

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

Photos

Page 2: PMI Indonesia

Page 5: Pascale Krumm/CDC (**left**), FAO/Rinah Wangila (**right**)

Page 7: CDC Tanzania Office

Page 9: AFROHUN Senegal

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Scenesetter

At the time this report was prepared, the world has faced multiple global health, humanitarian, and security crises. The COVID-19 pandemic alone demonstrates the grave threat of epidemics and pandemics to global health, security, economies, and societies, and that no country is fully prepared for emerging biological threats. As of October 3, 2022, more than 6.5 million people have died from COVID-19 and more than 615 million people have been infected with COVID-19 in more than 200 countries¹. The pandemic triggered a sudden global economic downturn and widened existing inequities. Beyond the already high cost of responding to the COVID-19 pandemic, the International Monetary Fund has estimated that prolonged pandemic recovery could cost the global economy \$5.3 trillion over the next five years². The pandemic has also set back many public health indicators including missed routine vaccinations for diseases such as measles and polio, delayed or missed treatment for known chronic conditions, maternal and child health care, and a myriad of undiagnosed health conditions, as well as profound impacts on mental health.

Amid this pandemic, the world remains susceptible to other outbreaks as evidenced by Ebola in the Democratic Republic of the Congo, Guinea, and now

Uganda, cholera in Yemen and Haiti, Lassa fever in Nigeria, Zika in India, Marburg in Ghana, and Crimean-Congo Hemorrhagic Fever in South Africa. These outbreaks also impact health, economies, and societies, and if not stopped at their source, risk becoming regional or even global threats. This has been witnessed most recently with mpox – a virus the United States has helped combat together with African partners for years – spreading to over 80 non-endemic countries.

These threats collectively make the case that strengthening global health security, the capacities that countries need to prevent, detect, and respond to infectious disease threats, remains an undeniable necessity to help stop outbreaks at their source. Strengthening these capacities requires dedicated resources and sustained high-level political attention paired with robust norms grounded in transparency and accountability to transform good intentions and platitudes into capacities. The United States implements a multipronged approach to global health security that includes marshaling political will, developing global norms, enhancing sustainable multilateral financing, and strengthening capacities in partner countries.



Simulation exercise carried out by PMI CP3 programme to train volunteers with the tools which will be used to collect data in their communities.
Photo: PMI Indonesia

A Multipronged Approach to Global Health Security

Building capacity in countries is a central component of the U.S. Government's multipronged approach to strengthening global health security that also includes marshaling political will, strengthening global norms, and enhancing sustainable multilateral financing.

The Evolving Global Health Security Architecture

Political Will: Recognizing the need to galvanize and maintain political will around the globe, the Biden-Harris Administration has exercised global leadership by convening a series of high-level engagements to keep COVID-19 response and global health security at the top of the agenda. This includes two Presidential COVID-19 Summits, as well as Health, Development, and Foreign Affairs ministerial meetings convened by Cabinet secretaries. These senior-level meetings resulted in stronger policy, financial, and technical commitments to: 1) vaccinate the world, including those most vulnerable; 2) save lives now by expanding equitable access to therapeutics, diagnostics, and oxygen; and 3) develop better health security preparedness and response for the future.

Global Norms: The United States also works to strengthen global norms and modernize existing institutions to address gaps revealed by COVID-19 and other health security threats, including by strengthening and reforming the World Health Organization and enhancing International Health Regulations (IHR) implementation. Beyond technical improvements, the United States is advocating that the IHR be amended to clarify early-warning triggers for international response to pandemic threats, promote rapid information sharing, and improve decision-making around determinations of public health emergencies. Proposed amendments

are designed to provide countries with the timely information they need to act in public health emergencies, and the IHR and their amendments by design reinforce the national sovereignty of States. At the same time, the United States is committed to developing a new international pandemic instrument to support more rapid and equitable pandemic prevention, preparedness, and response, including through improved approaches and mechanisms rooted in equity, transparency, accountability, and using One Health approaches.

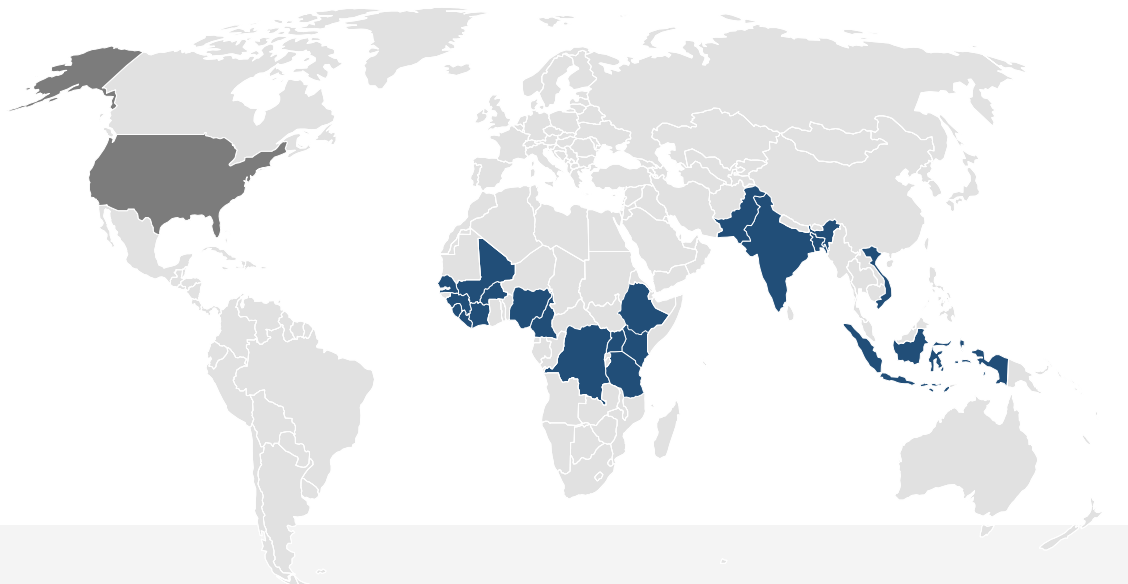
Multilateral Sustainable Financing: The World Bank Board formally approved a new Financial Intermediary Fund for Pandemic Prevention, Preparedness, and Response (FIF) in June 2022. Strong and relentless leadership from the United States, allies and partners, including through the Indonesia and Italy G20 presidencies, has brought us to this significant milestone. Initial U.S. Government announcements of \$450 million for the FIF helped spur a total of more than \$1.2 billion in early investments from more than a dozen countries, philanthropies, and organizations. As requested in the Fiscal Year 2023 Budget, President Biden has called on Congress to provide an additional \$4.75 billion in mandatory and discretionary funds, which will greatly enhance the fund's effectiveness and catalyze additional commitments from others that do not jeopardize ongoing global health investments.

Strengthening Health Security Capacities in Partner Countries

Since 2016, the U.S. Government has identified partner countries to receive dedicated interagency attention to accelerate capacity gains in health security. Partner countries receive U.S. Government program funding and technical assistance, engage with the U.S. Government interagency health teams to support implementation of global health security activities, demonstrate willingness to strengthen their domestic health security in a multisectoral fashion, and maintain positive diplomatic relations with the United States. U.S. departments and agencies operating in partner countries coordinate their activities, including through the Department of State coordinated work-planning and reporting processes. Importantly, the work completed in partner countries is intended to build capacity that can be maintained by the country.

The list of partner countries receiving intensive support from the U.S. Government in 2021 included Bangladesh, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Guinea, India, Indonesia, Kenya, Liberia, Mali, Nigeria, Pakistan, Senegal, Sierra Leone, Tanzania, Uganda, and Vietnam. The list of partner countries is reviewed annually.

This report highlights examples of the impact achieved through the U.S. Government's work to strengthen global health security capacities in these 19 partner countries. Work in the partner countries does not represent the entirety of the U.S. Government's efforts to strengthen global health security. U.S. departments and agencies partnered with more than 40 countries in 2021 to provide coordinated, whole of government operational and technical assistance to build their health security capacities and build equitable health systems.



19 GHS INTENSIVE SUPPORT COUNTRIES

- Bangladesh
- Burkina Faso
- Cameroon
- Côte d'Ivoire
- Democratic Republic of the Congo
- Ethiopia
- Guinea
- India
- Indonesia
- Kenya
- Liberia
- Mali
- Nigeria
- Pakistan
- Senegal
- Sierra Leone
- Tanzania
- Uganda
- Vietnam

Metrics-Based Approach: The Joint External Evaluation (JEE) Progress

The U.S. Government’s global health security efforts are focused on filling gaps across 14 specific technical areas that span multiple sectors and disciplines, including animal and human health, agriculture, and security.

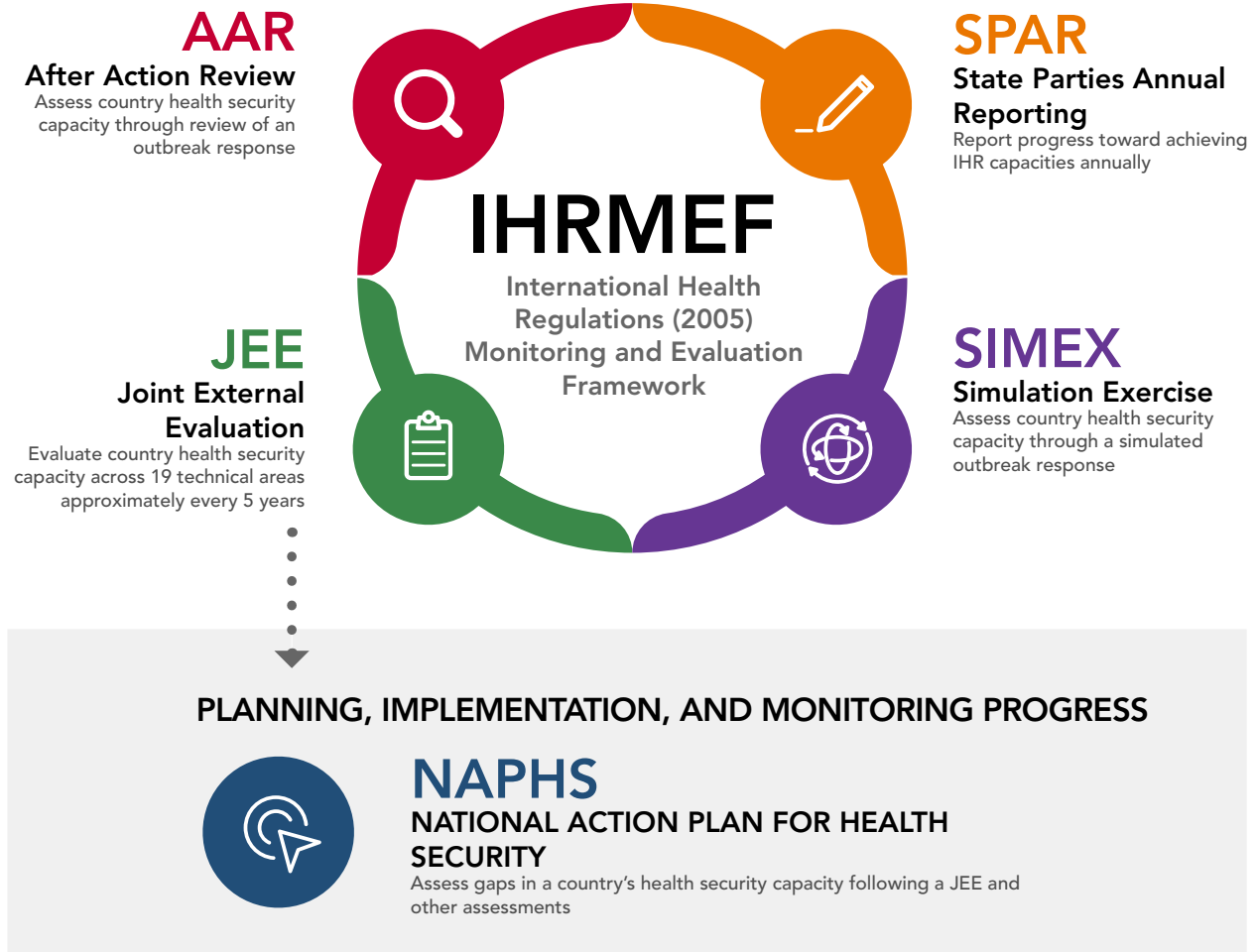


Guinean Red Cross workers and CDC health communicator, Pascale Krumm, check community feedback data from the Goueke health center. Goueke was ground zero of the 2021 Ebola outbreak, where a nurse died from Ebola at the end of January 2021. Photo: Pascale Krumm/CDC



Field training at an animal farm on syndromic surveillance and disease reporting through the Kenya Animal Biosurveillance System (KABS). Photo: FAO/Rinah Wangila

The WHO International Health Regulations Monitoring and Evaluation Framework (IHRMEF) helps establish a country’s baseline health security capacity scores and identify areas that need improvement. This IHRMEF consists of numerous components:



As of November 7, 2022, 184 countries have completed their 2021 IHR State Party Self-Assessment Annual Report (SPAR), 116 countries have completed a Joint External Evaluation (JEE), and an additional 10 countries are planning to undergo a JEE in the coming months. Additionally, in 2022 Thailand became the first country to conduct a second JEE, and the first country to use the JEE 3rd Edition. The World Health Organization (WHO) has worked with countries to complete 175 simulation exercises (SimEx) and 68 After Action Reviews (AARs). JEE results are published online, enabling partner organizations to work with countries in a more coordinated fashion to address health security gaps. Following a JEE, countries are encouraged to develop a National Action Plan for Health Security (NAPHS) with an accompanying budget to address gaps in health security and identify resources required to address those gaps. Approximately 74 countries have made substantial progress in developing a NAPHS.

IMPROVEMENTS TO THE JEE AND SPAR ASSESSMENT TOOLS:

WHO updated the JEE and SPAR tools based on lessons learned from the COVID-19 pandemic. The U.S. government drew on approximately 75 technical experts from across eight departments and agencies to develop a set of high-level recommendations that were highlighted at the WHO's JEE/SPAR Global Consultation in 2021.

Through WHO-organized working groups, countries and partners revised the JEE and SPAR to improve consistency between the JEE and SPAR; emphasize subnational capacity; strengthen underemphasized capacities such as infection prevention and control; and encourage greater multisectorality in the JEE/SPAR processes and technical areas. The updated SPAR tool was published Fall 2021, and the updated JEE tool was released in June 2022.



FELTP Graduate. Photo: CDC Tanzania Office

GHSA 2024 – A Multilateral Initiative to Advance Global Health Security

To help advance global health security capacity building efforts, the U.S. Government aligns its capacity building programs to also support the Global Health Security Agenda (GHSA)³. GHSA is a multilateral initiative that was launched in 2014 to accelerate compliance with the International Health Regulations (IHR) (2005), a legally binding instrument adopted by 196 countries, including the 194 WHO Member States, to strengthen country-level capabilities needed to prevent, detect, and respond to health emergencies.

GHSA addresses natural, deliberate, and accidentally occurring health security threats and because of its strong multisectoral approach, also supports implementation of the Biological and Toxins Weapon Convention, U.N. Security Council Resolution 1540, the World Organization for Animal Health (WOAH) Pathway for Veterinary Services, and other related international frameworks. In 2018, GHSA members renewed the initial five-year initiative (2014-2019) for an additional five years (2019-2024). Presently, more than 70 countries as well as international organizations, non-governmental organizations, and private sector entities are united in a common goal of measurably strengthening global health security. GHSA emphasizes the importance of a whole-of-government and multisectoral effort to build national capacity to prepare for infectious disease threats and biological catastrophes, including human and animal health, agriculture, security, defense, law enforcement, development assistance, foreign affairs, and finance. By investing in health security capacity, GHSA also strengthens health equity and health systems – including strengthening labs, frontline and community health workers, medicines – in many low- and middle-income countries.

Through the Department of Defense, the U.S. Government continuously engages partner nation defense sectors to increase defense sector participation in the Global Health Security Agenda (GHSA) multilateral work, advance dialogue to bridge the military-civilian divide in global health security, and promote international norms and standards on defense engagement in global health security activities under civilian leadership.

A defining element of GHSA 2024 is an overarching target to advance capacities in five technical areas in more than 100 countries by the end of the five-year period. Upon joining GHSA 2024, each country must make a tangible commitment to the initiative. The U.S. Government's commitment to GHSA 2024 is to help reach the 100 country GHSA 2024 Target described below.

The GHSA 2024 Target

By 2024, more than 100 countries will have completed an evaluation of health security capacity and will be implementing activities to address those gaps. These countries will strengthen their capacities and demonstrate improvements in at least five technical areas to a level of 'demonstrated capacity' as measured by relevant health security assessments.

PROGRESS TOWARDS GHSA 2024 OVERARCHING TARGETS IN 2020

Meeting the Target

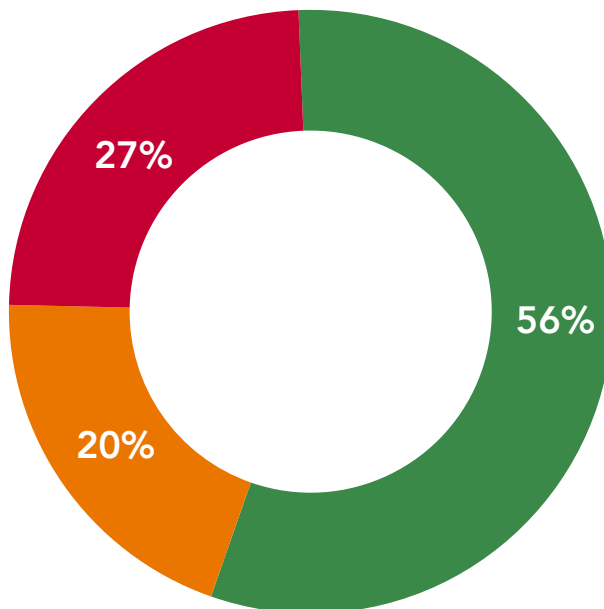
56% Countries that have completed a JEE and have at least 5 Technical Areas with a score of "4" or higher

Close to the Target

20% Countries that have completed a JEE and have 3 or 4 Technical Areas with a score of "4" or higher

Not Achieving Target

27% Countries that have completed a JEE but have fewer than 3 Technical Areas with a score of "4" or higher



114 countries have completed a JEE

The U.S. Government-led GHSA Taskforce on Accountability and Results tracks progress towards the GHSA 2024 Target utilizing JEE and SPAR data and publicly available data from the Global Health Security Index. As of the end of 2020, GHSA is 56% of the way toward meeting the overarching target, meaning that 56 countries meet the target and another 20 countries are close. The United States is working with the GHSA Steering Group to encourage countries to make specific commitments to achieve this goal.



Members of the Africa One Health University Network (AFROHUN) Senegal chapter engage in a training session on gender and One Health. Photo: AFROHUN Senegal

The following sections provide examples of the impact of U.S. Government and partner country investments to strengthen health security capacity. The countries listed below achieved an increase over their baseline capacity scores within a technical area as defined by the JEE. Importantly, U.S. Government activities are helping partner countries improve their scores and achieve benchmarks outlined in their own JEEs and NAPHS.

Shared Outcomes of U.S. Government Investments

The United States and our partners collect and amplify successes of investments with an eye towards preventing outbreaks where possible, detecting and notifying outbreaks rapidly, and when needed taking no-regrets rapid response:



Biosafety cabinet certifier's training at NSF facility in Gurugram. Photo: CDC India Office

P R E V E N T

 **BIOSAFETY AND BIOSECURITY** **11** COUNTRIES

Efforts to improve biosafety and biosecurity capacity helps prevent the accidental release or deliberate misuse of dangerous pathogens.

BANGLADESH can now conduct maintenance and annual certifications of laboratories. As a result of these efforts, the national certification of biosafety cabinets and testing laboratories was rapidly expanded to 52 sites within a few weeks of the COVID-19 outbreak in the country.

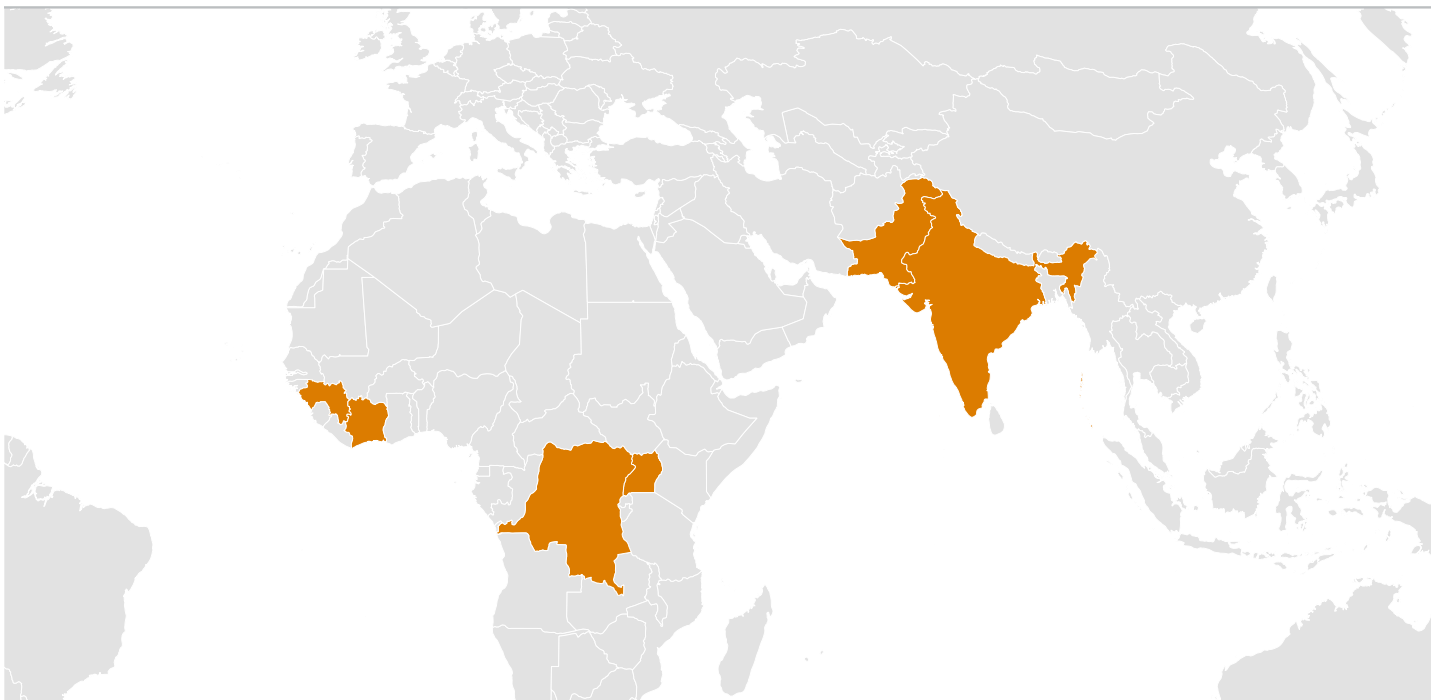
CÔTE D'IVOIRE'S national agriculture laboratory completed an inventory of dangerous pathogens as well as conducted performance assessments of two regional laboratories to improve biosafety and biosecurity practices.

 **ANTI-MICROBIAL RESISTANCE** **16** COUNTRIES

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

DRC'S Drug Regulatory Authority conducted assessments on antimicrobial consumption and antimicrobial stewardship policies and developed a three-year antimicrobial stewardship work plan that was unanimously approved by the Ministry of Health (MOH).

INDIA now conducts and reports on healthcare associated infection (HAI) surveillance in 36 sites, and is conducting training for 475 people from 209 healthcare facilities on HAI surveillance to reduce blood stream, urinary tract, and c-section surgical site infections.



P R E V E N T




IMMUNIZATION

8
COUNTRIES

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

The Public Health Emergency Operations Center in **GUINEA'S** Gbêkê region identified 41 cases of vaccine derived polio across Guinea. 34 Field Epidemiology Training Program graduates supported two rounds of polio vaccinations in 38 districts of the country, reaching nearly 100% of the targeted children.

PAKISTAN implemented a risk communication and community engagement plan for vaccine roll out, helping to improve planning and the response for vaccine communications to address vaccine hesitancy.



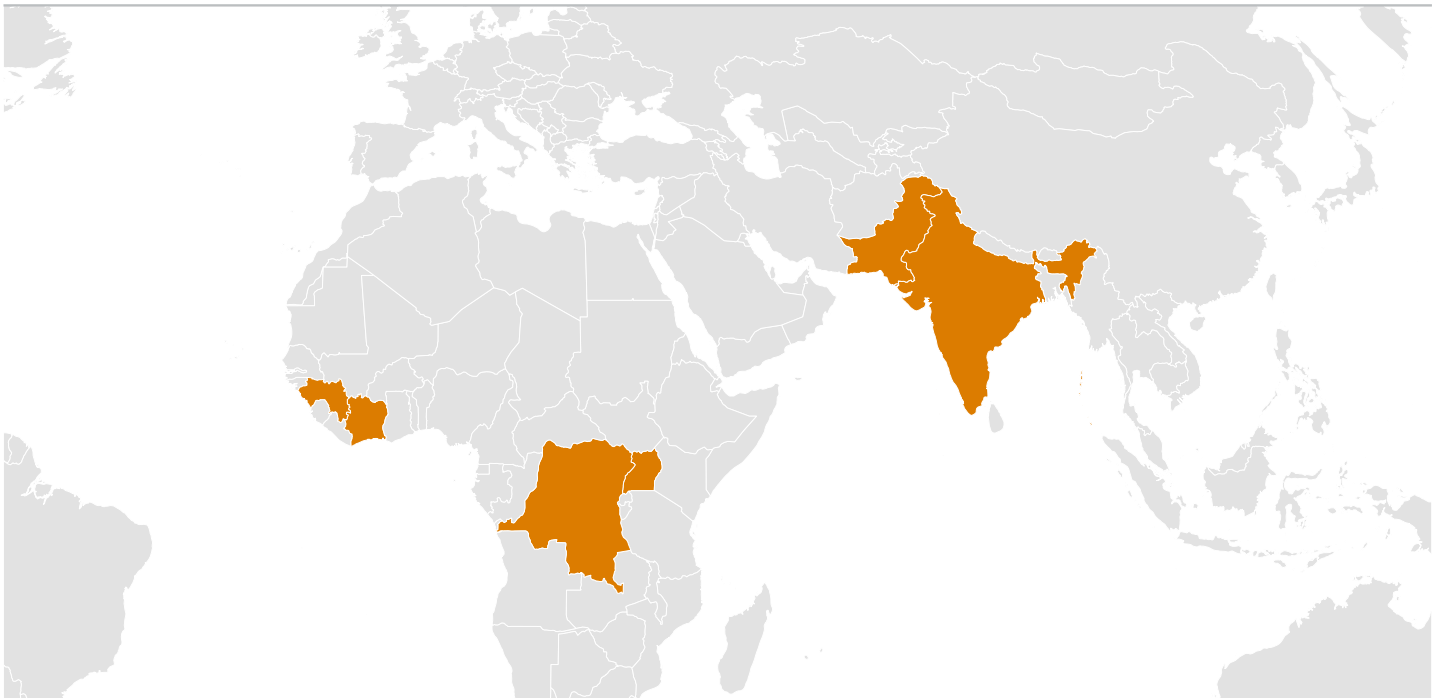
ZOONOTIC DISEASES

16
COUNTRIES

Most infectious diseases are zoonotic. These outbreaks need to be quickly identified in animals to prevent and prepare for possible spread into human and animal populations.

In late July 2021, **GUINEA** confirmed a case of Marburg virus disease in Koundou. Genetic sequencing determined the virus was similar to a strain that caused the largest recorded outbreak to date. A team of experts was quickly deployed to the field and sampled bats, confirming the presence of Marburg virus.

UGANDA finalized guidelines and tools for conducting data quality assessments in the animal health sector, filling a major gap in the national animal health surveillance system. The guidelines and tools will improve the quality of animal health data entry, analysis, and reporting.



D E T E C T



REPORTING

12
COUNTRIES

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

NIGERIA strengthened sustainability of Nigeria CDC surveillance and Emergency Operations infrastructure that improves reporting to WHO.

VIETNAM developed action plans for five provinces to increase the use of the Vietnam Animal Health Information System and improve animal disease data reporting.



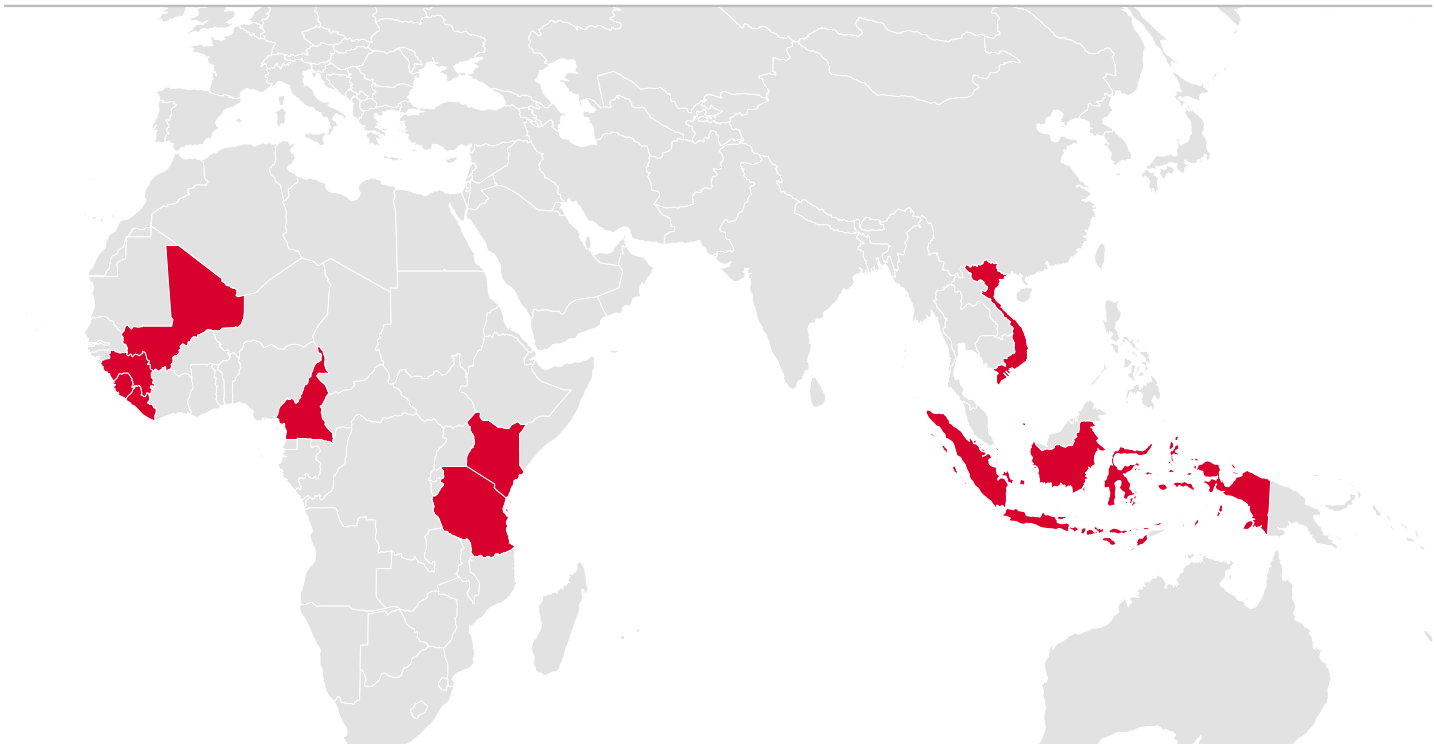
SURVEILLANCE

10
COUNTRIES

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

The **KENYAN** biosafety diagnostics laboratory in Nairobi implemented a strategy that included mass testing campaigns and the testing of truck drivers at all ports of entry, persons in quarantine centers, and international travelers. By the end of August 2021, the laboratory processed nearly 242,000 COVID-19 specimens.

MALI produced a standard community-based surveillance guide and reporting tools for the country. This work is now showing public health impact, leading to the detection of a case of yellow fever in the south of the country.



D E T E C T



**NATIONAL
LABORATORY SYSTEM**

14
COUNTRIES

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

LIBERIA'S sample transport system helped ensure the timely testing of samples and the reporting of dangerous pathogens like viral hemorrhagic fevers. The system safely transported 53 suspected Ebola samples and specimens for Marburg alerts for prompt diagnostics.

In **SIERRA LEONE**, surveillance for priority zoonotic and transboundary animal diseases was implemented country wide. Over 4,700 blood samples were collected from goats, sheep and ducks, processed, and shipped to the Central Veterinary Laboratory for testing.



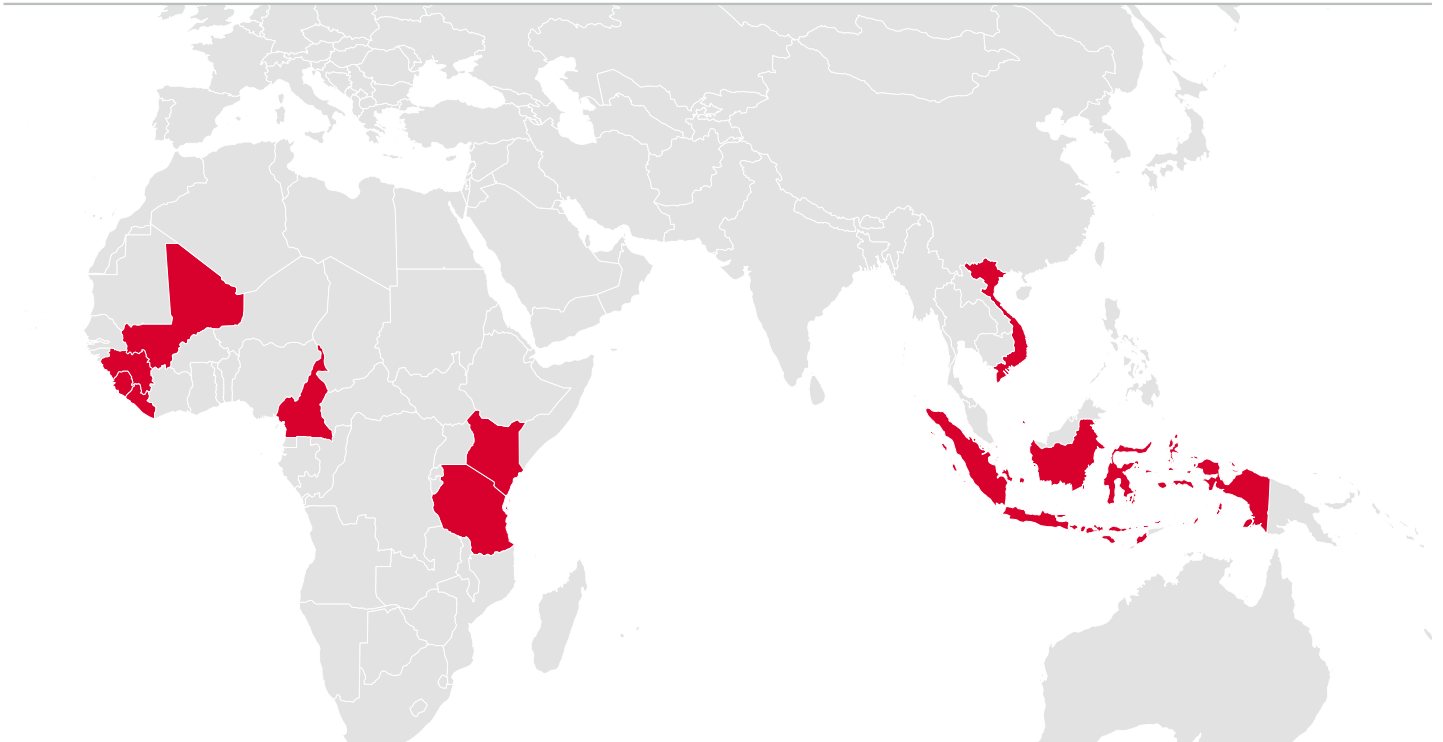
**HUMAN
RESOURCES**

11
COUNTRIES

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

TANZANIA, CAMEROON, and GUINEA each graduated their first cohort of trainees from the In-Service Applied Veterinary Epidemiology Training program, building a capacity of veterinarians to conduct surveillance and outbreak response.

Despite lockdowns and travel restrictions due to a surge in COVID-19 cases, **VIETNAM** trained more than 7,500 healthcare workers in three months on proper infection prevention and control procedures to keep themselves and patients safe.



R E S P O N D



PUBLIC HEALTH AND SECURITY AUTHORITIES

9
COUNTRIES

Planning for public health threats helps countries mount timely, effective, and efficient responses.

In **GUINEA**, collaboration between public health and security authorities has been strengthened through the COVID-19 response, allowing integration of security services into the incident management system.

BURKINA FASO conducted a simulation exercise on a massive arrival of casualties in the capital city of Ouagadougou. This exercise helped enhance collaboration amongst military, firefighter, the Red Cross, and hospital staff; tested contingency plans; and helped review emergency procedures.



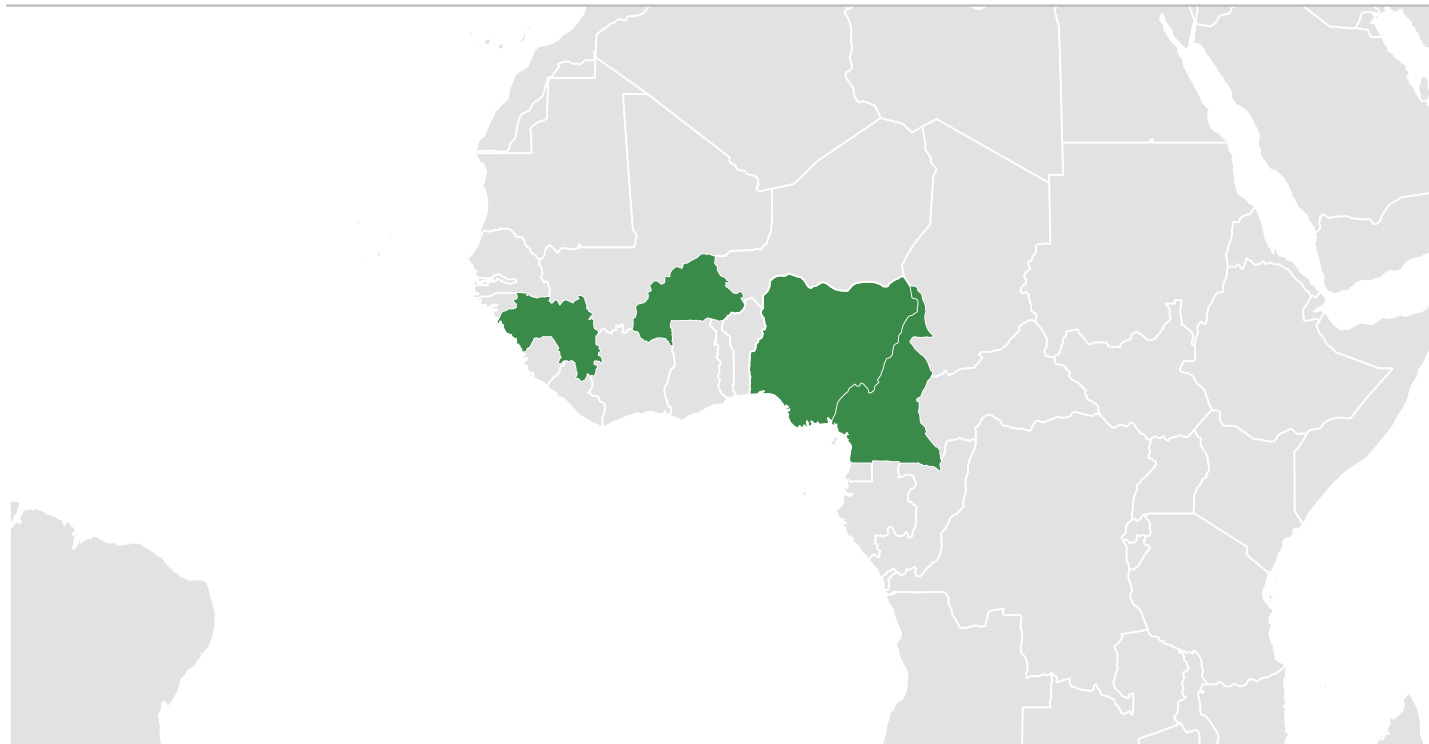
RISK COMMUNICATIONS

8
COUNTRIES

Timely and accurate information exchange can mitigate the negative impacts of public health emergencies.

Between October 2020 and March 2021, **CAMEROON** Red Cross volunteers trained more than 37,900 households, 95,000 people in community group sessions, 33,800 school children, and 4,300 community leaders on the importance of clean water and handwashing in preventing COVID-19, cholera, and polio.

NIGERIA developed a risk communication strategy to address misinformation and conspiracy theories that had been quickly spreading through social media. More than 200,000 community volunteers and media members were provided with accurate COVID-19 information to share.



R E S P O N D



POINTS OF ENTRY

14
COUNTRIES

Having adequate medical services and response capacities at airports, ports, and ground-crossings can help contain the spread of infectious diseases.

ETHIOPIA is mapping animal crossing points at the borders so that they can be used for vaccinating animals against diseases, especially priority zoonotic diseases in livestock.

KENYA, TANZANIA, and UGANDA undertook digitization of travelers' health declaration forms to enable reporting of health and travel related information for international air passengers. The countries also made progress validating transnational truck drivers' COVID-19 test results and sharing results among participating countries.



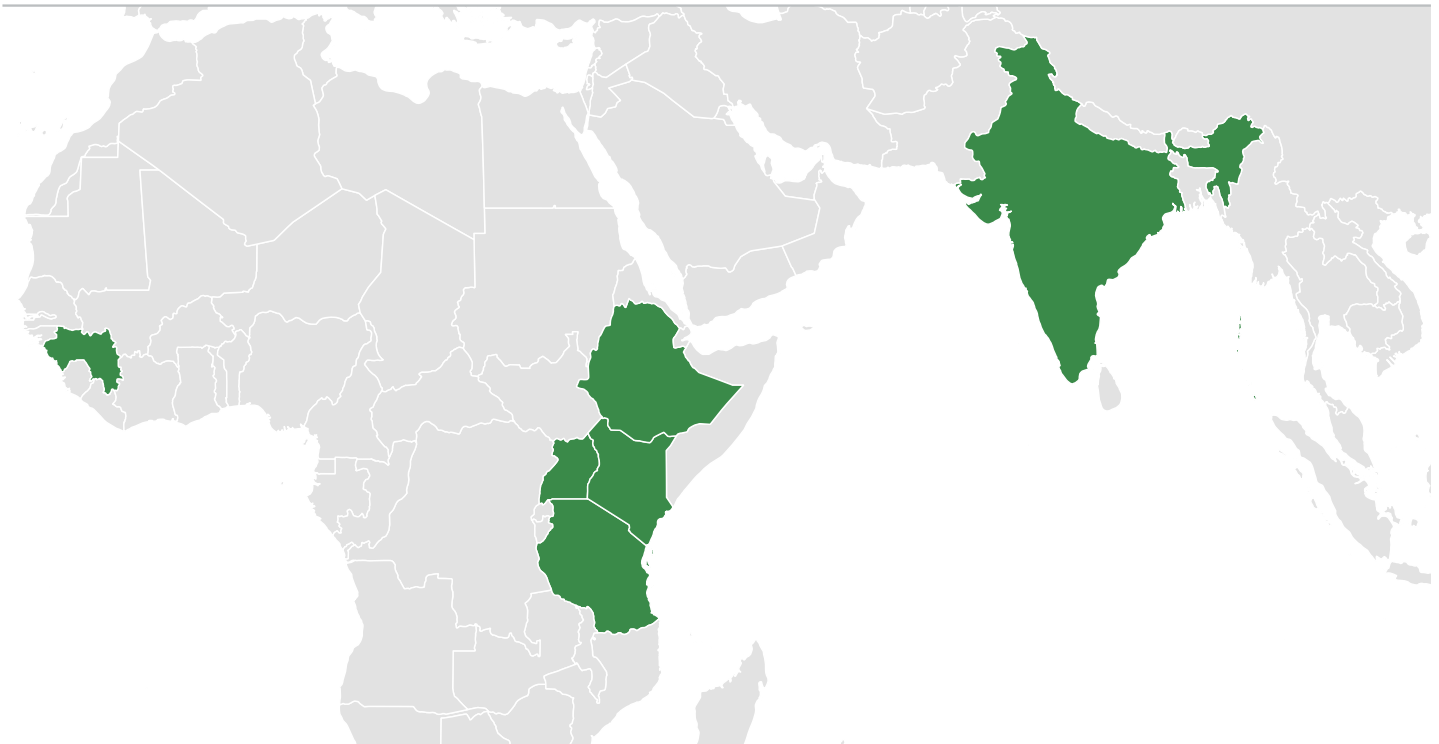
MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

12
COUNTRIES

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

ETHIOPIA developed procedures to support procurement and inventory management of microbiology and bacteriology supplies.

The government of **INDIA** developed and distributed guidelines and best practices for home-based care of COVID-19 including the use of digital tools, telemedicine, and community engagement as a way to extend care for mild, moderate, and recovering patients.



R E S P O N D



**EMERGENCY
RESPONSE
OPERATIONS**

13
COUNTRIES

Emergency Operations Centers bring together experts and stakeholders to efficiently and effectively coordinate responses to emergencies or public health threats.

CAMEROON'S Public Health Emergency Operations Center (PHEOC) was activated for COVID-19, cholera, and a surge in maternal, perinatal, and neonatal deaths. The PHEOC improved and standardized surveillance and response tools to decrease avoidable maternal, perinatal, and neonatal deaths.

ETHIOPIA is revising its National PHEOC guidelines and training materials to improve coordination and management of emergencies at the national and local levels.



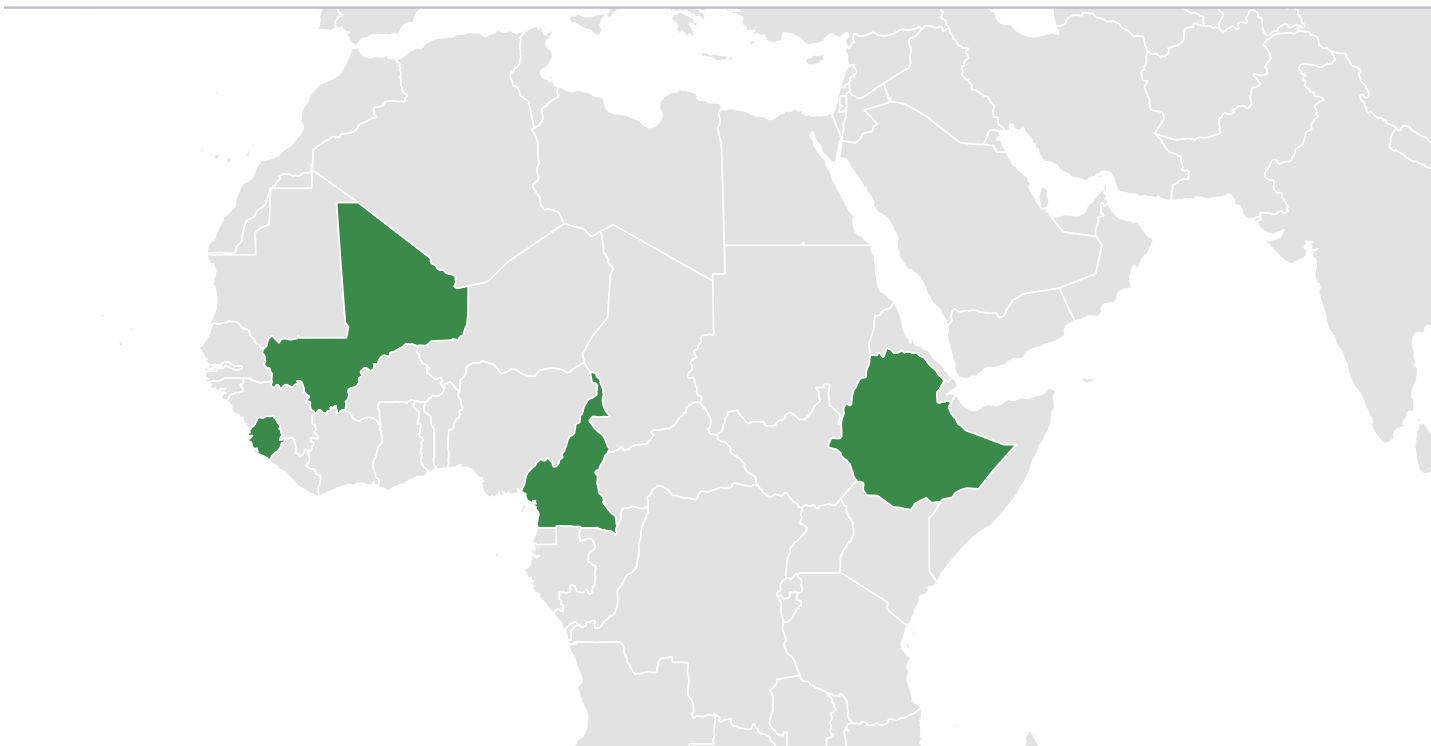
**EMERGENCY
PREPAREDNESS**

12
COUNTRIES

Planning for public health threats helps countries mount timely, effective, and efficient responses.

MALI developed training modules for rapid response teams (RRT) to address public health gaps during COVID-19 response. Two regional RRT trainings were conducted with 103 participants. An additional 372 frontline RRT members were trained on surveillance, infection prevention control, laboratory, risk communication and community engagement, and border health.

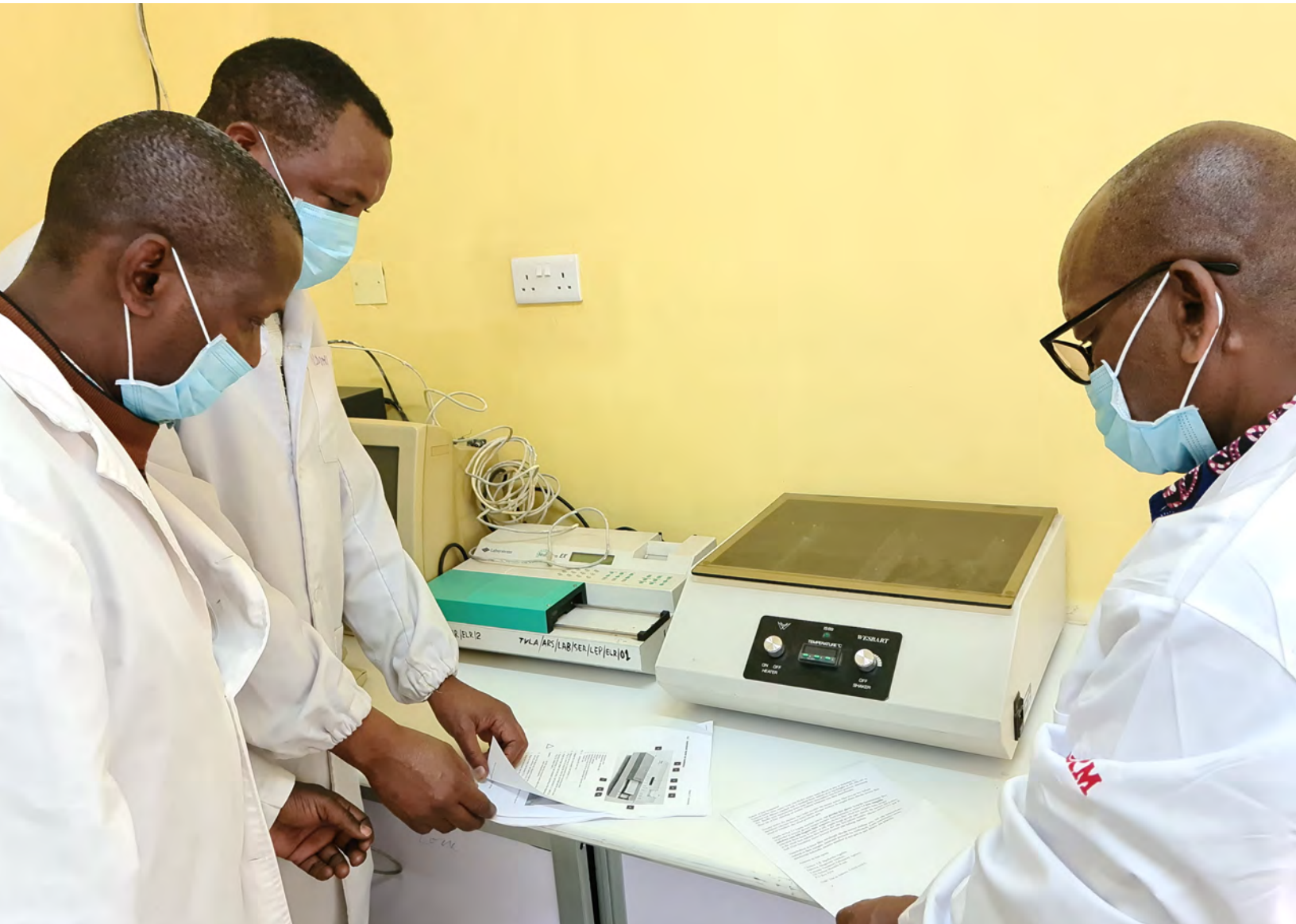
SIERRA LEONE conducted a multisectoral tabletop simulation with participation from the human, animal and environmental health sectors and used the results to update its National Prevention and Control Plan for Avian and Human Influenza.



Evidence of Impact in 2021 in the 19 Partner Countries

U.S. GOVERNMENT INVESTMENTS IN THE COVID-19 RESPONSE WILL MAKE US SAFER

The U.S. FY2020 Global Health Security (GHS) Annual Report highlighted how U.S. partner countries were able to build upon previous health security work to mount their early COVID-19 responses⁴. This year's report highlights how subsequent U.S. Government COVID-19 response investments have stimulated significant improvements and advancements of global health security capacities, which will pay dividends now and into the future.



Tanzania Veterinary Laboratory Agency - Arusha laboratory personnel reviewing documents during a quality management system audit and training. Photo: FAO/Elias Ponsiano

National Laboratory Systems

COVID-19 funds were used to strengthen more than 500 laboratories in partner countries to detect SARS-COV-2, employ advanced molecular diagnostic techniques, and expand safe specimen collection and transport. This represents a major expansion of national laboratory system capacities. For example, in **Uganda** more than 1,000 health workers across more than 200 health facilities were trained to conduct COVID-19 testing including rapid diagnostic testing and PCR techniques. In **Senegal**, testing capacity was expanded to twelve regions outside of Dakar, increasing Senegal's testing capacity. **Ethiopia** strengthened the National Reference Laboratory by establishing a quality assurance program that was expanded from one to more than 50 sites throughout affected regions.

Infection Prevention and Control (IPC) in Health Facilities

U.S. Government COVID-19 response investments provided IPC training, mentorship, and commodity support to more than 20,000 health facilities and 150,000 health workers in partner countries. For example, in **Liberia**, more than 3,000 staff at more than 320 health facilities were trained in water, sanitation and hygiene (WASH) and IPC, and received critical supplies. In **Cameroon**, 285 health facilities benefited from IPC training and commodities to help facilities comply with national IPC COVID-19 guidelines. In **Pakistan**, provincial health departments established facility-level IPC capacity in 10 hospitals. More than 500 staff received IPC training, including hospital managers, doctors, and nurses from hospital IPC committees.

Disease Surveillance

With U.S. Government assistance, disease surveillance programs have been improved across partner countries. For example, in **Pakistan**, all 158 District Disease Surveillance and Response teams were made operational, and all six Provincial Disease Surveillance and Response Units have been refurbished and strengthened. Routine bi-weekly reporting between the provincial and district units was launched. Additionally, **Vietnam** automated its COVID-19 case tracker and surveillance dashboards to provide real-time reporting and data visualization of its COVID-19 outbreak between provinces and districts.

Risk Communication and Community Engagement

Partner countries were able to increase public demand for COVID-19 vaccination and expand communication networks to promote health security, using social

media and mass media, mobile communication vans, SMS messaging, door-to-door visits, hot lines, and meetings with community leaders. For example, in **Nigeria**, the national government successfully deployed search engine optimization and social media strategies to position the National Center for Disease Control website and social media accounts as the most trusted and credible source of COVID-19 information and messages in the country. In **Sierra Leone**, 117 call center operators were trained to address the needs of callers experiencing psychosocial and mental health challenges. In **Uganda**, a rumor tracking and management system was established for COVID-19 that also integrates reporting for seven priority zoonotic diseases and other outbreaks.

Emergency Operations

In response to COVID-19, many partner countries enhanced emergency response operations to improve outbreak response coordination and implementation. For example, in **Nigeria**, the Ministry of Health established eight new PHEOCs with communication units to support the government's efforts to manage, mitigate and contain the spread of COVID-19 and other deadly outbreaks. In **Tanzania**, following the onset of the pandemic, the Field Epidemiology and Laboratory Training Program immediately engaged residents and graduates in all technical response pillars to support the PHEOC, provide laboratory support, assist in points of entry screenings, and help with overall coordination, risk communication and surveillance.

Case Management – Medical Oxygen

U.S. Government investments have helped more than 50 countries build capacity to provide medical oxygen in hospitals. The US is now in the process of building sustainable oxygen systems for key health facilities in more than a dozen countries in Africa, Asia, and Latin America. For example, in June 2022, the government of **Vietnam** launched a new liquid oxygen system at Binh Duong Provincial General Hospital, one of 13 new liquid oxygen systems being installed at health care facilities across Vietnam to strengthen critical care capacity and save lives. This system consists of an on-site storage tank and high-pressure piping to transport the oxygen to patients' bedsides. The United States' commitment to increasing access to oxygen will also support other global health programs, such as those that address child and adult pneumonia, safe birth, safe surgery, and new infectious disease outbreaks.

PARTNERSHIPS AND IMPACT BEYOND COVID-19:

While the COVID-19 pandemic remains the highest priority, other serious outbreaks also occurred in the past year. These included new Ebola outbreaks in Guinea, the DRC, and Uganda, Marburg disease in Guinea, as well as outbreaks of cholera, measles, vaccine-derived poliovirus, Lassa fever, plague, Crimean-Congo hemorrhagic fever, and mpox, which WHO recently declared a public health emergency of international concern (PHEIC). Outbreaks such as these continue to pose a serious threat to the global community. Most of the outbreak responses described below were led by partner countries leveraging the improved capacities built with the help of the U.S. Government, and other partners.

Sierra Leone and Uganda Close Gaps in Global Health Security through Operational Planning

The JEE assesses health security capacity across 49 indicators and provides countries with a score of 1-5 where 1 represents “no capacity” and 5 represents “sustainable capacity” and helps identify gaps in capacity. But to make an impact, countries must find ways to address these gaps, and that can be challenging. **Sierra Leone and Uganda** have started annual processes to help ensure the gaps are addressed.

- **Uganda’s** approach focused on improving all indicators that received a score of 1 or 2. In a recent internal self-assessment, Uganda scored a 3 or higher on the indicators that were previously at a 1 or 2, and increased capacity in 18 other indicators such as national laboratory systems, human resources, emergency preparedness, and border health.
- **Sierra Leone** adopted an annual planning process combined with an online activity monitoring system. With this new approach, Sierra Leone improved the number of JEE indicators that were scored at least a 4 from 12% to 33% during 2018– 2020. Likewise, the number of indicators scored at a 1 decreased from 33% to 14%. These included improvements in areas such as surveillance, emergency operations and response, and medical countermeasures.

Côte d’Ivoire Mounts a Comprehensive Response to an Outbreak of Highly Pathogenic Avian Influenza

Côte d’Ivoire mounted a multisectoral response to an outbreak of highly pathogenic avian influenza (HPAI) in 2021 which prevented possible major losses to its large poultry industry. In August 2021, teams in Grand-Bassam reported a suspected HPAI outbreak, including mortalities among poultry. In response,

national authorities deployed wildlife experts and epidemiologists to conduct investigations in farms, live bird markets, and wild bird resting areas. Following the confirmation of HPAI subtype A/H5N1 sanitary measures were implemented, including the culling of more than 300,000 poultry. The Directorate of Veterinary Services also organized missions to migratory bird staging areas and poultry production operations to document the source, sales, and mortalities of the poultry and migratory birds affected by the outbreak. In total, 25 live poultry markets were visited and 1,112 samples were collected. The analysis was used to draw risk maps linked to the outbreak and to conduct a risk analysis of HPAI in the resting areas of migratory/wild birds in the area. These actions will help to safeguard poultry production, which forms an essential part of livestock farming and food security in Côte d’Ivoire.

Improved Antimicrobial Resistance (AMR) Surveillance in Cameroon

In late 2020, **Cameroon** initiated its AMR surveillance program, began reporting AMR data, and enrolled in the Global AMR Surveillance System (GLASS). The Government finalized a strategy that describes what needs to be done at each level of the system by the human, animal, and environmental health sectors to detect and confirm cases of antimicrobial resistance and organize a response. In addition, kits, reagents and equipment for AMR detection have been provided to the national veterinary laboratory, and staff have been trained. This enables the veterinary laboratory to perform AMR surveillance according to national standards for selected priority pathogens. Moreover, the government is now using data to improve AMR surveillance and better address the threat of antimicrobial resistance.

Sierra Leone Establishes Broad based

Laboratory Capacities

Sierra Leone now has established in-country capacities to test for many priority zoonotic diseases (PZDs) in humans and animals and transboundary animal diseases (TADs). This is a major milestone to support disease investigation and surveillance activities in the country, since Sierra Leone no longer ships samples to other countries for laboratory confirmation. The Central Veterinary Laboratory (CVL) performs numerous diagnostic techniques for PZDs and TADs. The CVL has successfully confirmed the rabies virus and detected antibodies to avian influenza, African swine fever, peste des petits ruminants (ovine rinderpest), and brucellosis. The Government of Sierra Leone has also recruited a laboratory manager and taken over some of the CVL operational costs, promising milestones for sustainability.

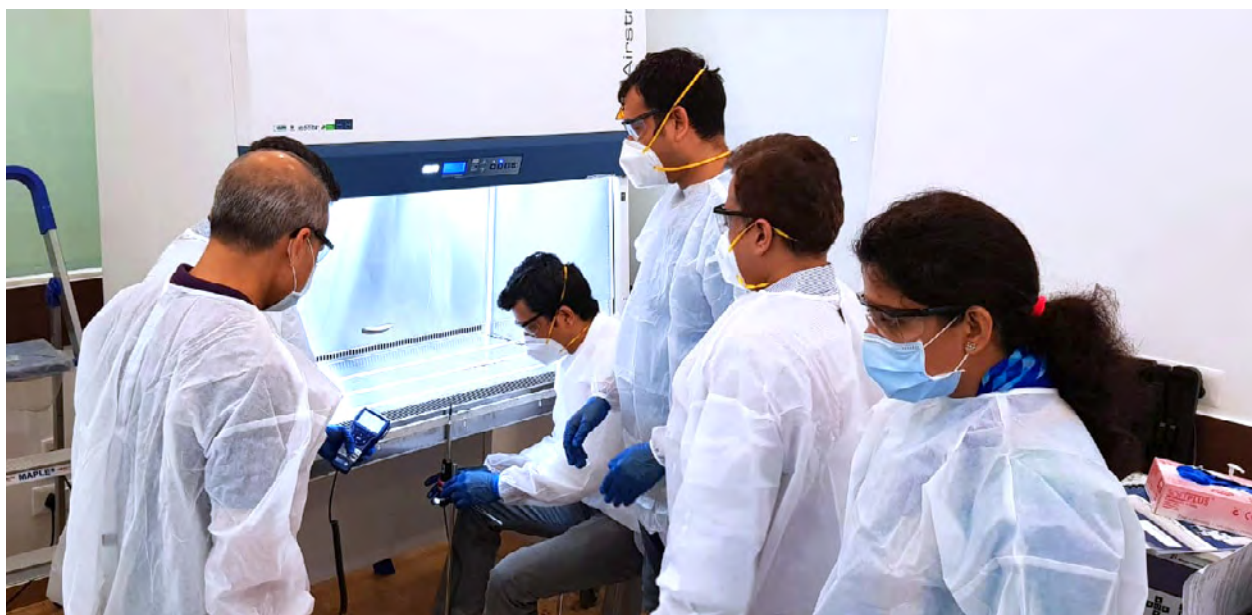
India Scales-up Laboratory Systems in Response to COVID-19 Second Wave

On January 30, 2020, **India** reported its first case of COVID-19. The National Health System Resource Center developed guidelines for a network of public health laboratories. The Government ultimately funded the network across 730 districts as part of its \$266 million USD pandemic economic stimulus package. This effort helped to strengthen and expand India's core public health laboratory capabilities and built on existing investments to expand laboratory testing capacity. In March 2021, India experienced another wave of

COVID-19, during which peer-to-peer relationships were established between the National Public Health Institute (NPHI) and the U.S. Government to provide technical guidance and training on safe COVID-19 sample collection, testing, and transport to more than 10,000 healthcare workers across 210 districts. India went from processing 100 tests per day in March 2020 to about one million daily tests about a year later. India's efforts and investments in laboratories have significantly improved and streamlined specimen transport systems and supply chains.

Cameroon Addresses Vaccine Hesitancy through Community Engagement

Cameroon's Ministry of Health worked closely with the U.S. Government to dispel vaccine hesitancy starting with a COVID vaccine campaign at the American School of Douala. This international school includes teachers and students from thirty different countries. Their efforts initially focused on vaccinating administrators, teachers, support staff, and guards. Through this prominent school they increased the staff COVID-19 vaccination rate from 15% to 80%. The vaccine was also opened to family members, friends, and members of the larger community. Seeing trusted members of the community get safely vaccinated at the school encouraged the surrounding communities to receive the vaccine as well. The school continued to host vaccine days for residents of the region.



CDC Lab Team in collaboration with U.S. Biothreat reduction program and NSF International, organized the second-ever biosafety cabinet certification training in Gurugram, 2021. Photo: CDC India office



PMI CP3 programme volunteers undertaking COVID 19 prevention campaigns in villages. Photo: PMI Indonesia

Uganda improves the Detection and Reporting of Animal Diseases

Early detection and timely reporting of animal diseases from rural areas are critical for adequate disease surveillance, the prevention of large outbreaks, and to protect animal and human health. **Uganda** has achieved major progress in this area by expanding its electronic animal disease reporting system nearly countrywide. The country has embraced the Event Mobile Application (EMA-i) for animal diseases first developed by the UN's Food and Agriculture Organization. This mobile phone reporting application for animal diseases is now utilized in more than 100 districts nationwide and has more than 1,200 users. Uganda has reconfigured the EMA-i to fit its needs, created a national database, and developed and conducted three training programs to scale the technology countrywide to streamline animal disease reporting in a cost-effective manner. The use of EMA-i app in Uganda has led to major improvements in disease reporting and communication between districts and central level and increased the number of animal disease reports.

Tanzania Improves Water Supply to Address Cholera

Zanzibar, a region of the United Republic of **Tanzania**, faces water, sanitation, and hygiene (WASH) challenges. Nearly 30% of people living immediately outside urban cities with rural characteristics have inadequate WASH services and facilities. Zanzibar's MOH has been monitoring water quality and bulk chlorination of stored water using a monitoring and evaluation platform to summarize, map, and analyze data on available chlorine used to disinfect water in the piped water network. Environmental health officials then take weekly samples at 45 sites to monitor and improve chlorination levels in the network. Recent evaluations showed 66% of vendors and institutions where water was tested had appropriate levels of free residual chlorine ensuring the water is safe to drink. These projects establish long lasting improvements to Zanzibar's water supply that will also help it reduce cholera outbreaks and reach its goal to be cholera free by 2028.

Biosafety and Biosecurity in Ethiopia

The establishment of a biosafety and biosecurity oversight system is a critical step towards mitigating risks associated with the accidental or deliberate release of dangerous pathogens. The **Ethiopia** Ministry of Agriculture has now made significant progress

towards its own biosafety and biosecurity system. This includes a plan to strengthen biosafety and biosecurity measures and how to introduce best practices that protect humans, animals, and the environment from dangerous pathogens. The Ministry of Agriculture has developed lists of hazardous pathogens and toxins and established a biorisk management system. So far, Ethiopia has trained 126 national and subnational veterinary laboratory staff on biosafety and biosecurity, proper use of personal protective equipment, and biosafety cabinet maintenance and calibration. In addition, Ethiopia has developed laboratory waste management and farm biosecurity guidelines, assigned a national biosafety and biosecurity focal person for the country, and is in the process of establishing a laboratory biorisk management unit at the National Animal Health Diagnostic and Investigation Center.

Uganda Enhances Arbovirus Surveillance

Rapid diagnosis of arboviral diseases, like yellow fever, chikungunya, and Zika viruses, is crucial to preventing large scale outbreaks that can cross borders. **Uganda's** Viral Research Institute (UVRI) has built robust in-country diagnostic capacity, enhanced the quality and safety of arboviral research, and provided technical support and training for the rapid and accurate detection of arboviral pathogens in the region. UVRI has been mapping the distribution of key arboviral vectors across the country. This is the first survey of this caliber since the 1950's and provides valuable information for preparing for potential disease outbreaks. In 2021, UVRI detected arboviruses not reported in over 50 years, and identified probable yellow fever cases that would not have been identified without their hospital surveillance network.

Progress addressing Antimicrobial Resistance in Malaria Treatments

Without effective malaria treatments, decades of progress could be undone. In FY 2021, the USG President's Malaria Initiative supported more than 100 sites in sub-Saharan Africa and across the Greater Mekong Subregion to study and closely monitor antimalarial treatment efficacy, identify genetic markers associated with antimalarial drug resistance, and support training and capacity strengthening of country collaborators. Thankfully, these and other studies show that there are still efficacious artemisinin combination therapies in Africa and even in Asia, where artemisinin resistance is high.

Programs Driving Progress

The Global Action in Healthcare Network (GAIHN)

In 2021, the U.S. Centers for Disease Control and Prevention (CDC) launched the Global Action in Healthcare Network (GAIHN), a global collaborative network through the Global Antimicrobial Resistance Laboratory and Response Network, consisting of countries, institutions, and partners at global, regional, national, and subnational levels. This network works to address emerging threats in healthcare settings through rapid detection and response to improve capacity for infection prevention and control and target threats like antimicrobial-resistant infections, healthcare-associated infections, and COVID-19. CDC is supporting the implementation of this new network encompassing six partners from more than 25 facilities across 11 countries.

Strengthening Capacity to Address Antimicrobial Resistance

- AMR Stewardship:** USAID's Medicines, Technologies, and Pharmaceutical Services (MTaPS) program, in 2021, worked with five countries to review and update their national action plans for AMR, supported 170 AMR-related meetings or activities with broad multisectoral participation, and provided training to over 650 individuals on AMR multisectoral coordination. MTaPS continued working with eight countries to implement the WHO access, watch, reserve antimicrobial classification in healthcare facilities, trained over 4,700 individuals on antimicrobial stewardship (AMS) topics, and supported 72 healthcare facilities to implement continuous quality improvement for AMS. During the ongoing COVID-19 pandemic, MTaPS continued to build the capacity of governments and local training institutions to operate eLearning platforms for AMS. For example, over 1,100 healthcare workers (100 doctors, 323 nurses, and 720 pharmacists) were trained on the practical aspects of AMS in health care settings in Kenya, using online, remote training mechanisms. Participation in these courses earned the participants points from their respective national regulatory bodies, which are crucial for annual renewal of required practice licenses.
- Infection Prevention and Control:** In FY21, USAID's

MTaPS program helped to strengthen infection prevention and control (IPC) through support of the COVID-19 pandemic response. These activities built on existing GHS platforms and assisted governments in developing guidance for IPC in health facilities. In 2021, the project strengthened IPC, supply chain management and health care waste management in more than 950 health care facilities across 12 countries (4,000 since the start of support in March 2020). More than 3,600 individual health care workers (42,300 since March 2020), including 1,730 women (23,890 since March 2020) received training on COVID-19 specific IPC protocols, including: appropriate PPE use, administrative control, triage, early recognition, source control, and adequate sanitation and handwashing methods. Further, the project finalized 19 distance learning programs, trained 147 local e-learning managers, and turned over the ownership of e-learning platforms to local institutions.



CDC Kenya laboratory staff, Albina Makio, prepares COVID-19 specimens for testing at the Nairobi laboratory. Photo: Bionventure Juma, CDC Kenya

Advancing Laboratory Biosafety, Biosecurity, and Responsible Conduct in Mali

The U.S. Department of Health and Human Services – Office of the Assistant Secretary for Preparedness and Response (HHS/ASPR) collaborated with Mali’s National Institute of Public Health to examine organizational culture among laboratory workers in Mali. The team conducted beliefs, opinions, and attitudes surveys among public health, medical, and veterinary laboratory workers across five Malian regions. The survey results were shared with HHS/ASPR personnel and together the team members from the two nations analyzed the data collected. The results offered insights into perceptions held by Malian laboratory workers about the importance of implementing biosafety and biosecurity measures and the state of biosafety and biosecurity across their respective laboratories. The study also helped identify potential opportunities to build a greater culture of responsibility among laboratory workers through promotion of safe and secure laboratory best practices and increasing training to identify and prevent misuse of biotechnologies. The HHS/ASPR and Mali team co-authored an article detailing the study and its results, titled, “Building a Culture of Biosafety, Biosecurity, and Responsible Conduct in the Life Sciences: A View from Mali” and it was included in the inaugural publication of the GET Journal for Biosecurity and One Health.

National Public Health Institutes (NPHI): Helping Build Better Public Health Systems

In 2021, CDC’s NPHI Program celebrated 10 years of operation. During this time, the program has supported multiple countries to strengthen their health systems through NPHIs. The program has worked with more than 30 countries worldwide, linking with critical platforms such as the United States President’s Emergency Plan for AIDS Relief, the World Bank, WHO, Africa CDC, and many others. Here are some examples of what this program accomplished in 2021:

- CDC supported **Nigeria** CDC to launch the Public Health Emergency Management for Professional Development Intermediate Certification Program, the first of its kind globally. Nigeria CDC emergency operation centers now have certified emergency management experts at the national and subnational levels and will continue to train additional people in 2022.

- **Pakistan’s** NPHI, supported by the U.S. Government since 2015, is leading the nation’s COVID-19 response. It supports testing and emergency operations; formulates case definitions and standard operating procedures; prepares health advisories and guidelines; and compiles and disseminates daily COVID-19 situation reports. It also provided resources for personal protective equipment, laboratory supplies, test kits, and infection prevention and control training to provincial COVID-19 laboratories. These efforts enhanced the country’s COVID-19 diagnostic capabilities and strengthened healthcare worker safety.

Risk Communications and Community Engagement to Address Infectious Diseases

USAID’s Breakthrough Action program supported risk communications activities which used newer technologies, including interactive voice response (IVR) and social media, in combination with more established approaches, such as hotlines and radio, to address community concerns in real-time to wider audiences. Risk Communication messages for COVID-19 reached an average of 118 million persons worldwide per month across multiple mass media channels, peaking at nearly 250 million about 12 months into the pandemic. In the **DRC**, IVR modules for priority zoonotic diseases were included in the country’s national “42502” hotline. Since its launch, this free, on-demand information service, accessible by any mobile phone, was accessed by over 2.5 million people to receive COVID-19 related and other priority zoonotic disease messaging. **Côte d’Ivoire** utilized its rumor management system to systematically track and address 1,332 COVID-19 and other infectious disease rumors and misinformation. **Guinea** used its newly developed social media strategy and created more than 40 posts on symptoms and prevention of Lassa fever, Avian influenza, brucellosis, Ebola, and COVID-19, reaching almost 360,000 persons. **Mali** implemented *Keneya Jo Sewn* (the Pillars of Good Health), a national multi-media campaign that reached over 10 million people to promote prevention and treatment behaviors for zoonotic diseases. The campaign integrated and harmonized community activities, mass media, and print with digital channels including Facebook, Twitter, YouTube, and WhatsApp.

Reducing the Risk of Biological Threats in Cameroon and Vietnam

The U.S. Department of Defense's Cooperative Threat Reduction program (DoD CTR) works cooperatively with partner nations to secure, eliminate, detect, and interdict weapons of mass destruction-related systems, materials, and expertise. Through implementation by the Defense Threat Reduction Agency CTR directorate's Biological Threat Reduction Program (BTRP), DoD CTR supports the ability of partner countries to reduce the proliferation of biological weapons (BW), BW components, and related technologies and expertise, and facilitate the detection and reporting of diseases caused by especially dangerous or high consequence pathogens (HCPs). As a result of these efforts, DoD CTR builds technical capacity in technical areas including zoonotic diseases, biosafety & biosecurity, national laboratory systems, surveillance, emergency preparedness, emergency response operations, risk communication, and linking public health and security authorities.

- In **Cameroon**, the BTRP transitioned the Ministry of Livestock, Fisheries, and Animal Industries National Veterinary Laboratory (LANAVET) Annex in Yaoundé to host nation operation and sustainment, and initiated biosafety and biosecurity and infrastructure upgrades at the LANAVET Annex in Douala and headquarters facility in Garoua. The completion of laboratory upgrades at all three LANAVET facilities will enhance Cameroon's capacity to detect, diagnose, and report HCPs in the animal health sector.
- In **Vietnam**, the BTRP conducted six virtual biosurveillance training sessions for the epidemiological partners from the Vietnamese government, including the Ministries of Health and Agriculture and Rural Development. The sessions included content on biorisk assessments and guidelines for contact tracing in COVID-19 prevention, laboratory biorisk management and proper use of personal protective equipment, infectious disease surveillance and response systems, and risk communication principles and strategies. These sessions will help ultimately strengthen Vietnamese capacity for a multisectoral, One Health response to infectious disease outbreaks.

Global Workforce Development through Field Epidemiology Training

For over 40 years, CDC has worked in more than 80 countries to expand its Field Epidemiology Training Program (FETP), comprised of Frontline, Intermediate and Advance Tiers. The CDC-supported program has produced more than 20,500 disease detectives and surveillance officers. Epidemiologists trained through FETP focus on investigating, containing, and eliminating outbreaks before they become larger threats. In 2021 alone, FETP Advanced and Intermediate residents responded to 583 public health emergencies, including 87 COVID-19 outbreaks, 49 measles outbreaks, and 45 malaria outbreaks, identifying suspected outbreaks early and improving investigation quality.

- In **Bangladesh**, FETP fellows were deployed to follow up on passengers at points of entry to detect and respond to the sharp rise of COVID-19 due to the delta variant. They are also conducting projects on long term effects of COVID-19, household transmission, COVID-19 prescription patterns by physicians, and seroprevalence in occupational high-risk groups, which can inform policy decisions.
- FETP graduates in **Sierra Leone** strengthened cross-border surveillance for Acute Flaccid Paralysis (AFP), following a circulating vaccine-derived polio outbreak in neighboring Guinea and Liberia. From March to September 2021, the graduates visited 117 hard-to-reach communities in 10 districts. They talked to community members about polio and visited 409 health facilities to discuss AFP and other priority diseases with 995 health workers. This resulted in six AFP cases reported and 250 children vaccinated against polio.
- In **Côte d'Ivoire** where FETP graduates lead on COVID-19 response, they have successfully developed a rumor tracking system to decrease vaccine hesitancy and increase vaccine demand. Along with monitoring support for adverse effects to immunization, and training vaccinators throughout the country on improving infection prevention, control, and waste management of COVID-19 vaccinations.

- **Liberia** piloted the executive FETP which introduced principles of public health and epidemiology to two cohorts, with a total of 28 hospital medical directors and other healthcare leaders.
- **Pakistan's** successful Field Epidemiology and Laboratory Training Program, which CDC has supported for over the past 12 years, earned the CDC Director's award for Excellence in Epidemiology and Public Health Response.
- Through FETP investments and support many countries have made significant strides in human resource capacity building. **Guinea** is now close to obtaining its goal of one epidemiologist per 200,000 people.

Engaging Communities to Prepare for and Respond to Outbreaks

USAID has partnered with the International Federation of Red Cross and Red Crescent Societies (IFRC) in several countries to support a whole-of-society

approach to pandemic preparedness. Efforts aimed to engage civil society and key stakeholders, with an emphasis on community health workers, religious leaders, traditional healers, and other local leaders, to help communities better prevent, detect, and respond to infectious disease threats. In the **DRC**, to support immunization campaigns, IFRC and volunteers worked with the Ministry of Health to map health zones where children had not been vaccinated for measles. Additionally, the DRC Red Cross carried out more than 40,000 household visits promoting COVID-19, cholera, and measles prevention and vaccination promotion. From April to September 2021, the **Sierra Leone** Red Cross organized 56 sessions with schools, reaching over 4,000 students, to promote proper handwashing, environmental cleanliness, and COVID-19 prevention. In **Uganda**, community-based surveillance detected a cluster of unusual illnesses among people in Kanungu, triggering an investigation by the health services that confirmed tuberculosis as the cause. Further investigations were conducted, and seven additional cases were identified and treated.



ZAWA technician on Pemba conducting a monitoring visit at a community tap stand.
Photo: Anu Rajasingham and Colleen Hardy/CDC

Response Deployments and Readiness Tracking to Assist with Global Health Emergencies

Amidst overwhelming demands of an international pandemic response, CDC continued to provide comprehensive response support. This support included deployment request and readiness tracking, emergency travel, equipment and supply issuance, supplemental facilities support, and continued administration of response tools like the Emergency Resource Request Tool and Time Tracker. In coordination with the deployment community, CDC supported deployment of over 1,029 public health practitioners – domestically and internationally – over 1,985 times to over 222 locations to provide agency expertise worldwide, in some of the most challenging circumstances. In 2021, CDC completed 156 international deployments for emergencies such as the Haiti Earthquake, COVID-19, polio, Ebola, and Operation Allies Welcome. One hundred and seven deployers were sent to 44 distinct locations in support of these global health emergencies through innovative procedures to facilitate CDC support, while in the midst of the COVID-19 global pandemic.



Technical working group. Photo: CDC Tanzania Office

Working with University Networks to Build a One Health Workforce

USAID's One Health Workforce - Next Generation project (OHW-NG), in partnership with the Africa One Health University Network and the Southeast Asia One Health University Network, supports workforce development in 59 universities across 10 GHSA partner countries: Cameroon (3 universities), Côte d'Ivoire (1), DRC (2), Ethiopia (3), Indonesia (20), Kenya (2), Senegal (2), Tanzania (2), Uganda (2), and Vietnam (22). In 2021, OHW-NG trained more than 12,800 current and future health professionals (including >6,600 students, 1,500 in-service professionals, and 1,100 faculty members) to further develop technical and collaborative One Health competencies, with topics ranging from zoonoses and infectious diseases to systems thinking, gender, risk communications, and policy. They also provided scholarships for more than 40 students to pursue advanced studies in One Health related programs and supported six graduate Fellows in infectious disease management. The Networks developed and curated over 460 training materials and curricula for future and current professionals and supported more than 5,200 participants across 40 mentored student One Health innovation clubs. Additionally, the Networks held activities at more than 40 One Health field sites, reaching hundreds of participants with community-based education, research, and outreach programs that addressed One Health challenges. Finally, OHW-NG helped 128 graduates complete degrees and supported their transitions into the workforce in the public sector, universities, and NGOs, where they will continue to put One Health skills in practice for long-term impact.

Improving Biosafety and Biosecurity Capacity in India through Biorisk Management Courses

The U.S. Department of State's Bureau of International Security and Nonproliferation (ISN) works to counter biological threats by enhancing partner countries' ability to prevent, detect, and respond to dangerous biological incidents, whether natural, accidental, or deliberate. Through these efforts, ISN builds capacity in technical areas including zoonotic diseases, biosafety and biosecurity, national laboratory systems, surveillance, emergency preparedness, emergency response operations, linking public health and security authorities, risk communications, and points of entry. During the COVID-19 pandemic, ISN's Office of Cooperative Threat Reduction Biosecurity Engagement Program improved biosafety and biosecurity capacity

in India through Biorisk Management Courses. The Biosecurity Engagement Program continued to engage with Indian partners by pivoting from in-person engagements to providing asynchronous virtual biorisk management workshops for the diagnostic laboratory, veterinary, and university biotechnology sectors focusing on foundational biorisk management, and introduced laboratory biosafety and biosecurity best practices. Together with the Department of Energy's Sandia National Laboratories, CDC-India, and the Indian Veterinary Association, more than 90 participants were engaged through a series of 13 biorisk management workshops which supported the development of in-country capacity on biosafety and biosecurity. CDC is ensuring that the knowledge is disseminated further through a series of district and state-level trainings.

Additionally in 2021, the U.S. Government engaged in public diplomacy and active outreach through numerous international, bilateral, and multilateral initiatives to advance U.S. and broader global health security objectives.

Encouraging Partner Commitments to Health Security:

Since its inception, the United States has served on the GHSA Steering Group, helping to guide the effort and voicing strong support for strengthening global health security. In 2020, the United States helped launch the GHSA Commitment Tracker to collect, visualize, and track progress of commitments towards achieving the GHSA 2024 target. In 2021, under Thailand's leadership as Steering Group Chair, 15 countries answered Thailand's call for concrete commitments towards the GHSA 2024 target, including several partners and the Republic of Korea, which committed \$200 million to strengthen health security capacity in developing countries by 2025.

Strengthening Legal Preparedness for Public Health Emergencies through GHSA: Under GHSA 2024, Action Package working groups are made up of experts from around the world who work together to advance capacity in areas that are critical to global health security (biosafety and biosecurity, immunization, sustainable financing, etc.). The GHSA serves as a unique and useful structure to launch and foster the work of these multisectoral expert groups. This year, in response to the legal challenges countries faced during the COVID-19 pandemic and other emergencies, the U.S. Department of Health and Human

Services – Office of Global Affairs and CDC launched the GHSA Action Package for Legal Preparedness in partnership with Argentina and Georgetown University's O'Neill Institute for National and Global Health Law. The new Action Package will promote legal preparedness as a critical capacity for effective public health emergency response and develop technical tools to assist countries in strengthening their legal preparedness for future public health emergencies.

U.S. Diplomatic Programs Promote Global Health Security:

In 2021, the U.S. Department of State, with support from multiple departments and agencies, advanced global health security and expanded capacity building through engagement with foreign governments, as well as with academic, non-governmental, and private sectors in countries worldwide. Using tools of diplomacy such as Embassy Science Fellows, U.S. Science Envoys, the International Visitor Leadership Program (IVLP), and engagement in international conferences, the U.S. Government reached across audiences to spur actions that strengthen bilateral and multilateral relationships.

- As part of the U.S. Government 2021 Climate Embassy Science Fellows Program, the San Jose Regional Hub executed a project on vector-borne disease prevention and spearheaded a two-day workshop with key regional stakeholders focused on building on past progress to pilot a dengue early warning system in the region. Additionally, in June 2021, the State Department linked several U.S.-supported lines of effort in the Pacific region through the 'Pacific Symposium on Health Security and Climate Resilience'.
- The U.S. Department of State created a three-week IVLP virtual program on global health security and the importance of intersectoral partnership for foreign scientists, public health experts, and policymakers from East Asia and the Pacific, South and Central Asia, and the Americas. IVLP introduces participants to a variety of information systems and public outreach programs that can strengthen global health security initiatives, using a One Health approach. IVLP participants network with U.S. counterparts and may apply for small grants projects via U.S. Embassies upon return to their home countries, in partnership with the U.S. Department of State's Bureau of Educational and Cultural Affairs.

Addressing Challenges and Looking Forward

The devastating impact of COVID-19 on the health, social, and economic well-being of populations around the world demonstrates the need to take collective action to end this pandemic and better prepare for the next one. With every outbreak, the cost of response far exceeds the cost of preparedness. Unfortunately, once the threat fades, so do resources and political will. COVID-19 must be the last time we fail to adequately invest in our collective preparedness and bring an end to the chronic cycle of panic and neglect.

While there has been substantial progress in building health security capacities in U.S. Government partner countries, there continues to be challenges to implementation and multisectoral coordination and action. These include the following:

- Ensuring that gaps in global health security capacity and pandemic preparedness are addressed effectively, including through national budgets and domestic resource mobilization.
- Investing in trained, paid, and equipped community health workers to prevent and respond to infectious disease threats.
- Expanding capacity beyond the national and regional levels to the sub-national and local levels.
- Sustaining the advances in national laboratory systems achieved as part of the pandemic response.
- Improving the quality and coverage of animal health systems.
- Expanding door-to-door community disease surveillance to enhance equity and strengthen early warning systems to identify budding epidemics.
- Improving multisectoral action and coordination
- Improving biosafety and biosecurity in the field, laboratories, farms, animal markets and along value chains to reduce transmission of emerging infectious diseases and mitigate risk of AMR.
- Leveraging investments in health security to strengthen equity in health care systems and leveraging investments in health systems to strengthen health security.
- Improving health security and frontline health care system capacity in rural remote areas with high zoonotic spillover risk.

The JEE 3rd edition highlights these challenges and provides a critical framework for strengthening country health security capacities. The U.S. Government will continue working together with national governments and other partners to address these and other pressing issues in the years ahead.

The U.S. Government will also continue to support the GHSA 2024, which has been helpful in building and sustaining countries' capacities to prevent, detect, and respond to numerous infectious disease threats regardless of origin. The U.S. Government remains steadfast in its commitment on progress towards the GHSA 2024 Target and to encourage concrete commitments that can accelerate progress. While significant progress has been made to improve global preparedness with 56 countries currently meeting the target and another 20 close to doing so, much work still remains to be done.

As we have seen with COVID-19, mpox, Ebola and other threats, an infectious disease threat anywhere can truly be a threat everywhere. It will take collective action to solve the complex challenges we face. We need to ensure that no country is left behind and that our efforts to defeat COVID-19 translate into sustained investments towards preparedness, or we risk being underprepared for the next threat.

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