS training since 2017, and Burkina Faso's success is a model for other countries seeking to improve community-level surveillance. Similarly, in Ethiopia, community outreach teams deployed after a suspected anthrax case in a sick cow that was slaughtered. Through multiple community discussions, community representatives agreed to dispose of the meat, preventing further spread within the community.

Guinea Detects Dangerous Infectious Diseases

Early: Strengthening the Central Veterinary Diagnostic Laboratory (LCVD) in Guinea resulted in the detection of two major infectious disease events. In June 2019, Guinea veterinary services detected avian influenza virus, for the first time, following a field investigation of 23 farms, nine of which had poultry that tested positive for the virus. On April 11, 2019, the LCVD of Conakry confirmed a suspected case of anthrax reported in Koundara, more than 600 kilometers from Conakry. The surveillance checkpoint of Youkounkoun electronically reported a suspected case, and field agents collected and transported the samples to the LCVD, which confirmed the results. In response, responders conducted an investigation and vaccinated 3,000 animals in the area.

Implementing a Laboratory Information Management System (LIMS) to Improve Detection and Reporting:

LIMS is a powerful tool for improving the management of laboratory data and external reporting to enable early detection and targeted, cost-effective response to zoonotic disease outbreaks. Tanzania, Ethiopia, Uganda, Kenya, Côte d'Ivoire, Cameroon, and Senegal have installed a free software LIMS system called "SILAB for Africa" (SILAB-FA) in their national (central and district) veterinary laboratories. These laboratories have shown considerable growth in services, marked improvement in laboratory



management, improved data quality and consistency, enhanced quality of test reports, and decreased time for test results. In Ethiopia, SILAB-FA decreased the average turnaround time of samples for export, farm diagnosis, and outbreak response from 17.5 to 1.8, 17.4 to 6.1, and 16.1 to 8.4 days, respectively. In Tanzania, turnaround time from sample registration to test results sent to the customer decreased from an average of three to five days to two days. National communication between central and district laboratories has also improved.

Sierra Leone Surveillance Moves at Lightning Speed:

The implementation of the U.S.-supported electronic Integrated Disease Surveillance and Response (eIDSR) system helped the Sierra Leone Ministry of Health improve disease reporting from less than 40% of health care facilities in 2015 to 99% in 2019. This system updated the paper-based surveillance system that often experienced reporting delays and human error. In addition to the web-based platform, an eIDSR mobile application allows local health facilities to send data on 28 priority diseases directly to a national database in real time. The national rollout of the app included 144 training sessions for more than 2,300 personnel, covering every government health facility in the country. Sierra Leone is the first country in the WHO Africa region to fully transform its national disease surveillance system from paper-based to a health facility-level, web-based electronic platform.

U.S. Government-Trained Epidemiologists Solve an HIV Mystery in Pakistan: In April 2019, the Sindh Province Ministry of Health in Pakistan identified a large HIV outbreak affecting mostly children in District Larkana. HIV experts joined the Sindh AIDS Control Program, fellows from the Field Epidemiology Laboratory Training Program (FELTP), WHO, and other local and international partners in May 2019 to investigate the source of the outbreak. By June 28, testing camps established by the Sindh AIDS Control Program identified more than 900 individuals with HIV, of whom 80% were children, in one of the largest HIV outbreaks in the country. Epidemiologists engaged in the development and analysis of FELTP-led case-control and cross-sectional studies and supported genomic testing of samples conducted at CDC. The outbreak investigation team found unsafe healthcare practices, including medical injections, as the likely source of the outbreak. The outbreak investigation team recommended a comprehensive, multimodal infection prevention and control intervention engaging the provincial health department, district health facilities, and the community to reduce transmission of HIV through unsafe injection practices.

Tanzania's Comprehensive Response to a Surge in Rabies:

Rabies is endemic in Tanzania, claiming at least 500 human lives annually. The disease is sporadically reported countrywide and nearly all cases are associated with a bite from an infected animal, especially dogs. In March 2019, Ulanga District Council reported an increase in human dog bites at both the Ulanga District Hospital and the Department of Livestock and Fisheries. Simultaneously, three human deaths were reported from dog bite victims previously admitted to the hospital. The Government of Tanzania activated a Public Health Emergency Operation Center and responded to the rabies outbreak by sending out vaccination teams that vaccinated almost 9,000 dogs and cats. In addition, the Government of Tanzania reached 14,319 students in 20 primary and 11 secondary schools in Ulanga district by conducting community sensitization using leaflets, posters, and community radio. Following these measures, the region reported no outbreaks from April through July 2019 and the number of dog bite victims dropped sharply.

Rapid Public Health Response to Control

Meningitis in Burkina Faso and Togo: In early 2019, more than 2,000 suspected cases of meningitis were reported in Burkina Faso and Togo. The United States worked closely with the Ministries of Health from Burkina Faso and Togo, as well as other partners, to successfully launch interventions against these outbreaks, leveraging capacity developed from several years of U.S. Government assistance. Those capacity-building efforts include strong meningitis case-based surveillance and diagnostic capacities (instrumental in the detection and confirmation of the 2019 meningitis outbreaks); reinforcing bacterial culture and polymerase chain reaction (PCR) diagnostic capacity at national and peripheral laboratories through trainings, mentorship, implementation of laboratory quality control programs; and an "e-meningitis" case-based surveillance system for real-time tracking of specimen testing and data reporting. In early 2019, the United States provided in-country support to Burkina Faso for real-time epidemiologic assessment of a meningitis outbreak and facilitated timely transfer of specimens and isolates from both countries to U.S. CDC. Rapid in-depth molecular characterization identified the strain as linked to those seen in recent large outbreaks in several West African countries. This information reinforced actions by the Ministries of Health in Burkina Faso and Togo to ensure rapid response to meningitis outbreaks and resulted in a decision by the WHO International Coordinating Group to release approximately 800,000 doses of meningococcal vaccine from the international stockpile to implement reactive vaccine campaigns in Burkina Faso and Togo.

Programs Driving Progress

The programs below supported by U.S. Government agencies and departments played important roles in the outcomes and impacts described in this report.

Strengthening Infection Prevention Control (IPC):

USAID — through the Medicines, Technologies and Pharmaceuticals Services program — is helping to prevent healthcare-associated infections (HAI). Clinics and hospitals should be sources of health, not illness. Ensuring health facilities use appropriate IPC measures is key to healthy patients and to controlling outbreaks of highly communicable diseases. In 2019, USAID conducted 122 assessments using the IPC Assessment Framework national tools in facilities in Cameroon, Côte d'Ivoire, Ethiopia, Kenya, Senegal, Tanzania, and Uganda and provided IPC support to a total of 13 countries. The assessments found a lack of IPC training and adherence, poor waste management, and a lack of guidelines on safe IPC. In response to these gaps, USAID is supporting local and national governments to conduct pre- and in-service IPC training to health professionals. USAID is also providing in-service capacity building in these seven countries to conduct IPC assessments, develop and update IPC guidance for human and animal health facilities, conduct in-service and pre-service training in IPC, and implement continuous quality improvement approaches to IPC. In addition, U.S. CDC technical experts work with global partners and low- and middle-income countries to implement IPC practices and establish national IPC programs to prevent HAIs and control the spread of AMR. In 2019, U.S. CDC supported IPC activities in at least 18 countries in Asia, Africa, and South America, developed additional IPC guidance for WHO and other partners, and assisted in 12 outbreaks around the world.

The DOD Biological Threat Reduction Program (BTRP) Creates Biothreat Surveillance Network

Across West Africa: Through the DOD's Cooperative Threat Reduction (CTR) Program, BTRP is supporting two synchronized One Health capacity-building research projects focused on Guinea, Liberia, and Sierra Leone. These efforts seek to promote standardized methodologies, data sharing practices, public outreach, and multi-national coordination. The primary objective of the effort is to establish a biothreat surveillance network between three culturally distinct, yet regionally significant, countries that have

minimal experience working together. This coordinated approach leveraging BTRP-funded research efforts in these countries will strengthen biosecurity, disease surveillance, and international reporting in these resource-burdened West African countries, which are endemic for numerous high-consequence pathogens.

USDA International Animal Health Trainings:

For several years, USDA has collaborated with the University of Delaware to host a series of animal health trainings related to poultry emergency response and regionalization specific to highly pathogenic avian influenza (HPAI), as well as a course focused on expanding laboratory testing and calibration credentials to meet international standards. In FY19, USDA also hosted a training addressing wildlife diseases — notably, HPAI and African swine fever — through a series of lectures, discussions, practical demonstrations, and necropsies. Representatives from 13 U.S. GHSA partner countries, including Côte d'Ivoire, India, Indonesia, Sierra Leone, Uganda, and Vietnam participated in one or more of these trainings in FY19. In addition, USDA worked with Vietnam's Department of Animal Health to provide two trainings on African swine fever — one specific to depopulation, disposal, and decontamination, and another specific to first responders — for roughly 60 veterinarians and government officials.

Biosafety & Biosecurity for Ebola: In June 2019, the U.S. Department of State in partnership with the U.S. CDC and U.S. Department of Energy's Sandia National Laboratories (SNL), conducted two 1.5-day workshops for 20 laboratorians operating in five of the Ebola Virus Disease mobile laboratories in the DRC on topics pertinent to laboratory biosafety and biosecurity. The training in Goma, DRC engaged laboratorians from the affected health zones of Beni, Katwa, Butembo, Goma, and Mangina. The training program included orientation to Biorisk Management (BRM); Decontamination and Waste Management; Personal Protective Equipment; Good Laboratory Work Practices; Incident and Emergency Response; and Packaging and Shipping Infectious Substances and Biological Specimens. The training leveraged practical exercises designed to reinforce BRM concepts specific to mobile laboratory operations for outbreak response.

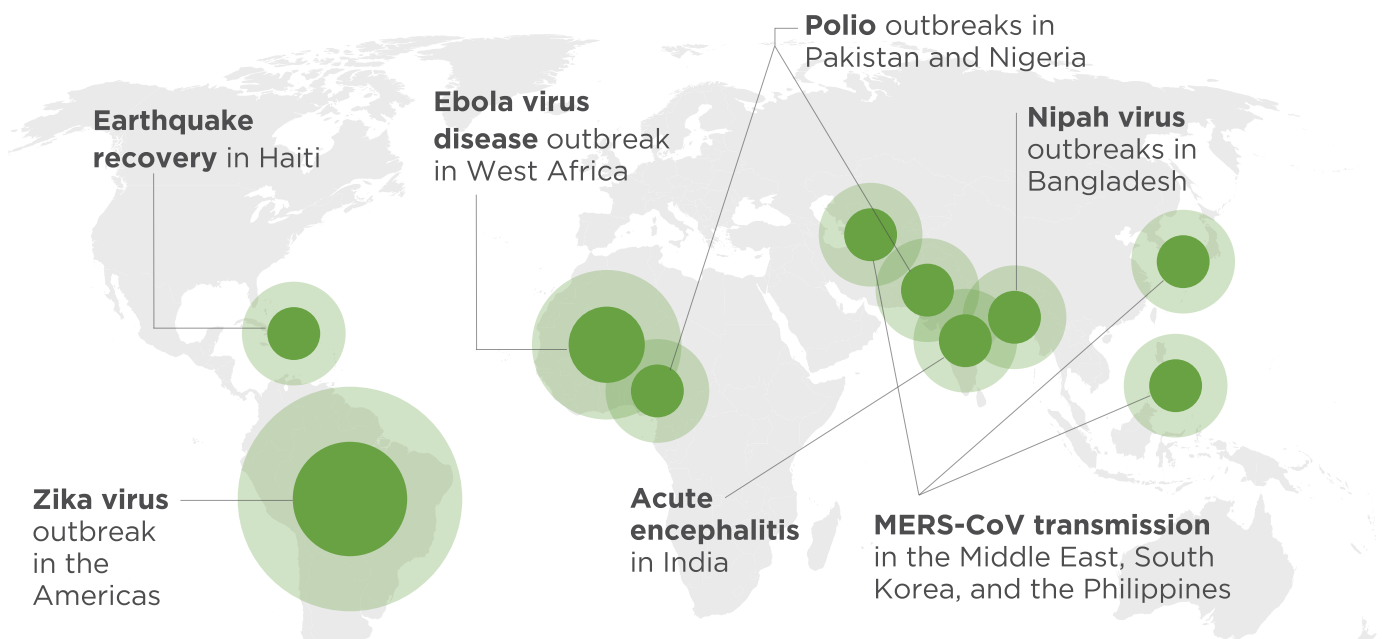
Department of the Interior/U.S. Geological Survey International Wildlife Health Capacity-Building:

The U.S. Geological Survey's (USGS) National Wildlife Health Center (NWHC) is the only federal high-containment facility dedicated to wildlife disease surveillance and research. Together, NWHC and the Canadian Wildlife Health Cooperative are the World Organisation for Animal Health (OIE) Collaborating Centre for Wildlife Health and Biodiversity. NWHC's Center Director is the OIE National Focal Point for Wildlife for the United States and a member of the OIE Working Group on Wildlife. In that OIE capacity, NWHC has conducted training for in-country wildlife disease professionals on various topics germane to wildlife disease surveillance, including zoonoses. In October 2019, staff conducted an on-site needs assessment at Mahidol University in Thailand. Thailand NWHC entered into a formal twinning project arrangement with Mahidol University to assist in the establishment of an OIE Collaborating Centre in Wildlife Health and Biodiversity at that institution.

Field Epidemiology Training Program (FETP):

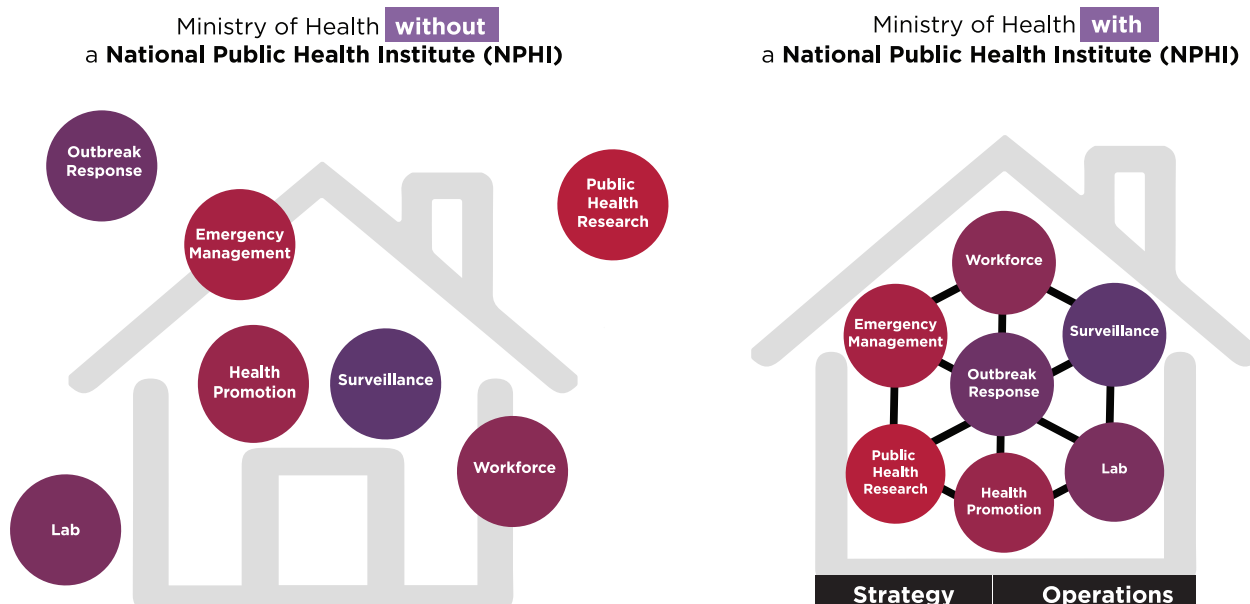
For four decades, the CDC has worked with partners across the world to develop a global workforce of field epidemiologists, or “disease detectives.” Since its inception in 1980, CDC has helped train more than 18,300 disease detectives in over 80 countries. In 2019, FETP residents and graduates played key roles in responding to major health threats including the aforementioned Ebola outbreak in the DRC and Uganda, the acute encephalitis outbreak in India, and the HIV/AIDS outbreak in Pakistan. In 2019, CDC-trained disease detectives investigated more than 450 emergency health threats across the globe. FETP trainings are important because they: (1) increase our ability to detect and respond to threats; (2) address the severe worldwide shortage of skilled epidemiologists; and, (3) build critical relationships with other countries.

Since 1980, CDC has helped train more than 18,300 disease detectives in over 80 countries through its flagship global FETP



Building a One Health Workforce: The USAID-supported One Health^{III} Workforce project, in partnership with One Health university networks in Africa and Southeast Asia, supports workforce development in 58 universities across nine GHSA Intensive Support countries: Cameroon, Côte d'Ivoire, Ethiopia, Indonesia, Kenya, Senegal, Tanzania, Uganda, and Vietnam. In 2019, the One Health university networks trained more than 2,700 health professionals (more than 1,400 students, 1,000 in-service professionals, and 300 faculty members) in GHSA Phase 1 countries on technical and collaborative One Health competencies, with topics ranging from zoonoses and infectious diseases to systems thinking, gender, and policy. They also provided scholarships for 33 students to pursue advanced studies in One Health-related programs and placed six graduate student fellows in local and international health organizations to gain practical experience in One Health. The networks collectively developed ten new training programs for current and in-service professionals, formed a new One Health student innovation club, and established five One Health field sites for community-based education, research, and outreach to address One Health challenges.

Giving Health Security a Sustainable ‘Home’ - National Public Health Institutes: Integral to CDC’s mission are the establishment of National Public Health Institutes (NPHIs). NPHIs serve as the nexus of a country’s public health functions and play a pivotal role in a country’s ability to address potential health threats. They serve as the “home” for a country’s public health activities. Creating a public health institute helps countries more effectively collect and use data, as well as implement and monitor science-based programs. NPHIs sustain CDC’s investment in global health security by creating permanent institutions for the implementation of public health coordination. This dedicated public health foundation helps countries build and strengthen public health competencies and achieve compliance with the International Health Regulations (IHR 2005). CDC’s support to more than 26 countries has ranged from technical assistance provided from abroad, to more intensive hands-on and on-the-ground technical assistance. NPHIs, like the United States’ CDC, help countries to more effectively prevent, detect, and respond to public health threats that can cost lives, cause political and economic instability, and spread to neighboring countries.



^{III} One Health is a collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.



Communication and Community Engagement to Combat Zoonotic Diseases:

USAID's risk communication efforts in 2019 led to the collaborative development of risk communication guides, tools, and campaigns that reached key audiences with vital information to address a range of priority zoonotic diseases. In 2019, USAID contributed to Risk Communication Technical Working Groups and National Risk Communication Strategies in Côte d'Ivoire, Sierra Leone, Uganda, Ethiopia, Guinea, DRC, Ghana, Senegal, and Mali. In Uganda, effective border efforts to stop Ebola used a combination of community-based media and strengthening of local risk communication structures to reach over 320,000 community members. Most were reached through film shows and mobile "experiential" events, while the rest participated in focused community dialogues, usually led by community and faith leaders, supplemented by home visits. In Ethiopia, job aids were developed and distributed for community and animal health extension workers to address anthrax, brucellosis, and rabies. These included fact sheets, radio broadcasts, and interactive road shows, reaching more than 40,000 community members with messages including anthrax behavioral prevention. Similarly, in Côte d'Ivoire, thousands of posters, leaflets, and television broadcasts were part of an integrated multi-media campaign providing communities with effective messages about dengue prevention behaviors.

Global Emergency Alert and Response Service Helps Protect Americans and the World:

CDC works around the clock to collect information about events around the world that could pose serious risks to public health. CDC's Global Emergency and Alert Response Service (GEARS) is one functional unit that combines the detection, alert, and response support activities of the

agency with the common mission of rapidly detecting and responding to global public health threats before they reach the United States. Through CDC's GEARS approximately 30-40 public health events are monitored per day worldwide, with more than 130 events of public health importance tracked in nearly 90 countries in 2019. Additionally, more than 350 CDC experts stand ready to deploy in response to a public health emergency anywhere in the world. In 2019, GEARS mobilized 177 staff to more than 32 countries to support outbreak response and provide public health expertise — logging more than 8,234 combined days of deployment.

Creating Responsive Supply Chain Systems for Health Emergencies:

USAID supports emergency supply chain (ESC) programs to improve capacities to quickly and effectively manage essential commodities during emergencies. ESC systems are critical for preparedness and response to infectious disease outbreaks. USAID's efforts supported provision of guides, tools, and simulations in Burkina Faso, Cameroon, Côte d'Ivoire, Ethiopia, Kenya, Liberia, Sierra Leone, Uganda, and Tanzania to support the development of ESCs. In Cameroon, the Minister of Public Health signed a Ministerial Decision to create a multisectoral ESC Management Working Group. In response to a cholera outbreak in early 2019, the Cameroon ESC manager addressed commodity and cold chain capacity needs. ESCs are designed to respond to biological threats, but their benefits extend also to natural disasters. For example, Tanzania created a commodity database and ESC guidelines for high-priority hazards (including priority diseases and mass casualty injuries), but was able to use this capacity to send 24 tons of medical commodities within four hours to aid countries affected by Cyclone Idai in March 2019.

International Reagent Resource: In 2016, CDC expanded the Influenza Reagent Resource to become the International Reagent Resource (IRR), an online resource where countries can procure reagents for important testing needs. Reagents were available to 24 U.S. Government GHSA partner countries in FY18 to support the detection of 20 respiratory, vaccine-preventable, and diarrheal pathogens (eight bacterial and twelve viral). For FY19, the IRR included 118 different types of products including test kits, primers and probes, and necessary ancillaries. In 2019, 14 GHSA countries had access to reagents for meningitis pathogen detection through IRR. Additionally, CDC shipped annual supplies to Benin, Burkina Faso, Ethiopia, Gambia,

India, Nigeria, Sierra Leone, and Togo to support detection of meningitis pathogens. The system will be expanded in the future to allow for countries to maintain sustainable detection of meningitis pathogens with reduced U.S. Government support.

Linking Community Preparedness to National Preparedness:

USAID's support to National Red Cross Societies in high-risk communities prepare for and respond to infectious disease outbreaks. As a result, these national societies have been able to expand their volunteer networks and develop or strengthen key capacities, including community-based surveillance (CBS), epidemic control in communities, and risk communication and community engagement. Community engagement should not begin when



there is an outbreak. It is a continuous process that must occur before, during, and after health events, which in turn builds trust between communities and health professionals. For example, in Kenya, the International Federation of Red Cross and Red Crescent Societies and the Kenya Red Cross were able to work with local volunteers and community members in a remote Masai pastoralist community to respond to an anthrax outbreak by isolating the stricken animals, raising awareness at schools and households for prevention, and referring the four affected persons for hospital treatment. Concurrently, a CBS alert triggered rapid investigation and action by local veterinary authorities who safely managed the carcasses, convened local farmers for a ‘community dialogue’ and launched a mass ring vaccination covering 10,600 cattle and 14,000 sheep. The threat was successfully contained, and no additional anthrax cases were detected in the area in the ensuing four months.

Strengthening Lab System Capacities through Improved Specimen Transport: To support and promote efficient national transport systems, CDC collaborated with the Association of Public Health Laboratories (APHL) to equip national laboratories with kits consisting of reusable containers for specimen transport. The program: (1) provided continuous, ready access to containers for shipping; (2) preserved the quality of specimens for testing; and (3) improved the safety of specimen transport. This program resulted in the purchase of 293 specimen transport kits, distributed approximately 13 per country. In partnership with CDC and APHL, Benin and Tanzania will pilot the Arktek specimen transport and storage device, modified from the vaccine storage device developed by Intellectual Ventures Global Good. The modified Arktek will enable remote sites to store and transport lab specimens for up to 30 days, which will in turn facilitate diagnostic, surveillance, and outbreak response activities. As a supplement to these activities, qualified workforce development is supported through packaging and shipping eLearning modules and implementing a collaboration site for countries to discuss usage of previously acquired packaging and shipping supplies. This work on laboratory transport, in tandem with CDC’s investment in building testing capacities within lab, help to strengthen laboratory systems, as a whole, in partner countries.

Improving Real-time Reporting of Animal Diseases with Event Mobile Application (EMA-i): Through its partnership with FAO, USAID implemented the EMA-i, a smartphone-enabled program developed to enable communities to provide real-time reporting of animal diseases with geo-referenced information. The EMA-i data are entered into the Global Animal Disease Information System database where the information is stored, verified, and validated. U.S. Government GHSA support resulted in the expansion of this animal disease surveillance tool to communities in Côte d’Ivoire, Guinea, Sierra Leone, Mali, Ghana, Uganda, and Tanzania. In Ghana, the use of EMA-i contributed to timely reporting of African Horse Sickness (AHS) in Accra in March 2019. The notification triggered a joint investigation leading to the confirmation of AHS and subsequent notification to OIE. EMA-i enabled Tanzania to increase the number of disease events reported by districts, from 256 reports in 2017 to 2,308 reports in 2019. Since 2016, more than 6,762 animal disease events have been reported with the help of the EMA-i in seven GHSA countries.

STEERIng Away from a Future Ebola Outbreak: U.S. CDC investments build capacity and strengthen health systems, and its work in the DRC is a prime example. CDC supports the Surveillance Training to Enhance Ebola Response and Readiness (STEER) initiative, built on the success of DRC’s FETP model and aimed to rapidly develop an accomplished unit of health workers trained in EVD detection and response. In collaboration with the DRC Ministry of Health, WHO, and DRC FETP, U.S. CDC trained 40 senior health workers from North Kivu and Ituri on topics such as case reporting, contract tracing, community engagement, and risk communication in July 2019. In August 2019, those same senior health workers, in cascade fashion, trained other health workers to eventually reach more than 4,000 health workers from 20 Ebola-affected health zones. Building the capacity of health workers to quickly identify suspect Ebola cases and apply principles of isolation, reporting, and infection control is a critical intervention for stopping Ebola outbreaks as well as other threats to health security. DRC’s FETP graduates played an instrumental role not only during the STEER training, but throughout the whole Ebola response.

Strengthening Laboratory Capacity in Goma,

DRC: USAID, in collaboration with Fondation Merieux, supported the establishment of a reference laboratory in Goma, DRC (the Institut National de la Recherche Biomédicale - INRB Goma). The lab is designed to increase sustainable, efficient, and safe laboratory capacities for the surveillance of infectious disease outbreaks with epidemic potential in the eastern DRC and contribute to both epidemic preparedness and response capabilities. The lab includes:

- A compound with three prefabricated lab modules: A BSL-2 molecular diagnostics lab, a BSL3 sample inactivation/procedure lab, and a BSL2 refrigerated storage unit;
- A mobile molecular diagnostics laboratory able to deploy throughout eastern DRC and significantly increase the safety, security, and diagnostic throughput of current INRB mobile lab teams; and
- A temporary, secure bio-bank for circulating presently unsecured EVD samples collected in outbreaks of EVD and other emerging infectious diseases.

USAID's support in the coming year will help the INRB Goma train staff and develop standard operating procedures to conduct molecular tests for Ebola, COVID-19, and CCHF, and other emerging diseases. USAID will help ensure that the capabilities and training provided to INRB Goma extend to other government-supported laboratories in the province to promote a strengthened DRC laboratory diagnostic system.

Preventing the International Spread of Pathogens:

CDC's Global Border Health Program has helped many partner countries make significant improvements to their border health security, particularly over the initial five years of GHSA. To support Ebola preparedness in Tanzania, in 2019 CDC facilitated a "training of trainers" for 30 Tanzania Ministry of Health staff on how to gather information on informal population movement patterns through community engagement. The 30 staff subsequently trained an additional 10 staff who collectively implemented 72 field-based events with 17 stakeholder groups to characterize community-level cross-border population movement and connectivity patterns. The Ministry of Health used the results to identify priority points of interest and travel patterns with connection to the DRC to target preparedness and to identify priority health care centers for IPC training. On a broader scale, CDC supported points of entry (POE) partners in six countries to develop multisectoral, IHR-compliant public health emergency response plans and POE-specific standard operating

procedures (SOPs) to detect, notify, manage, and refer ill travelers at more than 35 airports, seaports, and ground crossings. In addition, 170 health and non-health (e.g., customs and immigration, law enforcement, airline) staff were trained on the plans and SOPs.

Exchange Programs Leverage Academia to Enhance Animal Health Workforce:

For a fourth successive year, USDA collaborated with Iowa State University and Michigan State University to support the USDA Faculty Exchange Program for African Veterinary Science, an initiative to help improve veterinary curricula and instruction at the participants' universities. In 2019, 14 educators from Ethiopia, Ghana, Uganda, and Tanzania participated to improve their teaching and research methods and technical expertise in their respective fields — including epidemiology, food safety, microbiology, and pharmacology. Participants visited U.S. laboratories, government offices, and private farms and agribusinesses for experiential learning about animal health systems and applications of veterinary sciences in the United States. Their U.S. mentors, meanwhile, planned follow-up exchange visits to their mentee's home university in Africa. In addition, in August 2019, USDA and its partners delivered a regional workshop in Ethiopia for the U.S. and African alumni of preceding exchanges (2016-2018) to reconvene, share best practices, and explore opportunities for ongoing peer-to-peer professional development. Since 2016, USDA has supported training and mentor follow-up visits for 54 faculty from six African countries (Ethiopia, Ghana, Kenya, Nigeria, Tanzania, and Uganda) through this program. USDA plans to continue this initiative with up to 20 new exchanges.

U.S. Embassy Science Fellows Promote Global Health Security:

In 2019, the U.S. Department of State deployed innovative public diplomacy methods to engage with the academic, non-governmental, and private sectors to advance GHSA objectives and expand capacity building. Using flagship tools of diplomacy such as Embassy Science Fellows, U.S. Science Envoys, the International Visitor Leadership Program, and engagement in international conferences, the U.S. Government reached across audiences to spur actions that strengthen bilateral and multilateral relationships. Fellows placed in France, Argentina, Australia, and Qatar focused on a range of topics including advising on vector-borne diseases, emergency preparedness, workforce strengthening, and all-hazards preparedness in preparation for the 2022 FIFA World Cup.



International Visitor Leadership Program (IVLP) Advancing One Health:

In 2019, a delegation of 22 IVLP participants representing 19 countries exchanged ideas about integrated information systems to advance global health security under the One Health approach. The U.S. Department of State's three week IVLP program included meetings with USAID, CDC, EPA, NOAA, and NASA – as well as a variety of state, local, and non-governmental partners across the country — to learn various methods the U.S. Government, academia, and civil society use to collect and analyze data from human, animal, and environmental domains to generate early warnings and inform public health preparedness and response. IVLP participants network with U.S. counterparts and apply for small grants projects upon return to their home countries, in partnership with U.S. Embassies and the U.S. Department of State's Bureau of Educational and Cultural Affairs.

Assays for Emerging Respiratory Viruses:

In 2018 and 2019, the U.S. Department of State and Duke University engaged research teams to develop molecular assays for the detection of emerging respiratory viruses at the human-animal interface in the Philippines. Trainees were instructed on proper technique for implementation of these assays, and then were divided into human health and animal health teams for in-country surveillance efforts. By December 2019, the human health team had enrolled 174 farm workers across 70 duck farms and performed surveillance testing for zoonotic influenza strains A-D. The animal health team conducted assessments with local government and farmer organizations and collected samples from 48 duck farms, to be analyzed in 2020 for zoonotic respiratory viruses.

Global Health Security Capacity Helped Prepare and Respond to the COVID-19 Pandemic

The COVID-19 pandemic is the most serious health crisis in over a century. It is also a sobering reminder of how every country remains vulnerable to emerging disease threats and highlights the importance of global health security for public health, as well as for our everyday lives. The COVID-19 pandemic has led to broad-ranging global economic and social consequences. Multisectoral and community-focused approaches are valuable in stopping disease threats at their source, and the current pandemic reinforces the need to strengthen these capacities. **The pandemic demonstrates that the global community is inextricably linked; an infectious disease threat anywhere can truly be an infectious disease threat everywhere, and that it takes the whole of society to be prepared and respond.**

U.S. Government efforts to build global health security capacity pre-COVID-19 have laid the foundation for multisectoral and multi-agency coordination structures mobilized in this crisis. The GHSA has helped strengthen preparedness efforts, both at the country level and agency level. Collaboration among U.S. Government departments and agencies has facilitated proactive engagement with host governments on preparedness plans and helped identify key areas for U.S. support. GHSA efforts have helped strengthen technical capacities to better prevent, detect, and respond to infectious disease threats (whether pandemics, epidemics, or local events), and promoted multisectoral relationships to facilitate country-level response and coordination. The U.S. Government is also providing technical assistance to partner countries to facilitate their national COVID-19 responses, and countries are coordinating their responses through public health emergency operations centers developed with U.S. Government support. Many GHSA countries — including

Uganda, Vietnam, India, Ethiopia, Nigeria, and Kenya — have used U.S. Government-supported surveillance and laboratory infrastructure built through GHSA as well as longstanding programs like PEPFAR and their national IPC programs to respond to the COVID-19 emergency. In Vietnam, animal health laboratories — which have been strengthened with GHSA support — are now aiding response efforts with COVID-19 testing. In Sierra Leone, platforms used to communicate protective behaviors for zoonotic diseases such as rabies are now being used to communicate preventive behaviors for COVID-19 and contact tracing platforms developed to respond to Ebola are being used to control the spread of SARS-CoV-2. Trainees and graduates from CDC's Field Epidemiology Training Program in more than 65 countries around the world are now supporting their countries' responses to the COVID-19 pandemic. They have been among those detecting the first cases with ministries of health, applying essential skills learned in their training.

The United States remains firmly committed to the GHSA as a premier model of global engagement on health security and believes each country's ability to prevent, detect, and respond to infectious disease threats not only protects its own national security but also that of the global community. The value of public health capacities built and strengthened over the last five years by U.S. investments in GHSA is seen every day in response to COVID-19. Continued U.S. leadership and investment in global health security is essential so the world can be better prepared to address COVID-19 and future infectious disease outbreaks. GHSA has helped to make health security a global priority which is now more important than ever.



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