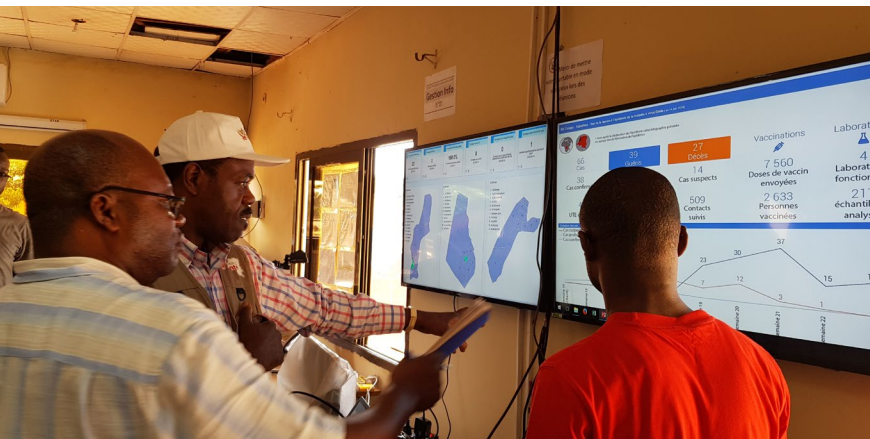




# Advancing the Global Health Security Agenda: Results and Impact of U.S. Government Investments



Cover photos clockwise:  
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Page 3 photo: Jonah Ainembabazi / One Health Workforce  
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# Background

New and re-emerging diseases spread quickly across the globe, resulting in outbreaks that overwhelm health systems, jeopardize lives, and devastate economies. The ongoing Ebola outbreak in the Democratic Republic of the Congo (DRC) is now the second-largest recorded Ebola outbreak in history. In 2018, numerous other outbreaks including Rift Valley fever, Crimean-Congo hemorrhagic fever, and Lassa fever also threatened the global community. While the international community has made significant progress in mitigating infectious disease threats, challenges remain, and the work to achieve global health security is ongoing.

A number of factors increase the opportunities for pathogens to spread and become global health security threats. Increased population growth and urbanization promote the spread of zoonotic diseases — diseases that spread between animals and people. Environmental changes continue to alter and increase the distribution of mosquitos and other disease vectors. Political and social instability fracture health systems and hamper our ability to promptly prevent, detect, and respond to public health threats. The misuse of antibiotics and emergence of pathogens with antimicrobial resistance (AMR) affect the human, animal, and agricultural sectors. Finally, the deliberate or accidental release of dangerous pathogens from laboratories or other facilities remains an ongoing global health security threat.

The economic burden of infectious disease outbreaks can be devastating. Economists estimate that pandemics could cause an average annual loss of 0.7% of global GDP<sup>[1]</sup>. Recent estimates of the 2014 Ebola

outbreak place the economic and social burden at \$53 billion globally<sup>[2]</sup>. The next severe pandemic could cost the world economy up to \$6 trillion<sup>[3]</sup>. Sustained investments in health security capacity building, both domestic and international, must be a leader-level priority for governments, development banks, nongovernmental organizations (NGOs), and private sector stakeholders.<sup>[4],[5]</sup> Experience has demonstrated that early investments in prevention, detection, and mitigation are far less expensive than the costs of responding to an infectious disease threat later.

The United States Government (USG) remains firmly committed to the Global Health Security Agenda (GHSA) as a premier model of global engagement on health security. Launched in 2014, the GHSA is a multi-sectoral and multilateral effort that seeks to accelerate implementation of the International Health Regulations (IHR) (2005) — the legally binding instrument adopted by 196 States Parties that set requirements for public health emergencies of all types. The purpose of the GHSA is to achieve a world safe and secure from infectious disease threats, whether naturally occurring, accidental, or deliberately released. The GHSA leverages host government and donor partner investments to prevent, detect, and respond rapidly and effectively to outbreaks. The GHSA encourages information sharing related to infectious diseases and provides measurable targets to build health capacity across eleven Action Packages (technical areas of focus that have been deemed essential for building a country's capacity to prevent, detect, and respond to infectious disease threats)<sup>[6]</sup>.

[1] <https://www.weforum.org/whitepapers/outbreak-readiness-and-business-impact-protecting-lives-and-livelihoods-across-the-global-economy>

[2] Huber, C., Finelli, L. and Stevens, W., "The Economic and Social Burden of the 2014 Ebola Outbreak in West Africa", *The Journal of Infectious Diseases*, jiy213, 13 October 2018, <https://academic.oup.com/jid/advance-article-abstract/doi/10.1093/infdis/jiy213/5129071?redirectedFrom=fulltext>

[3] Gostin, L.O., Mundaca-Shah, C.C., & Kelley, P.W. (2016). Neglected Dimensions of Global Security: The Global Health Risk Framework Commission. *JAMA*, 315(14), 1451-1452.

[4] Cassell, C.H., Bamberg, Z., Roy, K., Meltzer, M.I., Ahmed, Z., Payne, R.L., & Bunnell, R.E. (2017). Relevance of Global Health Security to the US Export Economy. *Health Security*, 15(6);563-586.

[5] Bamberg, Z., Cassell, C.H., Bunnell, R.E., Roy, K., Ahmed, Z., Payne, R.L., Meltzer, M.I. (2018). Impact of a Hypothetical Infectious Disease Outbreak on US Exports and Export-Based Jobs. *Health Security*, 16(1);1-7.

[6] The eleven GHSA technical areas are: antimicrobial resistance; zoonotic diseases; biosafety and biosecurity; immunization; national laboratory systems; real-time surveillance; reporting; workforce development; emergency operations centers; linking public health with law enforcement; and medical countermeasures and personnel deployment. Global Health Security Agenda. <https://www.GHSAagenda.org/>

# U.S.G. Approach

## GHSA Phase I and Phase II Partner Countries

### GHSA Phase I

|               |           |              |
|---------------|-----------|--------------|
| Bangladesh    | India     | Senegal      |
| Burkina Faso  | Indonesia | Sierra Leone |
| Cameroon      | Kenya     | Tanzania     |
| Cote d'Ivoire | Liberia   | Uganda       |
| Guinea        | Mali      | Vietnam      |
| Ethiopia      | Pakistan  |              |

### GHSA Phase II

|                              |            |          |
|------------------------------|------------|----------|
| Cambodia                     | Jordan     | Peru     |
| Democratic Republic of Congo | Kazakhstan | Rwanda   |
| Georgia                      | Laos       | Thailand |
| Ghana                        | Malaysia   | Ukraine  |
| Haiti                        | Mozambique | CARICOM  |

The USG is dedicated to supporting global efforts to prevent, detect, and respond to infectious disease outbreaks. In 2015, the USG partnered with 31 countries and the Caribbean Community to build health security capacity through the GHSA.

The USG pledged \$1.0 billion in funds via the Consolidated and Further Continuing Appropriations Act of 2015 to support activities in 17 Phase I countries, with technical assistance for 15 additional Phase II countries supported by baseline appropriations. As of December 31, 2018, the U.S. Centers for Disease Control and Prevention (CDC) has obligated \$518.1 million, and the United States Agency for International Development USAID has obligated \$342 million.

USG investments have helped partner countries identify shortfalls, build health security capacities, and design and implement five-year plans aimed at closing gaps in capacities across the GHSA Action

Packages. This third annual report focuses on activities implemented during the fourth year of the USG GHSA commitment, highlighting U.S. contributions that improved international capacities to rapidly detect and contain outbreaks at their source.

Many USG entities, such as the Department of State (DOS), the Department of Defense (DOD), the Department of Agriculture (USDA), the Department of Health and Human Services (HHS), CDC, USAID, the Federal Bureau of Investigation (FBI), the National Security Council (NSC), and others play critical roles in achieving GHSA goals. USG staff collaborate across agencies, leveraging capabilities in a multi-sectoral approach to enhance global health security.



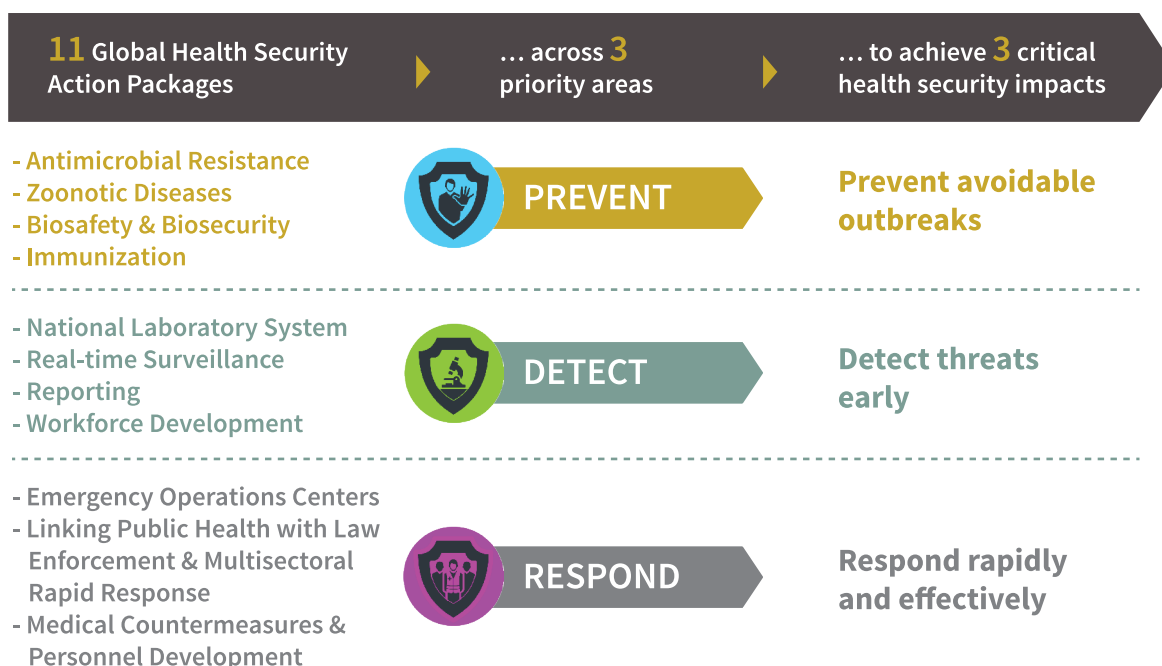


### The Role of Defense in Global Health Security

Militaries and defense sectors around the world, including the DOD, possess unique global health security-related capabilities and expertise as part of their normal missions, priorities, and authorities. The GHSA provides a framework through which these communities can better leverage and align their existing programs and activities with civilian counterparts to achieve shared health security goals. The importance of this coordination was on display at the 2018 GHSA Ministerial in Indonesia, where high-level defense representatives from the U.S., Indonesia, and the African Partner Outbreak Response Alliance spoke on how GHSA has allowed them to more closely partner with their civilian colleagues to prevent, detect, and respond to infectious disease threats before they become a security concern.

# Strategic Vision for Global Health Security

**GHSA builds capabilities across 11 specific technical areas, or Action Packages, that span multiple sectors and disciplines, including animal and human health, agriculture, and security.**



The following sections provide examples of U.S. support for GHSA implementation, including shared outcomes of our investments (what the U.S. technical and financial support coordinated with other partner investments have helped countries achieve) and evidence of impact (enhanced prevention, detection, and response to new infectious disease threats that decreases the potential for widespread disease and mortality).

## Our Partners

A significant number of multilateral organizations contributed toward GHSA objectives this year. At the November 2018 GHSA Ministerial Meeting, health ministers and other representatives from the Association of Southeast Asian Nations (ASEAN) member states declared their continued commitment to protect people from emerging infectious disease threats and advocated for strong participation in GHSA. At the 2018 Buenos Aires G20 Summit, G20 countries committed to collaborate with international stakeholders on global health security preparedness and response initiatives, including sharing their National Action Plans for Health Security (NAPHS). In addition, the World Bank, through its International Development Association replenishment process (which funds the least developed countries), established a commitment to promote the development of NAPHS, with budgets, in at least 25 countries. Finally, the World Bank joined the GHSA Steering Group in 2018, while the World Health Organization (WHO), the World Organization for Animal Health (OIE), and the Food and Agriculture Organization (FAO) extended their roles as permanent advisors to the Steering Group.

Several nations demonstrated support for global health security by making commitments and/or contributing financially towards GHSA objectives.

- The Republic of Korea continued to implement portions of a \$100 million commitment pledged in 2015 towards efforts/initiatives including immunization, national laboratory systems, and workforce development.
- Australia continued to fund its \$240 million commitment over five years (2017-2022) by

launching the Indo-Pacific Centre for Health Security to address infectious disease threats in the region.

- Finland, Australia, Bangladesh, Senegal, and other countries and stakeholders continued to provide leadership to the Joint External Evaluation (JEE) alliance, which complements GHSA objectives and champions the WHO's efforts to measure country capacities through a One Health approach, recognizing the connection of the health of people to that of animals and the environment.
- More than a dozen nations made country statements in support of the GHSA at the November 2018 GHSA Ministerial Meeting.



### The Role of Foreign Affairs in Global Health Security

The GHSA provides a framework through which foreign affairs ministries, including the DOS, can leverage strong relationships to spur new commitments to global health security and enhance existing activities. In one prominent example of bilateral coordination, the United States and Australia announced a multi-sectoral partnership, convened by the DOS and Australian Department of Foreign Affairs and Trade (DFAT), to strengthen coordination of foreign assistance and bring together experts from other Ministries and agencies on both sides. Ministers of State and Defense further affirmed this partnership at the 2018 U.S.-Australia Ministerial meeting.



# IHR (2005) Monitoring and Evaluation Framework – Tracking Country Progress Toward towards IHR Compliance

The IHR Monitoring and Evaluation (IHR M&E) Framework greatly aids GHSA efforts. The components of the framework help establish a country's baseline health security capacity and identify areas that need improvement.

This M&E Framework consists of four components:

1. The Annual Report to WHO — a mandatory self-assessment of health security capacity;
2. The Joint External Evaluation (JEE) — a voluntary, multi-sectoral external assessment process to identify gaps in capacity, determine a country's current level of health security capacity, and measure progress in a country's ability to prevent, detect, and respond to infectious diseases and other public health threats;
3. After Action Reviews (AARs) — voluntary, qualitative reviews of actions taken to respond to an emergency in order to identify best practices, gaps, and lessons learned; and

4. Simulation Exercises (SimEx) — a form of practice, training, monitoring, or evaluation involving a simulated emergency and its planned response, conducted to assess or develop a country's capacity to respond to outbreaks and other public health emergencies.

As of February 22, 2019, 165 countries have completed their 2018 mandatory annual report, 92 countries have completed a JEE, and an additional 21 countries are planning to undergo a JEE in the coming months. WHO has worked with countries to complete 97 SimEx and 44 AARs. JEE results are published online so that partners can work with countries in a more coordinated fashion to address health security gaps. Following a JEE, countries are encouraged to develop a NAPHS with an accompanying budget to address gaps in health security and identify resources required to address those gaps. Approximately 50 countries have made substantial progress in developing a NAPHS.

15 of the 17 USG-supported phase I countries have either completed, or are actively developing, a







NAPHS. These whole-of-government plans represent a significant commitment of domestic and external resources to address gaps in health security capacity. NAPHS planning and implementation allows countries to improve their capacity to prevent, detect, and respond to disease threats within their own borders so that these threats do not spread internationally. The USG continues to support these processes through participation in JEE missions by assisting countries in developing their NAPHS and providing strategic and technical guidance to WHO and other international organizations.

As part of a domestic commitment to improve health security capacity, the USG utilized IHR M&E framework components. Based on the results of the U.S. JEE completed in May 2016<sup>[7]</sup>, departments and agencies from across the USG worked together to develop

the U.S. Health Security National Action Plan. The plan is publicly available and includes action items to maintain or improve upon JEE indicator scores and address the recommendations from external evaluators<sup>[8]</sup>. Departments and agencies are currently working together across sectors to strengthen health security capacities in the United States that will address the gaps noted in the initial JEE to demonstrate progress in a second JEE scheduled for 2021.

The following sections provide examples of USG support for GHSA implementation, including *shared outcomes* of our investments (what USG 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).

[7] <http://apps.who.int/iris/bitstream/10665/254701/1/WHO-WHE-CPI-2017.13-eng.pdf?ua=1&ua=1>

[8] <https://www.phe.gov/Preparedness/international/Documents/jee-nap-508.pdf>



## The Shared Outcomes of U.S. Government Investments in the GHSA: Building Global Health Security Capacities

As a WHO-led process, 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 U.S. 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 table captures the impact of USG support by describing the number of countries that have built the capacity needed to increase to at least one point higher compared to baseline on the JEE scoring scale for technical areas related to the GHSA Action Packages. Representative examples of the progress achieved are in the fourth column.



# PREVENT

Action Package

▶ Toward These **Targets**▶ Number of Phase I Countries with  
**Capacity-level Increase over Baseline\***▶ Examples of **Implementation that Benefited** from U.S. GHSA Assistance

## AMR

Identifying antimicrobial-resistant pathogens allows us to react quickly when they spread.

# 14

Indonesia has demonstrated the ability to carry out antibiotic susceptibility testing (AST) following international standards. A total of 61 Salmonella isolates and 61 E. coli isolates were submitted from food animals. Results showed that both types of isolates were resistant to some major antibiotics.

India and its partners have trained more than 150 infection prevention and control (IPC) professionals to conduct hospital-acquired infections (HAI) surveillance, IPC assessments, and HAI outbreak investigations. After the training, staff in 38 hospitals began surveillance for HAIs using a common protocol and identified and addressed gaps in hospital IPC programs, helping to assess the burden of AMR and prevent additional infections.



## Zoonotic Disease

An estimated six out of 10 infectious diseases are zoonotic. These outbreaks need to be quickly identified in animals to prevent and prepare for possible spread into human populations.

# 12

Eight veterinarians were trained in the Field Epidemiology Training Program (FETP) in Burkina Faso, bringing the number of trained veterinary officers to 32. More than 30% of the country is now covered by a trained veterinary epidemiologist, which should allow Burkina Faso to detect outbreaks, especially zoonotic outbreaks, sooner.

Senegal demonstrated awareness and ability to rapidly investigate outbreaks of potentially epidemic diseases. Following the reporting of a death with a positive Rift Valley fever (RVF) result, a multi-sectoral, One Health team travelled to the southern city of Ziguinchor to conduct a case investigation. As part of this exercise, blood samples were collected from the case's brother, colleague, and driver who experienced a cough. These samples all tested negative for RVF. There was no further spread of human cases of the disease.



## Biosafety & Biosecurity

Dangerous pathogens need to be handled carefully and stored securely to prevent them from accidentally or intentionally being released to the public.

# 9

In Cameroon, the government, with help from FAO, evaluated the national veterinary laboratories in Garoua and Yaounde on their biosecurity and quality assurance systems. The evaluation informed the on-site training of 31 staff in quality assurance, samples shipment, laboratory waste management, management of pathogens strains, training on biobank and sequential analysis, and other biosafety and biosecurity topics.

In Uganda, 65 human and veterinary laboratorians were trained on safe and secure handling of hazardous biological samples. Technicians in 5 high-risk priority districts in Western Uganda received training for the Ebola Virus Disease (EVD). An inventory of veterinary facilities that store dangerous pathogens was also conducted.

Human and animal health staff in 47 counties in Kenya received training on safe and secure handling of anthrax cases and samples.



## Immunization

Effective immunization systems reduce illness and death from vaccine-preventable diseases, and help limit the magnitude and number of infectious disease outbreaks.

# 3

For the first time in 30 years, a mass vaccination campaign against anthrax was implemented in Guinea. Approximately 173,000 animals were vaccinated against anthrax in outbreak prone areas.

In Senegal, the Ministry of Health (MoH) organized and conducted a targeted national measles and rubella vaccination campaign, which increased vaccination coverage of children under 12 from 80% to 90%.

In Tanzania, a multi-sectoral, One Health team implemented a mass dog vaccination and public awareness mission in the Moshi district. More than 27,000 animals were vaccinated, a five-fold increase from any previous year. No cases of rabies were reported from May 2018 through the end of September as compared with an average of 14 cases per month during the previous 15 month period.



# DETECT

Action Package

Toward These Targets

Number of Phase I Countries with  
Capacity-level Increase over Baseline\*

Examples of Implementation that Benefited from U.S. GHSA Assistance


**National  
Laboratory  
System**

Confirming diagnoses with labs allows health workers to respond rapidly with the most effective treatment and prevention methods.

## 11

Bangladesh now has the capacity to identify and confirm diphtheria outbreaks. USG experts helped establish local capacity for laboratory confirmation of diphtheria, strengthened surveillance in the Rohingya refugee camps, and developed vaccination campaigns and prevention strategies.

Côte d'Ivoire has the capacity to detect meningitis in 6 of 10 of its regional labs. The national post office can transport samples from all 85 districts of Côte d'Ivoire to the national lab within 72 hours.

In Tanzania, the use of a new laboratory information management system in nine veterinary labs has significantly contributed to reducing the turn-around time of sample submission to result delivery from seven to one-two days and improved the accuracy and reliability of sample data capture, the traceability of each test sample, and the quality of test reports.


**Real-time  
Surveillance**

Effective disease surveillance enables countries to quickly detect outbreaks and continuously respond to potential risks.

## 12

Burkina Faso established an event based surveillance system for unusual health events that detected 125 health events in three pilot health districts from August 2017-February 2019. Village lay people detected over 90% of the events and reported more than half of them to a community health post within 24 hours of occurrence. Unusual animal deaths, the beginning of a dengue epidemic and a nation-wide strangles outbreak among donkeys that marked the start on a national epidemic were detected with this system. The Ministry of Health is able to more rapidly and effectively identify outbreaks and establish priorities for response and prevention using this system.

In Sierra Leone, a new Ebola species was discovered in healthy bats roosting in people's homes. Additionally, for the first time in West Africa, Marburg virus was discovered in cave-dwelling bats from multiple sites in Sierra Leone. These discoveries will help Sierra Leone and neighboring countries (1) update their diagnostics to ensure they can detect all Ebola and Marburg viruses, (2) set up early-warning human and livestock surveillance; and (3) develop communication materials to help reduce people's risk of exposure.


**Reporting**

Procedures and systems for reporting potential outbreaks allow experts to assess public health events and respond rapidly.

## 8

Ethiopian officials expanded the Animal Diseases Notification and Investigation System (ADNIS) to 1,000 additional sites, trained 28 district animal health staff directly involved in animal disease reporting, and trained 174 frontline animal health field staff to enhance disease reporting.

Uganda rapidly contained a Crimean-Congo hemorrhagic fever (CCHF) outbreak, utilizing surveillance and reporting systems to notify the Public Health Emergency Operations Centre, which rapidly mobilized responders to collect samples, identify contacts, and trace the origin of nine cases to prevent spread.

Pakistan was able to effectively identify a major outbreak of extensively drug resistant Typhoid and escalate it to a level of public health event to report to WHO.


**Workforce  
Development**

To maintain global health security capabilities, countries need people who can quickly investigate potential outbreaks, identify the issue, and take swift action.

## 11

In Burkina Faso, three health district teams, 210 assistant nurses and chief nurses, and 935 community health workers were trained on event-based surveillance (EBS). Additionally, 92 primary health care facilities were equipped with tools for EBS. These activities increased detection of unusual events from 14 cases in over a year to 23 cases over just three months.

From January to March 2018, Malian epidemiologists reported 492 suspected measles cases with 154 confirmed by national laboratory. FETP graduates lead the outbreak investigations, managed measles cases to avoid additional infections, traced cases to identify people at risk, and increased community awareness of the outbreak.

The Vietnamese One Health University Network organized three training courses (including 33 veterinary staff) on applying multi-sectoral, One Health core competencies to zoonotic disease prevention. 17 Masters in Public Health students (10 Vietnamese and 7 international) graduated with a specialization in One Health from the Hanoi Medical University.

Senegal/West Africa: The Inter-State School of Science and Veterinary Medicine (EISMV), a regional university based in Senegal, developed a new Master's program in Wildlife Management and Epidemiology. Currently, 11 graduate students are enrolled. The annual admission target is expected to result in 100 wildlife professionals trained in West Africa over the next 10 years. Wildlife epidemiologists are critical in addressing the many zoonotic disease threats emanating from wildlife.

# RESPOND

Action Package

▶ Toward These **Targets**▶ Number of Phase I Countries with  
**Capacity-level Increase over Baseline\***▶ Examples of **Implementation that Benefited** from U.S. GHSA Assistance
**Emergency Operations  
Centers (EOCs)**

EOCs bring together experts and stakeholders to efficiently and effectively coordinate response to an emergency or public health threat.

## 13

Malian officials conducted a joint field simulation exercise with Senegal for the control of highly pathogenic avian influenza (HPAI) outbreaks at the border between the two countries. This activity, involving 61 participants, allowed both countries to test and improve the ability of multi-sectoral stakeholders to investigate and respond to HPAI outbreaks and other cross-border infectious diseases. A documentary film on the simulation is being produced.

In Cote d'Ivoire, a joint investigation mission was conducted in response to high mortalities on poultry farms and suspicion of HPAI Type A H9N2 infection. The differential diagnosis was made within 10 to 12 days, identifying Newcastle disease, not HPAI. The Director of Veterinary Services, demonstrating leadership in the response effort, designed both a vaccination strategy and a training program for poultry owners to improve biosecurity measures.

Senegalese staff managed the public health emergency operations center's response to a dengue epidemic in the country, preventing spread of the disease to additional areas. Shortly after the epidemic the Ministry of Health performed an after-action review, identifying gaps and best practices to respond better in the future.

Four staff from Sierra Leone, trained through the USG's Public Health Emergency Management Fellowship Program (PHEM) in Atlanta, facilitated workshops on the Incident Management System and Standard Operating Procedures development in the country. Additional trainings are planned by the staff at national and district levels.

Guinea's EOC network includes one national and 38 district level EOC that were established with USG assistance but are now fully staffed and funded by the Ministry of Health and being regularly used for emergency response and routine vaccination activities.


**Linking Public Health  
with Law and Multi-sect-  
toral Rapid Response**

Law enforcement personnel are often front-line responders during health emergencies. Effective coordination between the law enforcement and health sectors is critical to responding to health threats.

## 5

The Indonesian Biorisk Association collaborated with the USG to begin development of an academic biosecurity program to address gaps and vulnerabilities in institutional laboratories in the country. In 2019, the government of Indonesia will begin consolidation of dangerous agricultural pathogens.


**Medical  
Countermeasures (MCM)  
and Personnel Deployment**

Lessen the impact of disease outbreaks through systems that deliver the right medicines and personnel to the right place at the right time

## 4

Cameroon officials adopted a set of emergency supply chain (ESC) management tools to plan and receive medical countermeasures during disease outbreaks of public health concern. These tools contributed in the management of monkey pox and cholera outbreaks in 2018. The MOH has now trained and installed ESC teams in two of the ten regions of the country.

Ethiopian Public Health Institute (EPHI) and health department staff responded to a pertussis outbreak affecting over 1,800 persons. Following the confirmation of pertussis at the national reference laboratory at EPHI in October 2018, over 900 children were vaccinated and prophylactic antibiotics were given to over 70,000 persons to prevent additional infections. Ethiopia demonstrated timely reporting of the outbreak, effective field investigation by epidemiologists, laboratory confirmation of the outbreak, and effective use of medical countermeasures to control the outbreak.

## Evidence of GHSA Impact in 2018

The world continued to experience a high number of disease outbreaks and health emergencies in 2018. Within WHO's Africa Region (AFRO), there were 11 Grade 1 emergencies, five Grade 2 emergencies, and two Grade 3 emergencies, not including the two Ebola outbreaks in the DRC. There were several other ungraded emergencies in AFRO adding up to a total of 142 public health emergencies, of which 123 were disease outbreaks<sup>[9]</sup>. In Asia, avian influenza, primarily the H7N9 virus, continues to be a concern for both the animal and public health communities. As the DRC was responding to its ninth Ebola outbreak, a Nipah virus outbreak occurred in India's Kerala State, more than 2,000 km away from the nearest known location of a previous outbreak. Both events were controlled relatively quickly due to rapid response by the health community, but this demonstrated that concurrent outbreaks of especially dangerous pathogens can happen in areas with high density populations, and that they have the potential for regional spread. Unfortunately, soon after the end of the ninth Ebola outbreak in the DRC, the 10<sup>th</sup> Ebola outbreak was declared in the eastern DRC and remains ongoing. Ongoing violent conflict, community resistance, and limited health services in the DRC's Nord Kivu and Ituri provinces underscore the continued need for strong efforts to prevent, detect, and respond to infectious disease threats like Ebola and Nipah where they originate before they are able to spread regionally or globally.

Partner countries led the response to the outbreaks described below by using the improved capacities built with the help of GHSA, the USG, and other partners.

### *Early Detection of Serious Infectious Diseases and Effective Responses to Outbreaks*

#### **Stopping Avian Influenza in Multiple Countries:**

In 2018, circulating Avian Influenza (AI) in livestock and wild birds was detected in at least eight GHSA countries: Bangladesh, Cambodia, Indonesia, Vietnam, Côte d'Ivoire, the DRC, Ghana, and Senegal. As a result of USG assistance, countries are now detecting and responding to AI outbreaks more effectively through improved laboratory diagnosis, surveillance and outbreak investigations, and the use of livestock production and risk assessments. In addition, countries are now working with the FAO to monitor AI isolate diversity and vaccine

effectiveness. For example, in response to a H5N1 outbreak in a poultry farm in Bangladesh's Mymensingh district, the Department of Livestock Services conducted biosafety training for poultry farmers, trained communities in poultry vaccination, and conducted tests of the circulating viral strains to inform vaccination efficacy and policy. The Government of Cambodia trained technicians on AI laboratory diagnostics, expanded longitudinal surveillance at live bird markets, and effectively conducted nine HPAI outbreak investigations. In Côte d'Ivoire, the national veterinary laboratory improved its capability to analyze HPAI outbreak samples, utilize personal protective equipment (PPE), and strengthen targeted risk-based surveillance of HPAI along the poultry value chain in markets, border areas, and wild birds resting areas. The Government of Indonesia's improvement in live bird market surveillance led to the determination that H9N2 in circulation had increased within the country. As a result of this discovery, the Government of Indonesia conducted trainings and workshops on the proper biosecurity for poultry production and poultry markets.

**Spotting Nipah Virus in India:** Nipah virus has no cure, kills approximately 75% of infected people, and can be quickly spread by both animals and humans. This virus highlights the need for fast and accurate diagnosis of this fatal emerging zoonotic virus and potential threat to global health security. When Nipah was suspected in India in 2018, diagnosis was swift, and state and central government agencies responded to the outbreak rapidly, containing its spread and limiting its severity. The Government of India used the technical expertise gained from U.S. Government trainings, including the use of next-generation sequencing (NGS) analysis, to swiftly and accurately diagnose the initial Nipah cases, allowing India to do the testing in-country instead of referring samples out for testing.

**Preventing Anthrax in Guinea:** Consistent with its new National Emergency Response plan for anthrax, the Ministry of Livestock with the MoH, in 2018, conducted a joint investigation of a reported outbreak of anthrax in ruminants. Guinea used its new central veterinary lab, refurbished with the help of the USG, to confirm the anthrax outbreak. In response, the Ministry of Livestock vaccinated 173,000 at-risk animals against anthrax in outbreak prone areas. It had been 30 years since a mass vaccination campaign against anthrax was

[9] <http://newsletters.afro.who.int/emo/m6x810xbhma1qqvybnloqp?a=6&p=54077912&t=21013825>



implemented. As a result of these rapid and effective actions, the outbreak was promptly controlled in animals and no spillover cases in humans occurred.

**Kenya Responds to Rift Valley Fever:** In 2018, suspected outbreaks of RVF occurred in livestock in four countries: Kenya, Rwanda, Sierra Leone, and Uganda. The largest occurred across 16 counties in Kenya from June through July 2018 and affected 98 humans, 37 goats, 19 camels and five sheep. By detecting the event and promptly declaring the outbreak on June 8, 2018, the Government of Kenya triggered effective response actions including outbreak investigation, sample testing, community awareness campaigns, isolation and management of human cases, closure of livestock markets and slaughter houses, and vaccination of the at-risk livestock population. The USG's contributions included support for sentinel herd monitoring (which began in May of that year), the introduction of a real-time animal disease reporting system, support for joint outbreak investigations, and strengthening of the veterinary laboratory capabilities including providing lab supplies for confirmation of RVF. Additionally, USG-trained Kenyan field epidemiology laboratory training program residents, including two veterinarians, one nurse, and two medical officers, provided technical assistance to the outbreak response. The Government of Kenya was able to effectively manage the outbreak without causing significant human, animal, or economic losses in the affected counties.

**Investigating an Animal Health Emergency in Liberia:** The Liberia Animal Health and Livestock Service, through the work of its newly established Veterinary Epidemiology Unit, responded to an animal health emergency in Nimba County that had led to the death of more than 3,700 goats, sheep, and cattle within the Twah River District. Following informal reports received on July 16, 2018 through local radio broadcast, the Veterinary Epidemiology Unit organized a rapid outbreak investigation and response team. The team was composed of Ministry of Agriculture (MOA) central staff (epidemiology and laboratory), surveillance officers from the National Public Health Institute of Liberia and

FAO national consultants along with local MOA staff of the county. The team conducted investigations in six affected communities, and from the investigation it was determined the first case likely occurred in March 2018, four months before it was brought to the attention of the Veterinary Epidemiology Unit. The team collected eight samples, four of which tested positive for “Peste des Petits Ruminants” (PPR), a disease affecting sheep and goats. The team educated communities regarding control of the spread of the disease, and how to avoid human illness which might result from eating sick or dead animals, a common practice in the communities. The coordination and collaboration among partners in responding to this outbreak is another example of the multi-sectoral, One Health approach in Liberia.

**Controlling Crimean-Congo Hemorrhagic Fever in Uganda:** In a part of the world already fighting to contain Ebola, CCHF is often initially misidentified as that disease, highlighting the need for effective surveillance and laboratory testing to correctly diagnose and contain the infectious pathogen before it spreads. In Uganda, when an alert of suspected CCHF cases in two regions was received, USG-trained Ugandan scientists at the Uganda Viral Research Institute National Reference Laboratory, within 12–24 hours, confirmed CCHF through molecular diagnostics. In each instance, health facilities were able to utilize national surveillance and reporting systems to immediately report the cases to Uganda's Public Health Emergency Operations Centre, which in turn quickly mobilized national rapid responders to collect samples and provide technical assistance to healthcare workers. As a result of USG investments in the Ministry of Health's infection prevention and control activities and viral hemorrhagic fever diagnostics, Uganda has developed its own ability to rapidly act to contain deadly outbreaks, including of CCHF and Ebola.

**Stopping Rabies in its Tracks in Tanzania and Other Countries:** With GHSA support, countries are making significant progress addressing the threat of rabies. Some 1,500 people die from rabies every year in Tanzania. Following reports of outbreaks of rabies

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

in humans in the district of Moshi in June 2018, the Ministry of Livestock and Fisheries acted promptly in alliance with the USG and national partners to conduct an intensive awareness campaign, heighten surveillance, and conduct a sustained vaccination campaign in dogs and cats. In total, more than 30,000 vaccinations were delivered in Moshi, more than six times the previous record of rabies vaccinations in a year in the district. This was accomplished due to a multi-sectoral team of 70 officials and 50 university students. As a result, no single incidence of rabies was reported from May through November 2018 as compared to an average of 14 cases per month between January 2017 and April 2018. In addition, the Guinea Central Veterinary laboratory, upgraded with USG assistance, confirmed its first positive rabies case. Also in 2018, the Liberia Central Veterinary laboratory diagnosed positive cases of canine rabies for the first time in its history. Ethiopia made significant progress in developing a rabies surveillance system with linkages between human and animal health. The country now has eight health centers capable of evaluating dog bites, coordinating with counterparts at veterinary centers to secure the dog, and initiating appropriate treatment in human patients.

**Tackling Lassa Fever in Guinea:** When a case of Lassa Fever, originating in Guinea, was detected in Liberia in October 2018, the Guinean National Health Security Agency sprang into action, recognizing that the patient may have infected others before traveling out of the country. The Guinean National Health Security Agency immediately coordinated response activities at the community, regional, and national levels. They also mobilized partners to augment government efforts to limit transmission. With USG support, community health volunteers were trained to conduct contact tracing to identify all possible cases. Cross-border coordination of community-based surveillance activities and point of entry health monitoring minimized disease transmission, prevented a regional Lassa Fever epidemic, and saved lives. Collectively, these efforts contained the outbreak to just 28 cases and stopped it before it could spread to any more of Guinea's six neighboring countries.

**Rapid Response to Measles in Sierra Leone:** On June 4, 2018, a measles outbreak was reported in two remote communities of Sierra Leone's Koinadugu district near the Guinean border, striking fear in public health officials that the outbreak could become a cross-border epidemic. Within one day of beginning the outbreak investigation, USG-supported Sierra Leone FETP-Frontline graduates conducted an active case

search and identified new cases, instituted prevention and control measures, reviewed the outbreak data, and prepared the outbreak report with the national response team. The district was able to mount a response before getting support from the national Ministry of Health and Sanitation staff, which dramatically reduced the response time from an average of seven days to one day. The outbreak was limited to 31 confirmed cases, a majority of them young children under five years old. The rapid response and containment of this measles outbreak by Sierra Leone FETP-Frontline confirms the need for a trained and skilled workforce that can immediately be deployed to stop outbreaks in their tracks and save lives.

#### **Addressing the Threat of Antimicrobial Resistance:**

AMR is a growing threat to health security around the world. With USG support, numerous countries are now beginning to conduct antimicrobial susceptibility testing (AST) and AMR surveillance. For example, Bangladesh's Institute of Epidemiology, Disease Control and Research established an antimicrobial resistance surveillance platform with 10 hospitals across the nation to report culture and AST results for 10 priority pathogens. Initial data analyses found high levels of resistance to several classes of antibiotics. USG investments have also built AMR capacities in additional countries. With the help of technical assistance, mentoring, and supplies, the Ethiopian Public Health Institute and three designated laboratories now detect and report priority AMR pathogens. Senegal collected samples from aquaculture farms, tested for antibiotic residues, and determined that there was no residue in aquaculture products. In Indonesia, 61 *Salmonella* isolates and 61 *E. coli* isolates were submitted for AST from food animals. Results showed that both types of isolates were resistant to major antibiotics. In Côte d'Ivoire, 22 laboratories are now conducting tests and reporting on some priority AMR pathogens.



## Programs Driving Progress

**Development of One Health Workforce:** Through the USAID-supported One Health university networks, more than 2,800 people (about 2,000 students, 400 faculty, 400 in-service professionals – more than 11,000 cumulatively) were trained in 2018 on multi-sectoral, One Health competencies, including zoonotic diseases, human-animal-environment interface, gender, and communications. In addition, more than 45 current and future health professionals were placed in local and international health organizations to gain practical experience in One Health. Across 56 universities in Africa and Asia, the One Health University networks have developed more than 25 training modules, created 27 One Health student innovation clubs, and established eight field demonstration sites to promote community-based learning activities.

**The Field Epidemiology Training Program (FETP)-Frontline Trains Disease Detectives:** For more than three decades, U.S. CDC has worked with MoH and other partners around the world to build local capacities and strengthen the national public health workforce through programs like the FETP. To expand workforce capabilities at the local level, U.S. CDC launched FETP-Frontline in 2015, a three-month training program focused on detecting and responding to diseases and events of public health importance or international concern. FETP-Frontline participants include government public health workers in charge of the collection, compilation, analysis, reporting of surveillance data, and response activities at the local level of a health system. Within 24 months, FETP-Frontline programs were launched in 30 countries. All 17 USG funded GHSA Phase I countries have either FETP-Frontline or a similar FETP. More than 9,100 trainees graduated from FETP-Frontline programs by the end of the 2018 fiscal year. FETP-Frontline trainees and graduates have actively participated in responses to outbreaks of cholera, measles, yellow fever, and other diseases by identifying suspected outbreaks early and raising standards for quality investigations.

**Developing Central Veterinary Laboratories:**

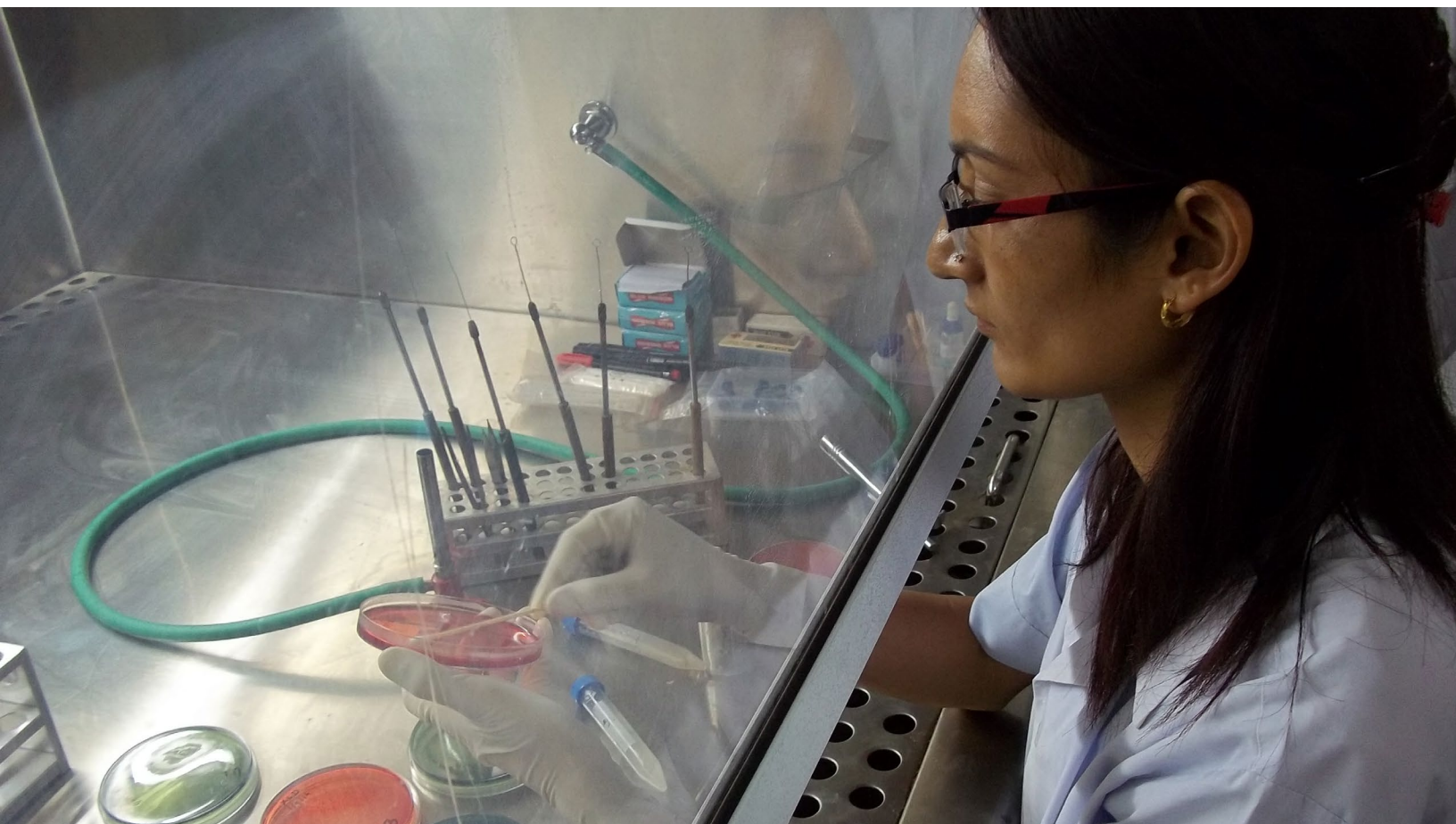
During the past 15 months, USAID supported the FAO to renovate the Central Veterinary Laboratories (CVLs) at Teko in Sierra Leone, Fendall in Liberia, and Conakry in Guinea, and to train the staffs to help detect and respond to zoonotic disease threats. Years of decline and civil wars led to the misuse and abandonment of these CVLs.

Although sporadic funding of the CVLs resumed after the civil war, they never returned to the level of functioning needed to serve the country. In collaboration with each country's Ministry of Agriculture, the FAO refurbished these facilities in order to ensure animal disease testing could be conducted in secure laboratories with adequate diagnostic equipment and basics such as potable water and electricity. These CVLs serve as the government's only diagnostic veterinary laboratories in country and are essential to reviving the animal health sector. These CVLs will diagnose diseases such as rabies, anthrax, avian influenzas, and brucellosis, which all have the potential to not only cause illness in humans, but also greatly impact the economy through the loss of livestock from infected animals.

**National Public Health Institutes:** U.S. CDC's National Public Health Institute (NPHI) program builds the capacity of public health institutions around the world. NPHIs serve as the nexus of a country's public health functions, a focal point for public health information, and the natural government-to-government partner in times of crisis. Working closely with the International Association of National Public Health Institutes (IANPHI) and Ministries of Health, the NPHI program supports work in over 25 countries to develop and strengthen new and existing NPHIs. Countries are better able to achieve and maintain compliance with the IHR (2005) when public health institutions are able to effectively coordinate, plan, implement, and manage programs. NPHI investments in the Africa CDC Southern Africa Regional Collaborating Center, hosted by the Zambia National Public Health Institute, facilitated regional surge capacity during a 2018 Cholera outbreak in Malawi. The Southern Africa Regional Collaborating Center facilitated and coordinated needs assessments, trainings on laboratory and data management, and procurement of laboratory reagents.

**One Health Coordination Structures:** In 2018, USAID helped 12 GHSA countries develop or strengthen multi-sectoral One Health coordination platforms which link expertise in animal health, human health, and the environment. Building on lessons learned from the 2014-2016 West Africa Ebola response and post-outbreak efforts, new platforms were recently launched in Mali, Sierra Leone, Liberia, and Guinea, with an Ethiopia launch expected in late 2018. These platforms





coordinated across ministries and with relevant health actors to improve preparedness and incident management and helped respond to infectious disease threats. Most recently, the platforms have contributed to an avian influenza outbreak response in Bangladesh and Uganda, as well as anthrax, RFV, Lassa fever, and CCHF outbreak investigations and after-action reviews in Africa. The platforms have also worked with countries and partners to engage in the WHO-led JEE of IHR readiness; design or update preparedness and response plans for priority zoonotic diseases; develop a One Health strategy and action plan to prevent and manage AMR; build country capacity for work planning, execution, and monitoring and evaluation of their country strategy; and advocate for increased domestic resources.

**Detection of Emerging Threats:** Through the PREDICT project, USAID is supporting the most comprehensive effort to date to strengthen capacities for improved detection, identification, and characterization of priority zoonotic diseases, and spillover risk for emerging threats

in the world's most vulnerable hotspots for disease emergence. In 12 African and four Asian countries, the PREDICT project has tested samples from 15,118 animals and 2,316 humans for high priority viral families, such as corona-, filo-, flavi-, influenza-, and paramyxoviruses, which are associated with high consequence outbreaks, such as Ebola, Marburg, influenza, and Middle East respiratory syndrome coronavirus. Results from Africa in 2018 include the identification of 17 new viruses and 26 existing viruses in new geographic areas or species, which will be prioritized to determine which viruses to characterize to understand if they may pose risks to humans. In addition, PREDICT conducted in-depth behavioral interviews with more than 1,584 individuals to help identify the enabling behaviors and practices associated with transmission of priority zoonotic diseases and other emerging threats.

**The Public Health Emergency Management Fellowship Trains Emergency Managers:** U.S. CDC established the PHEM Fellowship in 2013 in response

to an increased demand for assistance from countries that are seeking to strengthen their PHEM capacity. During the four-month program, PHEM Fellows receive advanced training in all major functional areas of public health emergency management. The PHEM Fellowship participation has directly affected countries' ability to reduce the time between the notification of an emergency and activation of the national public health emergency operations centers (PHEOC). After completion of the program, the PHEM Fellowship alumni have been promoted into roles such as PHEOC Manager in Côte d'Ivoire, PHEOC Operations Chief in Senegal and Guinea, Incident Manager for an avian influenza outbreak in Cameroon, Ebola Response Manager in the DRC, and other PHEM functional area positions. In 2018, WHO specifically requested a French-speaking PHEM Fellowship graduate through a Global Outbreak Alert and Response Network (GOARN) agreement to work on the Ebola response in the DRC. As a result, this PHEM fellowship graduate from Burkina Faso was deployed in response to the Ebola outbreak in the DRC. As of December 2018, 96 PHEM Fellows have graduated from 35 countries.

#### **Risk Communication and Community Engagement:**

Risk communication is critical to an effective outbreak response, addressing both the communication of risk and active engagement with affected communities. In 2018, USAID partners helped develop strategies, guides, and tools in Côte d'Ivoire, Ethiopia, Sierra Leone, and Uganda, and launched similar work in the DRC, Guinea, Mali, and Senegal. Several countries utilized their risk communication capacities to respond to zoonotic disease outbreaks and viral discoveries. For example, in Sierra Leone, following the discovery of a new Ebola virus in bats, the communication program worked with the government and others to develop and refine the booklet "How to Live Safely with Animals," a tool that was used to address community concerns related to the newly discovered Bombali virus. In Uganda, USAID's program helped to respond to that country's anthrax outbreak by working with the government and village health teams to align messages and materials and develop visuals and radio messages. Following the outbreak of Ebola virus disease in the eastern DRC, the communication partner in Uganda helped community structures disseminate Ebola focused messages, films, and materials, reaching almost 50,000 people in six high risk districts. Finally, projects in Côte d'Ivoire and other countries are developing real time tracking systems

to address rumors, misinformation, and community concerns regarding infectious disease threats.

#### **Global Emergency Alert Response Service**

**(GEARS):** A disease outbreak anywhere in the world can spread to the United States in 36 hours or less. U.S. CDC's GEARS detects and monitors events around the world that could be a serious risk to public health. Each day, approximately 30-40 public health threats are monitored. By maintaining a deployment-trained workforce drawn from across CDC that is ready to deploy anywhere in the world in response to global public health emergencies, GEARS has supported response efforts in more than 75 countries since 2015, including 51 countries in 2017 alone. As 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 U.S., GEARS links partners and enhances collaboration during response activities.

**Discovery of a New Ebola Virus:** As part of the USAID supported PREDICT project, a new Ebola species, the Bombali virus, was discovered in healthy bats roosting in people's homes. The virus, announced by Sierra Leone on July 25, 2018, represents the sixth species within the Ebola family and is the first Ebola species to be discovered before an outbreak in humans. While no direct evidence exists at this time to suggest the new virus has ever infected humans or livestock, USAID partners have developed communications materials to help communities in Sierra Leone proactively reduce their risk of exposure to Ebola and other viruses originating in bats and other animals. The discovery of the new virus will also help Sierra Leone and neighboring countries update their diagnostics to ensure they can detect all Ebola viruses, and set up early-warning human and livestock surveillance in communities where there are high contact rates with bats.

**Detection of other viral disease threats:** Marburg virus was detected in fruit-eating rousette bats from three districts in Sierra Leone. This discovery was made and reported simultaneously to the Government of Sierra Leone by the USAID Predict program (University of Makeni and University of California, Davis) and Njala University in collaboration with U.S. CDC. Marburg virus is in the same viral family as the Ebola virus with similar high case fatality. It's the first time

Marburg has been detected in West Africa. Also, with support from the Predict program, the government of Liberia, in 2018, detected the Ebola Zaire virus in a fruit bat, indicating this deadly virus still poses a threat to the country. This discovery also provides further evidence that these bats may have been the animal host for the Ebola epidemic of 2014-15.

#### **Addressing the Threat of Avian Influenza in**

**Ethiopia:** The highly pathogenic avian influenza (HPAI) H5N8 strain is a major threat to Ethiopia due to its spread to the Middle East and Uganda. With USAID support, FAO helped Ethiopia develop an HPAI surveillance plan and trained laboratory staff in collecting and testing samples. Beginning in early 2018, USAID supported three regional veterinary labs to conduct active surveillance in wild resident and migratory water fowls and domestic chickens in high risk areas. The three laboratories coordinated their surveillance programs with the Ethiopian Public Health Institute. While the staff from the regional veterinary labs sampled chickens for AI, the Ethiopian Public Health Institute staff looks for flu-like symptoms among the owners of the chickens. This is a promising multi-sectoral, One Health approach that addresses a major new threat to Ethiopia.

**GHSA Symposium in Indonesia:** Following Afghanistan's request for GHSA membership in December 2017, the Department of State supported a Biosecurity and Biosafety Symposium in Jakarta from July 10-12, 2018 to facilitate consultations on advancing biosecurity and biosafety capacities in Afghanistan by leveraging GHSA implementation. Indonesia, as a GHSA Steering Group member and former chair, was an ideal host country to provide a breadth of experience on multiple GHSA action packages and support Afghanistan's onboarding as a new member. 12 delegates from Afghanistan, representing the public and nongovernmental sectors in health, agriculture, and policy attended the consults; shared the results of their JEEs; the challenges they were facing in implementing biosecurity, biosafety and immunization programs; and their draft NAPHS. As a result of collaboration in the lead up to and following the Symposium, the Government of Afghanistan (GOA) prioritized Action Packages and provided a draft costed national action plan for health security through an official letter to the GHSA Steering Group in June 2018. The GOA also identified the Ministry of Public Health as the focal point for the IHR implementation and GHSA in Afghanistan. Additionally, both Indonesia

and Afghanistan agreed to maintain communication and efforts to support GHSA implementation.

#### **Training Programs Leverage Academia to Enhance Animal Health Workforce:**

For a third successive year, USDA collaborated with Iowa State University and Michigan State University to support the USDA Faculty Exchange Program for African Veterinary Science helping to improve veterinary curricula and instruction at the participants' universities. 14 educators from five African countries participated in 2018 to improve their teaching and research methods and technical expertise in their respective subject areas. Beyond the host universities, the African participants also visited U.S. laboratories, government offices, and private farms and agribusinesses for experiential learning about applications of veterinary sciences and animal health systems in the United States. Following the 2018 program, USDA and its partners began planning a regional workshop to take place in August 2019 for the alumni to re-convene, share best practices, and explore opportunities for ongoing peer-to-peer professional development in the future. Since 2016, USDA has engaged 38 U.S. faculty mentors and supported training for 38 faculty members from six African countries (Ethiopia, Ghana, Kenya, Nigeria, Tanzania, and Uganda) through this program.

#### **Development of a Public Health Emergency**

**Operations Center in Cameroon:** The Department of Defense's Biological Threat Reduction Program (BTRP) partnered with Cameroon to develop a PHEOC. The BTRP supported the design, construction, and equipping of Cameroon's PHEOC in Yaoundé. The PHEOC will serve as the focal point for reporting and managing health emergencies within Cameroon and increase Cameroon's capacity to detect, diagnose, and report disease outbreaks, whether intentional or naturally occurring. The PHEOC will also enhance Cameroon's ability to share bio-surveillance data throughout the country and will allow for internal coordination across ministries. With this new capability, Cameroon is poised to be a regional leader in bio-surveillance and respond to future outbreaks in Central Africa.

#### **Using a One Health Approach to Protect Health:**

In 2018, U.S. CDC experts helped strengthen global health security and capacity to prevent zoonotic diseases by collaborating with partners to conduct One Health Zoonotic Disease Prioritization Workshops in multiple countries and, for the first time, regions. The first regional workshops were held for the





Economic Community of West African States, with 15 member countries. U.S. CDC experts also facilitated national zoonotic disease prioritization workshops in Mozambique, Ghana, and Uzbekistan. In Uzbekistan, they pilot tested a new toolkit to help the country develop a One Health strategy to prevent the diseases identified as being high priorities. Commonly prioritized diseases worldwide include rabies, brucellosis, anthrax, and viral hemorrhagic fevers like Ebola and Marburg. By prioritizing the zoonotic diseases that pose the biggest health threats, countries can more efficiently build their laboratory capacity, conduct disease surveillance, plan outbreak response and preparedness activities, and create disease prevention strategies to reduce illness and death in people and animals using a multi-sectoral, One Health approach.

**Keeping Cool and Improving Specimen Transport through Repurposing Advanced Technology:** Poor specimen transport networks can take days to move biological samples from their collection site to the testing laboratory and lead to sample deterioration. U.S. CDC partnered with the Association of Public Health Laboratories and Global Good, a technology company, to modify existing vaccine storage technology and provide a functional cold chain system for laboratory sample transport in resource poor environments. This modified design can provide cold chain stability for up

to 30 days and allows for triple packaging of the samples within a lockable chamber. These cold chain systems, established through U.S. CDC's collaboration with innovative companies and trusted international cross-agency partners, can improve laboratory capacity and protect the world from dangerous pathogen outbreaks.

**International Reagent Resource:** To ensure that public health laboratories have the capacity to test samples quickly and accurately to prevent the spread of infectious diseases, U.S. CDC's International Reagent Resource expanded beyond an existing influenza program to provide reagents and test kits for an additional 20 respiratory, vaccine preventable, and diarrheal pathogens to 24 countries. Access to these reagents provides qualified labs with the materials to carry out basic research and develop improved diagnostic tests, vaccines, and detection methods for a wide array of infectious disease threats. In 2018, countries ordered more than 1,100 non-influenza viral and bacterial reagents and ancillaries through the International Reagent Resource. This investment often allows the requesting country to use the International Reagent Resource for sustainable detection of pathogens with reduced USG support.

## Public Diplomacy and Stakeholder Engagement

Collaboration across the USG, NGOs, and private sector partners from around the world is critical to the success of the GHSA. In 2018, the USG engaged in effective public diplomacy and active outreach through numerous international bilateral and multilateral initiatives to advance U.S. and broader GHSA objectives. The examples below highlight some of the collaborations and engagements that the U.S. undertook to advance global health security.

### **Science Envoy for Health Security Engages Key International Partners and Media:**

The USG named Dr. Michael Osterholm, internationally recognized scientist and infectious diseases expert, as a Science Envoy for Health Security. In this capacity, Dr. Osterholm forged critical relationships with priority countries in Africa and Asia, strengthening relationships and collaborations around issues of vector-borne diseases, antimicrobial resistance, and pandemic preparedness. While visiting Indonesia, Dr. Osterholm stressed the importance of vaccinations to ensure children's health, and his comments received a broad positive response in the national press.

### **Building Health Security through Public Private Partnerships (PPP):**

The USG, in cooperation with the private sector, convened two regional conferences to highlight the value of building PPP for global health security. The meetings, held in Africa and Asia, served as forum for governments, NGOs, and the private sector to share best practices, lessons learned, and common challenges in working together on health security activities. Participants discussed their experiences engaging in this topic, and key themes emerged during the first interactive session that focused on policy, communication, and finance challenges. Common messages included: the importance of transparency when initiating and defining the scope of PPP discussions, the need for overarching terms of reference or policies that support these relationships, the concerns around trust and motivation of the other party (government official or business representative), and the need to identify the shared value for health security PPPs.

In 2018, the Private Sector Roundtable (PSRT) continued to convene a diverse coalition of companies to work toward our shared goal of health security and expand the role and contributions of the private sector in this space. Having been instated as the singular private sector member of the GHSA Steering Group, the PSRT has become a trusted partner in collaborations with governments and other GHSA stakeholders. Notably, the PSRT began a formal partnership with the Ministry of Health of Uganda, offering support for capacity building across areas including data literacy, diagnostics for AMR, biosafety and biosecurity, communications, and monitoring and evaluation. The partnership will serve as a model for future public-private collaborations for GHSA.

### **Promoting a New Generation of Leaders in Global Health Security:**

The U.S. continued to support NextGen efforts to expand its network of young to







mid-career professionals working to advance the goals of the GHSA through social media messaging in key partner countries. NextGen members engaged with local governments in the WHO JEE process and implemented global health security activities in regional working groups in the Americas and Africa. In May, the NextGen promoted health security in the Americas through joint participation with USG representatives at the 10th Regional Scientific Conference of the Americas organized by the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). Additionally, the NextGen collaborated with the Virtual Student Foreign Service Fellows of the DOS to promote a global activity for the 2018 Infectious Disease Mapping Challenge. Their efforts helped garner more than 30 entries from individual and group projects utilizing global positioning systems skills to visualize epidemiological data for creative health maps.

**GHSA Consortium Educates Congressional Leaders and Policy-makers:** The GHSA Consortium (GHSAC), in partnership with public and private sectors, convened senior leaders from USAID, U.S. CDC, the DoD, the USDA, and others for a discussion and educational briefing about how USG agencies are addressing significant global health security challenges and achieving results through results-oriented global partnerships like GHSA. This event, along with others coordinated by GHSAC, strengthened the critical role of collaboration and relationship-building between governments, the private sector, and civil society stakeholders.



## Looking Forward

### **GHSA 2024**

GHSA 2024, the next five-year iteration of the GHSA, was officially launched at the fifth GHSA Ministerial Meeting held November 6-8, 2018 in Bali, Indonesia. The launch concluded a year-long, highly consultative GHSA 2024 development process led by the Steering Group and involved the global GHSA community through questionnaires, draft reviews, virtual town hall meetings, and other dialogues. The U.S. chaired the development of the overarching GHSA 2024 Framework, which maintains elements central to the first five-year iteration of GHSA, such as the commitment to high-level engagement, multi-sector interactions, and a focus on achieving measurable progress. The GHSA 2024 Framework also updates and adds new elements to enhance its effectiveness, drawing on lessons from the first five years. For example, GHSA 2024 expands the existing GHSA partnership beyond countries to include multilateral organizations and non-governmental stakeholders as full members, giving all members the opportunity to participate and lead in groups such as the newly formed Task Forces and the Steering Group.

The United States will join Italy, Saudi Arabia, Republic of Korea, Senegal, Thailand, Indonesia, Kenya, GHSAC, and Private Sector Roundtable as permanent Steering Group members. Additional rotating members will serve for two years, and from 2019 to 2020 members will include Australia, Canada, Finland, Netherlands, Argentina, and the World Bank.

Over its five-year mandate, GHSA 2024 will work with relevant partners to support national, regional, and global efforts in evaluation, planning, resource mobilization, and implementation of activities that build health security capacity, with greater focus on sustainability, mutual accountability, and impact. The GHSA partners will collectively work toward a common, overarching 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, such as those conducted within the WHO IHR M&E Framework. 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.

### **The USG Global Health Security Strategy (GHSS)**

Consistent with United States National Security Strategy, the GHSS supports the following primary goals to strengthen partner country global health security capacities using specific standardized metrics, increase international support for global health security, and prepare and make resilient the homeland against global health security threats. As outlined in the GHSS, the United States will continue to provide bilateral support to select partner countries, with the goal of eventual transition to country ownership. In addition, the United States will leverage diplomatic channels and multilateral organizations to increase the donor pool and advocate for resources from partner countries to build national health security capacities. Finally, the United States will continue to implement the United States Health Security National Action Plan to improve domestic health security. Whenever feasible, the United States will partner with donor nations, international organizations, and other stakeholders to maximize overall support for global health security capacity building.



## Final Note:

Despite the progress achieved in global health security, many challenges remain and much more needs to be done to make the world secure from infectious disease threats. This state of affairs is exemplified in the global responses to the two recent Ebola outbreaks in the DRC, described below.

The effective international response to the **2018 DRC Ebola Outbreak in Equateur** (compared to the 2014-15 West Africa epidemic) demonstrated improved coordination, strengthened laboratory and diagnostic capabilities, and new interventions (including the use of an investigational vaccine). This response also incorporated social and anthropological perspectives to a greater extent than in previous outbreaks. WHO, with the help of the USG and other partners, supported the initiation of preventive measures in neighboring countries, including the development of a standardized readiness scorecard to assess Ebola prevention, containment, and response preparedness levels in these at-risk countries. One of the most important

lessons learned from the 2014-2016 West Africa Ebola outbreak was the importance of integrating social sciences in public health emergencies to improve risk communication and community engagement practices.

The **Ebola outbreak in the eastern DRC**, which began August 1, 2018, is still not under control (as of June 2019) with increasing case figures within multiple outbreak hotspots. It is now the second largest in recorded history. This outbreak has proven to be a difficult response environment, due to years of conflict, political instability, persistent pockets of poor community acceptance, and hesitation to participate in response activities. This has contributed to the delayed detection and late presentation of cases to Ebola treatment facilities, and a high proportion of community deaths among reported cases. The USG, using a whole-of-government effort, is working closely with the Government of DRC, the WHO and other UN organizations, and other humanitarian partners to stem the outbreak.

# Annex

| U.S. Government<br>Departments, Agencies,<br>and Offices  | Key Roles as defined by the Executive Order – Advancing the Global Health Security Agenda to<br>Achieve a World Safe and Secure from Infectious Disease Threats (November 4, 2016)<br>In conjunction with the other relevant agencies, departments, and agencies will:  |
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| <b>Executive Office staff<br/>(National Security<br/>Council, Office of Man-<br/>agement and Budget,<br/>and Office of Science<br/>and Technology Policy)</b> | <ul style="list-style-type: none"> <li>• Convene a GHSA Interagency Review Council (Council) to perform the responsibilities described in the Executive Order – Advancing the Global Health Security Agenda to Achieve a World Safe and Secure from Infectious Disease Threats.</li> <li>• Serve as chair of the Council as designated by the Assistant to the President for National Security Affairs, in coordination with the Assistant to the President for Homeland Security and Counterterrorism.</li> </ul>  |
| <b>Department of State</b>  | <ul style="list-style-type: none"> <li>• Engage Chiefs of Mission, country teams, and regional and functional bureaus within the Department of State to promote the GHSA with international partners and to facilitate country-level implementation of U.S. programmatic activities.</li> <li>• Monitor and evaluate progress toward achieving GHSA targets, determine where more work is needed, and work with agencies and international partners to identify the partners best placed to achieve the GHSA targets for countries the United States has made a commitment to assist.</li> <li>• Facilitate implementation and coordination of Department of State programs to further the GHSA.</li> <li>• Coordinate planning, implementation, and evaluation of GHSA activities with the U.S. Global Malaria Coordinator at the USAID, and the U.S. Global AIDS Coordinator at the Department of State in the countries the United States has made a commitment to assist.</li> <li>• Lead diplomatic outreach, including at senior levels, in conjunction with other relevant agencies, to build international support for the GHSA.</li> <li>• Work, in conjunction with other relevant agencies, with other donors and non-governmental implementers in partner countries in order to leverage commitments to advance the GHSA with partners.</li> <li>• Coordinate, in conjunction with other relevant agencies, the U.S. Government relationship with foreign and domestic GHSA non-governmental stakeholders, including the private sector, non-governmental organizations, and foundations, and develop, with consensus from the Council, an annual GHSA non-governmental outreach strategy.</li> </ul> |
| <b>USAID</b>  | <ul style="list-style-type: none"> <li>• Facilitate implementation and coordination of USAID programs to further the GHSA, as well as provide technical expertise to measure and evaluate progress in countries the United States has made a commitment to assist.</li> <li>• Provide, in conjunction with other agencies, strategic technical guidance for achieving GHSA targets.</li> <li>• Work, in conjunction with interagency partners and the in-country GHSA teams, with other donors and non-governmental GHSA implementers in partner countries in which USAID programs are active in order to coordinate and leverage commitments to advance the GHSA with partners.</li> </ul>   |
| <b>Department of Defense</b>  | <ul style="list-style-type: none"> <li>• Facilitate implementation and coordination of Department of Defense programs to further the GHSA, as well as provide technical expertise to measure and evaluate progress in countries the United States has made a commitment to assist.</li> <li>• Work, in conjunction with interagency partners and the in-country GHSA team, with other donors and non-governmental implementers in partner countries in which Department of Defense programs are active in order to coordinate and leverage commitments to advance the GHSA with partners.</li> <li>• Coordinate and communicate, in conjunction with other relevant agencies, with defense ministries with regard to the GHSA, including at the GHSA Ministerial and Steering Group.</li> </ul>   |



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| <b>Department of Health and Human Services</b>  | <ul style="list-style-type: none"> <li>• Represent, in conjunction with other relevant agencies, the United States at GHSA Ministerial and Steering Group meetings and in working with G7 and G20 Health Ministers on the GHSA, and coordinate U.S. Government support for those activities.</li> <li>• Provide overall leadership and coordination for the GHSA Action Packages, which consist of country commitments to advance and share best practices toward specific GHSA targets, including serving as the primary point of contact for the Action Packages, providing support to Action Package leaders, and tracking overall progress on the Action Packages.</li> <li>• Coordinate U.S. Government support for and participation in external evaluations, including the WHO JEE tool and the Alliance for Country Assessments for Global Health Security and IHR Implementation.</li> <li>• Represent, in conjunction with other relevant agencies, the United States in coordination and communication with the WHO regarding the GHSA.</li> <li>• Facilitate, no less than every 4 years, the request for an external assessment, such as the process outlined within the WHO JEE tool, of U.S. Government domestic efforts to implement the IHR and the GHSA and work to publish the assessment to the general public.</li> <li>• Consolidate and publish to the general public an external assessment of U.S. domestic capability to address infectious disease threats and implement the IHR, including the ability to achieve the targets outlined within the WHO JEE tool and including the gaps identified by such external assessment.</li> </ul> |
| <b>U.S. Centers for Disease Control and Prevention</b>  | <ul style="list-style-type: none"> <li>• Facilitate implementation and coordination of U.S. Centers for Disease Control and Prevention programs to further the GHSA, as well as provide technical expertise to measure and evaluate progress in countries the United States has made a commitment to assist.</li> <li>• Provide, in conjunction with other agencies, strategic technical guidance for achieving GHSA targets.</li> <li>• Provide, in coordination with the Department of Health and Human Services, strategic technical support for and participate in external assessments, including the WHO JEE tool, and the Alliance for Country Assessments for Global Health Security and IHR implementation. Work, in conjunction with interagency partners and the in-country GHSA team, with other donors and non-governmental implementers in partner countries in which the U.S. Centers for Disease Control and Prevention programs are active in order to coordinate and leverage commitments to advance the GHSA with partners.</li> </ul>  |
| <b>Department of Justice, Attorney General acting through the Federal Bureau of Investigation</b> | <ul style="list-style-type: none"> <li>• Serve, in conjunction with other relevant agencies, as the U.S. Government lead for GHSA targets relating to linking public health and law enforcement, and coordinate with INTERPOL on the GHSA and its successful implementation.</li> <li>• Facilitate implementation and coordination of FBI programs to further the GHSA, as well as provide technical expertise to measure and evaluate progress in countries the United States has made a commitment to assist.</li> <li>• Work, in conjunction with interagency partners and the in-country GHSA team, with other donors and non-governmental implementers in partner countries in which FBI programs are active in order to coordinate and leverage commitments to advance the GHSA with partners.</li> </ul>  |
| <b>Department of Agriculture</b>  | <ul style="list-style-type: none"> <li>• Represent, in conjunction with other relevant agencies, the United States in coordination and communication with the FAO and OIE with regard to the GHSA.</li> <li>• Facilitate implementation and coordination of Department of Agriculture programs to further the GHSA, as well as provide technical expertise to measure and evaluate progress in countries the United States has made a commitment to assist.</li> <li>• Work, in conjunction with interagency partners and the in-country GHSA team, with other donors, contributing international organizations, and non-governmental implementers in partner countries in which Department of Agriculture programs are active in order to coordinate and leverage commitments to advance the GHSA with partners.</li> </ul>   |
| <b>Department of Homeland Security</b>  | <ul style="list-style-type: none"> <li>• Assess the impacts of global health threats on homeland security operations.</li> <li>• Lead, in conjunction with the Secretary of Health and Human Services, the Secretary of State, and the Secretary of Agriculture, U.S. Government GHSA activities related to global health threats at U.S. borders and ports of entry.</li> </ul>   |

