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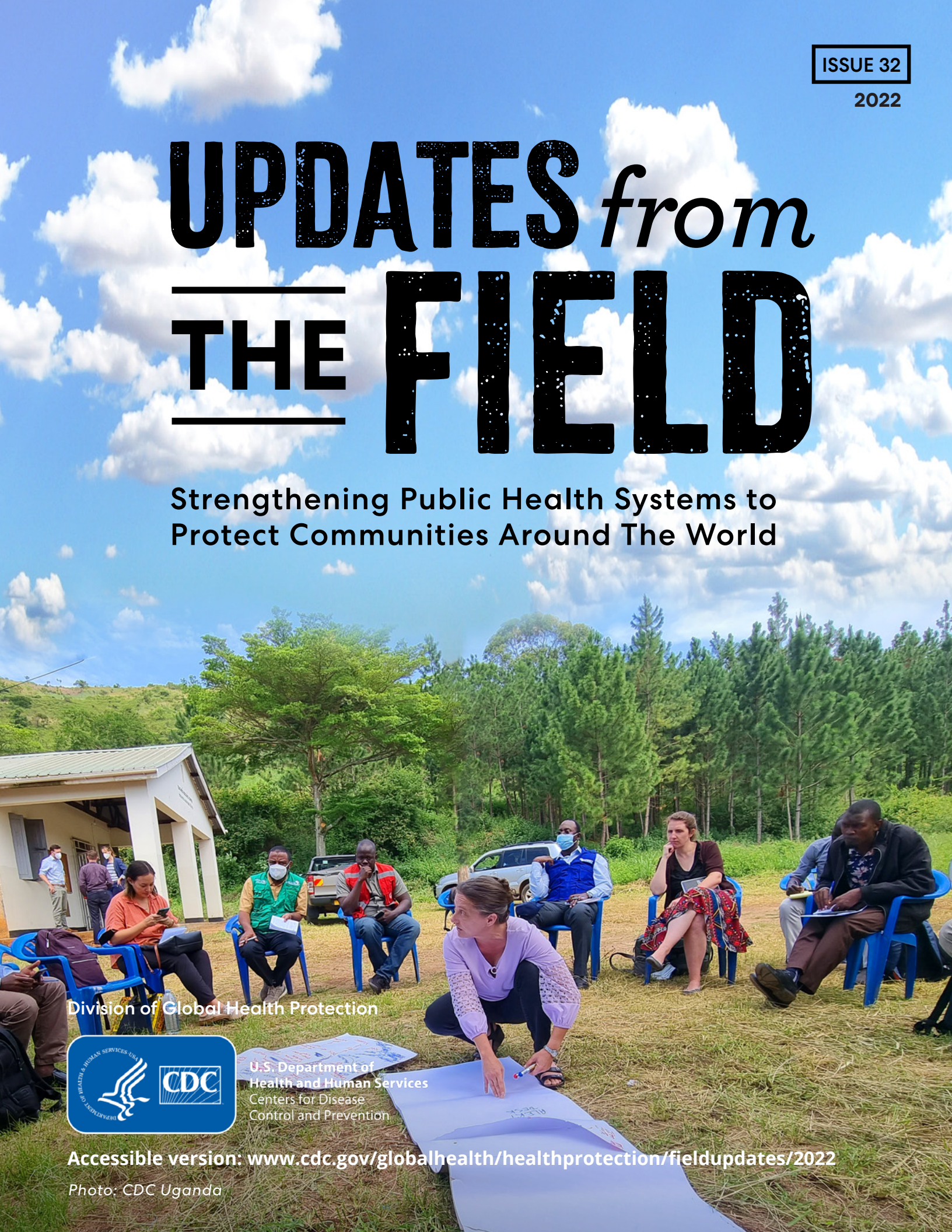
UPDATES *from* THE FIELD

Strengthening Public Health Systems to Protect Communities Around The World



Division of Global Health Protection

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

Accessible version: www.cdc.gov/globalhealth/healthprotection/fieldupdates/2022

Photo: CDC Uganda

STRENGTHENING PUBLIC HEALTH SYSTEMS *to* PROTECT COMMUNITIES AROUND *the* WORLD

In 2022, the Division of Global Health Protection (DGHP) collaborated with countries to respond to continued challenges of the COVID-19 pandemic as well as other health threats. **We work with public health experts across CDC and around the world to help countries strengthen their public health infrastructure to protect the health and safety of Americans and people around the world.** We accomplish this mission through four goals:

- **Increase the speed of outbreak detection, identification, and response**, especially for diseases of epidemic potential;
- **Strengthen National Public Health Institutes** (NPHIs) as the home for public health preparedness and emergency response;
- **Strengthen local level capacity** to control outbreaks at their source before they spread; and
- **Build new and strengthen existing partnerships** in the field, across all sectors, government levels, and functional roles.

CDC provides Next Generation Sequencing training from the Training Center of Excellence in Medical Sciences (TEMS). Students participate in DNA sequencing using Oxford Nanopore Technology and Bioinformatics analysis. Photo: TEMS, Team DMSc

This issue of *Updates from the Field* highlights DGHP's successes in strengthening surveillance systems, expanding laboratory networks, improving emergency management and operations, and developing a well-trained workforce with the necessary skills to prevent, detect, and rapidly respond to health threats. We continue to make significant strides and implement lessons learned from COVID-19 and other outbreaks through our global health security programmatic activities. But there is still more work to be done to ensure a healthier, safer world able to stop public health threats.

DGHP is committed to the time and work it takes to build strong and sustainable public health systems and build vital relationships with ministries of health (MOH) and partners so countries can increase their ability to lead these efforts. We don't know when or where the next outbreak will occur, but we know that through our work, many countries are better prepared today for tomorrow's outbreak.

WORKING TOGETHER *to* ACHIEVE IMPROVED EMERGENCY RESPONSE AROUND *the* WORLD

New and ongoing global public health emergencies in 2022 continue to demonstrate the vital need for countries to be better prepared to respond to emergencies quickly and effectively. CDC partners internationally with ministries of health, U.S. government agencies, United Nations partners, and others to build emergency preparedness and response capacity. Activities include training responders, enhancing surveillance and lab systems, and supporting emergency operations centers to coordinate responses. CDC's assistance allows more support on the ground, better technology, and improved coordination. As a result, countries like Uganda, Cameroon, Ukraine, and Pakistan were able to respond to disease outbreaks rapidly and effectively address complex health needs after natural disasters and humanitarian emergencies.

Dr. Amy Boore, Division of Global Health Protection Program Director, CDC Uganda (center) helps coordinate surveillance activities with partners in Mubende District, Uganda in the first week of the Ebola response to gather critical surveillance data and create a unified approach. Photo: CDC Uganda

CDC Responds to Ebola Outbreak in Uganda

On September 20, 2022, the Ugandan Ministry of Health (MOH) confirmed an outbreak of Ebola (Sudan virus) in the country. CDC's long-term relationship with Ugandan MOH and other U.S. agencies in Uganda to build emergency response capacity meant CDC was a trusted advisor and partner during the Ebola outbreak. In addition, CDC set up an incident command system to coordinate U.S. Government (USG) response support activities and partnered with other U.S. agencies within the U.S. Embassy.

Dr. Julie Harris, CDC Uganda FETP Resident Advisor, sitting outside the Mubende District Health offices showing FETP fellows how to connect Ebola cases using exposure periods and onset periods into a transmission tree. Photo: CDC Uganda

CDC provided support in surveillance, epidemiology, laboratory, communication, and ecological investigations to help understand the relationship between exposure to the virus and the effect on a population. One significant impact was the work that CDC led with Uganda's equivalent of the Field Epidemiology Training Program (FETP), which trains disease detectives to provide real-time information and data to inform response work. Ugandan country leadership called on FETP graduates and fellows, who were the first in the field, to perform Ebola case investigations. FETP teams worked long hours and helped save lives by gathering information, developing an Ebola transmission diagram, and making a roadmap to show partners where to focus resources to control the outbreak. CDC

Uganda's Division of Global Health Protection Program Director Dr. Amy Boore said, "FETP was pivotal in controlling and stopping this outbreak and was a key U.S. Government asset". In fact, the Ugandan MOH is funding and expanding FETP because MOH sees it as the gold standard field training program to develop knowledgeable and capable leaders in public health.

On January 11, 2023, the Uganda MOH officially declared the Ebola outbreak over. CDC will continue to support the Ugandan Ministry of Health in surveillance, infection prevention and control, and response activities to help ensure rapid detection and response to any future Ebola cases or other disease outbreaks.

Cameroon's PHEOC Helps with COVID-19 and Cholera Responses

A Public Health Emergency Operations Center (PHEOC) serves as a hub for coordinating the preparation and response related to public health emergencies. PHEOCs enable coordination of resources and capacity building to respond to emergencies. CDC has helped establish PHEOCs globally to provide a quicker and more effective public health emergency response.

Cameroon's PHEOC is effective in Africa based on its functionality, because it can be activated within six hours to respond to disease outbreaks or other emergencies. CDC trains responders from Ministry of Health and other ministries to handle public health work. CDC's technical assistance and training in close collaboration with the Defense Threat Reduction Agency (DTRA) helps ensure Cameroon is ready for an emergency response at all times.

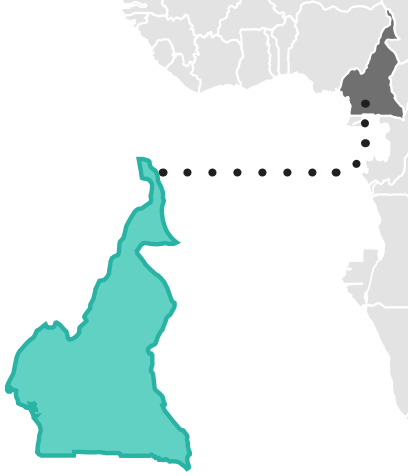
As a result, the country's PHEOC initiated improved surveillance and response tools during outbreaks of COVID-19 and cholera.

Advanced Field Epidemiology Training Program (FETP) residents Tonye Theodore Alexe (back right) and Kalissou Yaya Toure (back left) practicing a presentation at Cameroon's Public Health Emergency Operations Center in September 2022 under the supervision of FETP resident advisor Dr. Adama N'Dir (front right). Photo: Dr. Patricia Mendjime, Ministry of Health/Cameroon Field Epidemiology Training Program.

The tools were also useful in investigating a surge in deaths of pregnant or postpartum people and/or their babies.

The PHEOC focused on enhancing personnel and workforce development capacity by working closely with Cameroon's Field Epidemiology Training Program (FETP), a CDC-supported program. More than 1,200 residents completed three-month Frontline FETP training. Fourteen graduates completed the nine-month FETP-Intermediate training, and 54 Advanced FETP residents finished two years of training. All FETP graduates are actively engaged in Cameroon's Emergency Operations Center (EOC) to respond to disease threats.

The PHEOC was critical in coordinating response to COVID-19, cholera, and other disease outbreaks. Next, CDC will partner with the Cameroon Ministry of Health to further improve the efficiency and effectiveness of the PHEOC by decentralizing it and creating multiple PHEOCs at the regional level.



CAMEROON

1,200 residents

More than 1,200 residents completed Frontline FETP training.

14 graduates

Fourteen graduates completed FETP-intermediate training.

54 residents

Fifty-four Advanced FETP residents finished two years of training.

CDC Experts and Global Partners Unite to Support Humanitarian Efforts in Ukraine

13.6 million

an estimated 13.6 million people fled their homes to seek safety

Since February 2022, the Government of the Russian Federation has been attacking Ukrainian cities, causing widespread death, destruction of critical infrastructure, and the largest and most rapid displacement of people from their homes since World War II. In a matter of weeks, an estimated 13.6 million of people fled their homes to seek safety, either to other areas in Ukraine or neighboring countries.

To respond to the complex health needs within Ukraine and border countries, CDC quickly mobilized to support the humanitarian response efforts of the U.S. government, Ukraine Ministry of Health

Key Public Health Implications of War in Ukraine

TRAUMA AND INJURIES
Conflict-related wounds, healthcare-associated infections, antimicrobial resistance and rehabilitation following injury

INFECTIOUS DISEASES
COVID-19, polio, measles, and diptheria

CONTINUITY OF CARE
Cardiovascular and respiratory diseases, diabetes, cancer, HIV, TB, opioid use disorder, and maternal healthcare

WATER, SANITATION, HYGIENE (WASH)
WASH services to prevent waterborne diseases such as cholera, typhoid, hepatitis

FOOD INSECURITY AND NUTRITION
Shortages of infant forumula; disruptions in grain, sunflow oil, fertilizer affecting malnutrition in Ukraine and globally

WEAPON OF MASS DESTRUCTION
Assessment of health threats associated with chemical, biological and radiological/nuclear agents

MENTAL HEALTH AND PSYCHOSOCIAL NEEDS
Anxiety, depression, and post-traumatic stress disorders

HEALTH DISPARITIES
Sexual and gender-based violence, human trafficking, and inequities for vulnerable groups such as the elderly and disable

(MOH), regional partners, United Nations, and non-government organizations.

As the Ukrainian MOH and partners confront public health priorities, CDC is leveraging technical experts from across the agency to provide support through programmatic and scientific guidance. This includes activating a program-level emergency response incident management structure, providing training on complex humanitarian emergencies and post-disaster needs assessments, and navigating supply chain disruptions. Leading technical experts are also giving guidance on how to prioritize and adapt existing programs to tackle emerging health needs such as war-related injuries and associated antibiotic-resistant wound infections, acute diarrheal diseases, and disrupted care for chronic diseases.

Although the current humanitarian response is ongoing and evolving, planning is underway to determine how to rebuild key public health infrastructure, such as facilities, programs, and personnel. These efforts also include improving identified gaps and providing long-term safeguards in public health security.

Pakistan Floods Endangering Communities Near and Far

In September 2022, heavy rain during monsoon season led to severe flooding in 84 out of 124 districts in Pakistan. This flooding resulted in 1.3 million homes damaged and affected about 33 million people. Epidemiologists from CDC quickly deployed to the CDC Pakistan country office. During this swift response, CDC experts played an important role in engaging U.S. Government agencies, Ministry of National Health Services, Regulations & Coordination (M/o NHSR&C), and United Nations (UN) agencies to determine provincial and district-level health needs. For instance, CDC and M/o NHSR&C coordinated work to provide access to clean drinking water and sanitation for people in affected areas of Pakistan. These water,

CDC epidemiologist Endang Handzel works with Dr. Hana Yahya (Gallup, Pakistan) to assess death records and trends, including the examination of flood-related mortality. Photo: Dr. Sobhan Qadir/CDC Consultant

sanitation, and hygiene (WASH) services help prevent disease spread through unsanitary conditions, exposure to dirty water, and poor hygiene practices.

Additionally, CDC experts collaborated with local data experts to develop an emergency surveillance dashboard to monitor flood-related disease trends under the National Institute of Health Pakistan (NIH). Provincial-level public health staff learned how to accurately interpret the data and then identify and respond to disease trends in the flood-affected areas of Pakistan to save lives. In collaboration with the health sector coordination body, CDC staff are now analyzing the successes and challenges experienced during the Pakistan floods emergency response. Reflecting on lessons learned will improve emergency response efforts in the future.

The Future of Emergency Response Efforts

Emergencies can happen at any time and anywhere. CDC remains committed to helping countries prepare for and mount an effective response against any future disease outbreak. Fragile health systems anywhere leave openings for disease to take root and spread, allowing local challenges to become global crises. In the face of this threat, CDC continues to leverage its resources and relationships, providing technical support for emergency preparedness and response to countries around the world.

CUTTING-EDGE LABORATORY TECHNOLOGIES *and* PROCESSES PREPARE COUNTRIES *for* PUBLIC HEALTH EMERGENCIES

Pandemics, like COVID-19, cannot be stopped effectively without critical information from laboratories. Laboratories help confirm the presence of disease, pinpoint the cause of illness, and guide the right response to outbreaks. CDC plays a leading role in developing sustainable laboratory networks that can safely, accurately, and rapidly identify disease threats so they can be eliminated at the source. CDC works with countries to help improve their ability to detect disease outbreaks by providing access to cutting-edge technology, expanding laboratory networks, and bringing environmentally safe waste management solutions to improve efficiency and streamline coordination across all levels of the healthcare system.

Through collaboration with countries such as Thailand, Democratic Republic of Congo (DRC), and Nigeria, countries are better able to perform diagnostic tests and help scientists prepare for future public health emergencies more quickly.

CDC provides Next Generation Sequencing training from the Training Center of Excellence in Medical Sciences (TEMS). Students participate in DNA sequencing using Oxford Nanopore Technology and Bioinformatics analysis. Photo: TEMS, Team DMSc

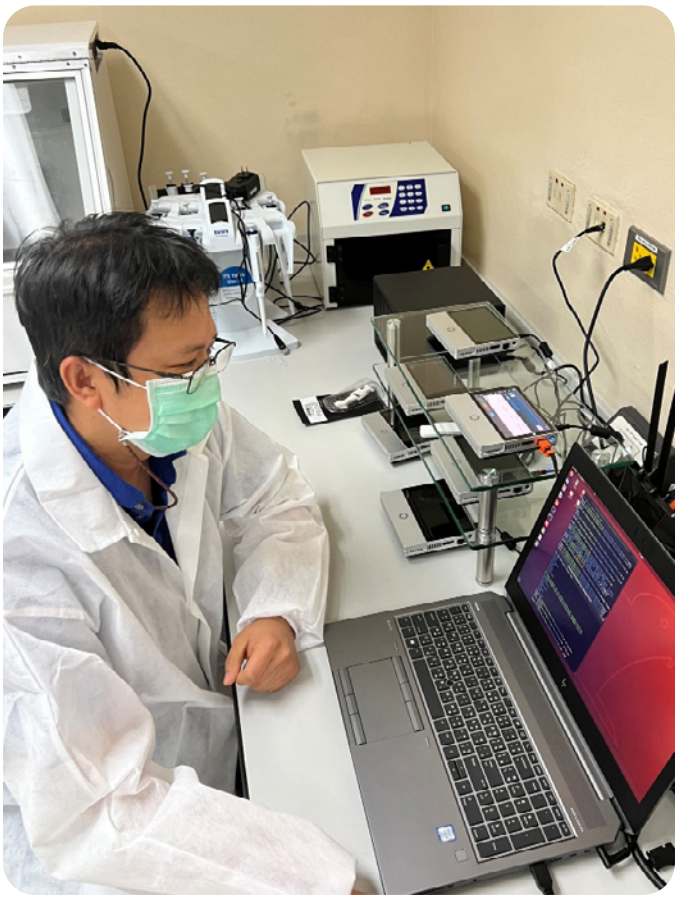
Strengthening Outbreak Response with Next-Generation Sequencing in Thailand

The recent COVID-19 global pandemic highlighted the need to rapidly detect and respond to potential outbreaks. The most common approaches to identifying pathogens use tools and

technology, such as PCR-based methods, to identify and compare the traits of known and unknown pathogens. However, next-generation sequencing (NGS) technology provides a higher power to detect genetic material with speed and scalability. NGS has allowed laboratories to perform a variety of applications and analyze systems at a level never achieved before. Genomic sequencing finds the order of the chemical building blocks, or bases, that form an RNA molecule which allows the study of how the pathogen is changing over time.

During 2021-2022, CDC developed a pilot program, Global Network for Genome Sequencing of SARS-CoV-2 (the virus that causes COVID-19) to establish NGS capacity by strengthening the ability to test for pathogens in select countries. Because staff were already trained and the required equipment was in place at the start of the pandemic, pilot program countries like Thailand were able to quickly pivot to sequencing SARS-CoV-2. In December 2021, CDC's Dr. Pongpun Sawatwong and his team confirmed the first case of the Omicron variant in Thailand using NGS.

CDC experts within the Division of Global Health Protection (DGHP) and DGHP Thailand Laboratory team worked together to leverage existing capacity for pathogen testing during the COVID-19 response to identify variants as they emerged, allowing more time for the health system to respond and save lives. Since the COVID-19 pilot



CDC Dr. Pongpun Sawatwong analyzes sequence data to confirm the first Omicron Variant in Thailand in collaboration with the Thailand Ministry of Public Health. Photo: Dr. Thidathip Wongsurawat/Ministry of Public Health (MOPH)

program, Dr. Sawatwong and his team have been involved with NGS of bacterial pathogens. CDC is dedicated to supporting countries in the implementation and use of advanced laboratory technology and training and working alongside partners to better equip countries to identify, respond, and prepare for emerging public health threats.

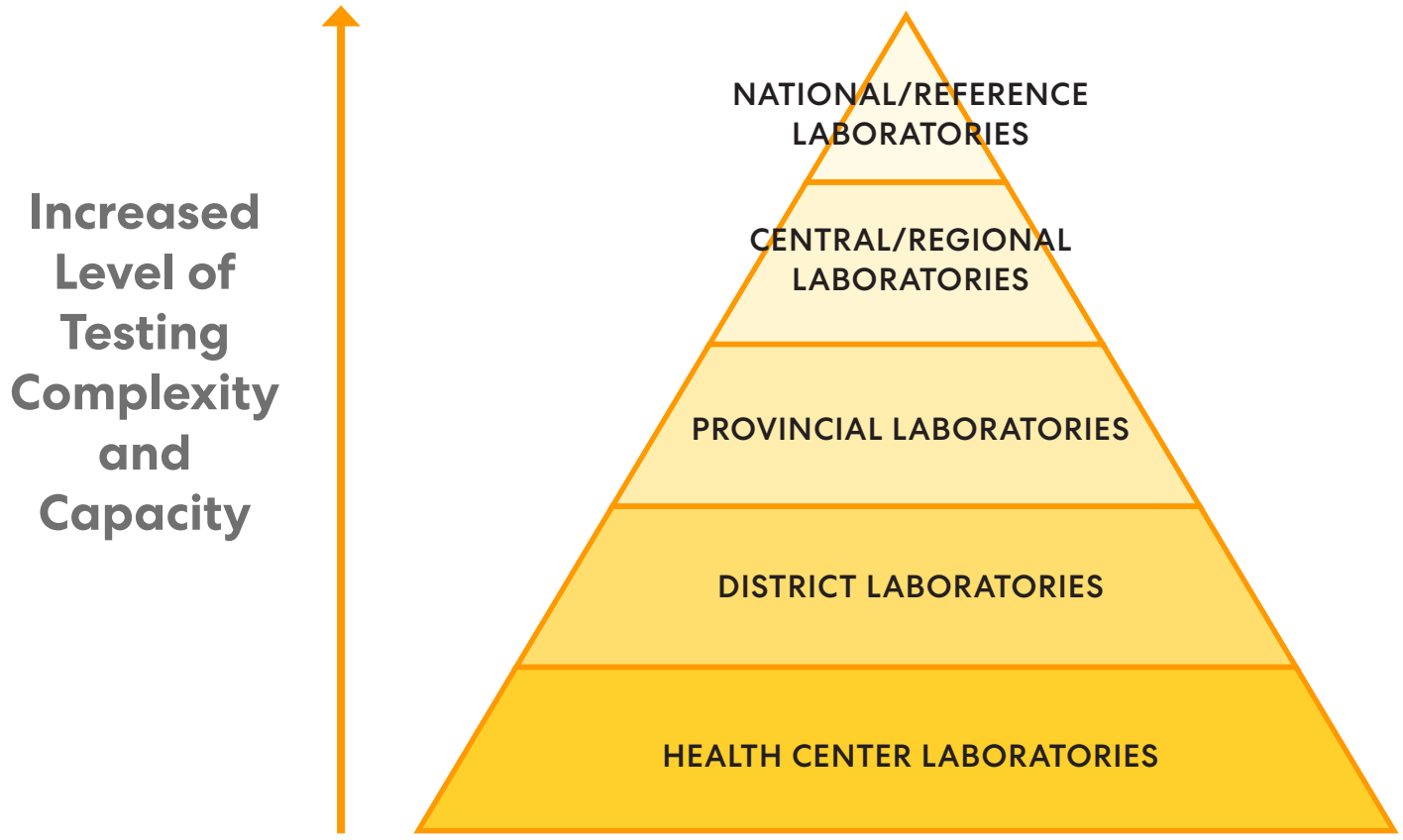
Establishing a Strong Tiered Laboratory Network in the Democratic Republic of Congo (DRC)

Public health systems with functioning diagnostic laboratories at multiple levels offer several advantages when compared to tiered laboratory systems with centralized national testing. Usually, these laboratories reduce the time between sample collection and testing, and can identify pathogens more rapidly. Tiered laboratory networks include laboratories at different levels (district, provincial, regional, and national) with increasing complexity and capacity for testing at each level. Tiered laboratory networks are critical to strengthening public health laboratory systems and increasing the laboratory capacity to test for pathogens in a timely manner.

CDC laboratory experts provided guidance on improving both testing capabilities and general laboratory upkeep to assist the DRC Ministry of Health and ICAP at Columbia University in developing tiered laboratory networks. DRC's new laboratory within the Lubumbashi Provincial Laboratory allowed diagnostic testing for numerous pathogens instead of shipping samples to the national laboratory in Kinshasa for testing. To support community laboratory services within the Mbandaka Region of DRC, Mbandaka Provincial Laboratory contributed to facility repairs to improve the water source and quality, electrical wiring, and laboratory work

areas to expand its testing capabilities in the future. CDC also funded procurements such as cold chain equipment, autoclaves and solar panels for electrical power and back-up for some laboratory sections.

With CDC's expertise in creating strong tiered networks, countries such as DRC can improve their laboratories and reduce the number of samples that require long-distance transportation. When samples require more sophisticated testing methods, CDC can also provide technical advice on the safe and efficient transportation of samples to appropriate facilities for testing. When smaller laboratories are built or updated, countries are not forced to rely upon national laboratories alone or outdated technology for their testing needs. This results in more efficient and effective use of laboratory resources and faster responses to public health emergencies.



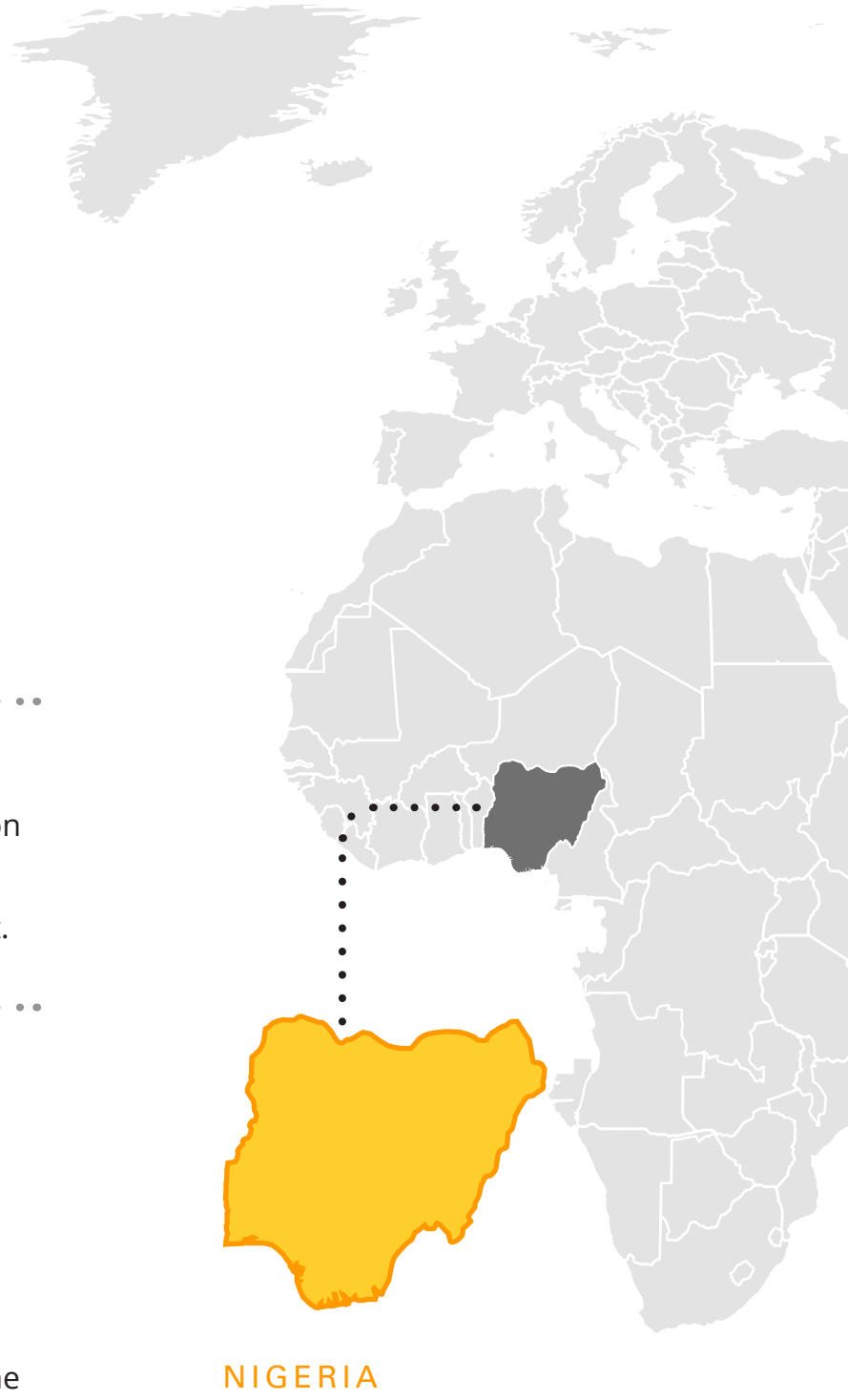
This tiered laboratory system features different levels of laboratories based upon agreed testing services, with each level offering increased technical testing complexity and capacity.

Developing Biowaste Management Systems in Nigeria

After laboratories test samples for pathogens, the samples and other waste generated in the testing process, known as biowaste, need to be safely discarded. Improper waste disposal from laboratories can harm the laboratory, environment, and people.

Biowaste management systems provide protection to laboratorians and the surrounding environment.

In 2022, to address needs identified during a laboratory assessment, CDC collaborated with the Defense Threat Reduction Agency (DTRA) and Nigeria CDC to establish a modern and sustainable biowaste management system at Nigeria CDC after laboratory facility assessments identified the need. A modern autoclave system, which sterilizes laboratory equipment, supplies, and waste using high-temperature steam, was placed in a Nigeria CDC laboratory to



NIGERIA

prevent the growth of microorganisms on surfaces, improving safety and reducing the threat of pathogen exposure.

Given the challenges with waste that laboratories generate, experts determined the need for a biomedical waste incinerator. In August 2022, a standard high-temperature incinerator was installed at the National Reference Laboratory (NRL) in Abuja. The incinerator burns materials, compounds generated during testing, and other infectious waste materials (solid and liquid) from the NRL and other laboratories across the country that have been mapped to the site for centrally coordinated laboratory waste management. The installed incinerator is coupled to a Pollution Control System (PCS) to remove gaseous and particulate emissions from the incinerator that may be harmful to the environment.

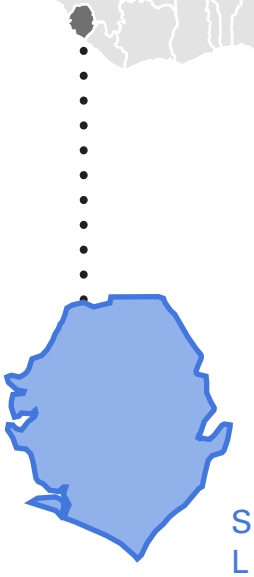
Nigeria CDC now has a country-owned and sustainable system for the safe management of biological waste from laboratories and clinical facilities that it supports. This closes a major gap identified in laboratory facility assessments. DGHP played an important role in the process by leveraging expertise from across CDC to support Nigeria in improving its laboratory function and increasing the safety of laboratorians and the community.

Increased Access to Emerging Technologies Prepare Countries for Future Outbreaks

CDC continues to strengthen laboratory systems by creating global networks that can conduct testing, analyze findings, manage data, and protect against biosafety and biosecurity threats. By collaborating with countries and partners around the world, countries have the needed laboratory information to identify and recognize threats early, implement stronger testing approaches, and prepare for future outbreaks.

COLLABORATING *to* STRENGTHEN SURVEILLANCE SYSTEMS WORLDWIDE

Surveillance systems are an essential component of every country's core emergency response capability. CDC collaborates with more than 45 countries and regions to develop and support quicker and stronger surveillance systems that generate the data needed for rapid response during public health emergencies and improve global health security. Through training, technological innovations, and partnerships, CDC has prepared countries to monitor, find, and track outbreaks, as well as generate data that informs emergency response. These surveillance data are essential to guide and plan interventions, as well as to pinpoint where to look for new and unknown pathogens (bacteria, viruses, fungi, or other organisms that cause illness), allowing countries to effectively prevent, detect, and respond to disease threats.



SIERRA LEONE

Electronic Surveillance Improves COVID-19 Detection in Sierra Leone

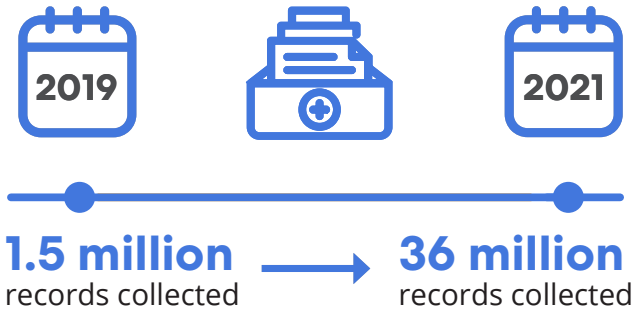
With CDC support, Sierra Leone's pilot program for an electronic case-based disease surveillance system (eCBDS) was completed, allowing country leaders to make strategic decisions in reducing the threat of COVID-19. As COVID-19 spread, Sierra Leone quickly implemented its newly developed eCBDS, which is built upon the District Health Information Software (DHIS2). The DHIS2 software supports data collection,

Bridget Magoba, African Field Epidemiology Network (AFENET) demonstrates using the electronic case-based disease surveillance system (eCBDS) with a tablet. Photo: Philip S. Turay/U.S. Embassy, Sierra Leone

analysis, and visualization. Through DHIS2, data on individual cases of COVID-19 are captured using a mobile application. This allows national health officials to receive SMS (text) messages and emails when COVID-19 is detected. Additionally, CDC provided Sierra Leone Ministry of Health with technical assistance in March 2021 to customize the DHIS2 vaccine toolkit to manage COVID-19 vaccination data through the African Field Epidemiology Network and Health Information Systems Program-South Africa. Sierra Leone has integrated this vaccine tracking system into eCBDS, used throughout the country's 16 districts. With this system, health officials can track doses administered, and providers can easily schedule appointments, send appointment reminders via SMS, report adverse side effects, and track missed appointments. CDC's technical collaboration on Sierra Leone's surveillance strategy enables consistent collection and communication of COVID-19 data from all testing sites. Sierra Leone's investment in the eCBDS is providing a successful health data system to support the country's COVID-19 response, while preparing for future threats through a more sustainable surveillance system.

Recognizing Surveillance Capacity in Colombia – SIVIGILA

SIVIGILA, Colombia's public health surveillance system, was developed 15 years ago. The program has since been a key component of the continuing collaboration with CDC and Colombia's National Public Health Institute, Instituto Nacional de Salud (INS), a partnership that started in 1992 with the Field Epidemiology Training Program (FETP). Ongoing commitment to the development of SIVIGILA highlights the importance of building public health surveillance capacity in Colombia and its network of over 14,000 local health service providers.



During the COVID-19 pandemic, INS used SIVIGILA to identify trends and share information for decision-making. SIVIGILA expanded the reporting network to include municipal, departmental, and district level

units and scaled-up the number of records captured from an estimated 1.5 million records collected in 2019 to an estimated 36 million in 2021. Epidemiologists and public health professionals—including FETP residents and graduates—used the system to identify and monitor COVID-19 hotspots and inform investigations. The country also expanded the integrated Laboratory Information System (SIVILAB) with new modules that increased available health data and enabled rapid genomic surveillance. The data were used for complex analyses and provided comprehensive information to the health system and external partners using interactive dashboards and real-time geographic visualizations.

With CDC's continued support, INS promotes work that improves and streamlines public health data sharing. SIVIGILA is supporting **One Health** by bringing together animal health data from veterinary and agricultural monitoring into the system, ensuring the compatibility of databases with SIVILAB, and expanding electronic medical record keeping. These efforts and the ongoing collaborations between CDC and INS continue to improve the capacity of Colombia and the region to prevent, detect, and respond to public health threats.

SIVILGIA 4.0 Timeline

Tracked Records and Project Milestones

2018
- Development of SIVIGILA 4.0
- **1.7M records**

2019
- Ingenuity Award
- COVID-19 Pandemic
- **1.5M records**

2020
- Online dashboard
- Expanded networks
- **17.7M records**

2021
- Combination with lab network info systems (SIVILAB)
- **36M records**

2022
- Enhancing databases
- Expanding record keeping
- **5.5M records**

CDC and WHO Leverage Partner Resources to Respond to Humanitarian Emergencies

With 235 million people in 36 countries requiring humanitarian assistance in 2021, CDC and its partner organizations must have a structure in place for deployment to coordinate resources for organized and rapid emergency response. For over 20 years, CDC and the Global Outbreak Alert and Response Network (GOARN) have collaborated to deliver and strengthen public health systems.

In 2000, CDC was one of the 60 founding institutions of GOARN and continues to be an important partner and leader in the network. CDC provides personnel and coordinates response activities with GOARN through the Global Disease Detection and Operations Center (GDDOC) team, helping deploy, train, and develop trainings for rapid response teams. One of the important roles CDC plays with GOARN is conducting event-based surveillance (EBS), which identifies and tracks infectious diseases and other public health events.

Recently, CDC has deployed subject matter experts to the 2022 Ukraine response as well

A group of Ukrainians carrying luggage as they cross to and from Ukraine at the Palanca border in Moldova. Photo Courtesy of UNHCR

as the 2022 Uganda Ebola outbreak, which is the largest since the 2000 outbreak in Gulu, Uganda. In October 2022, CDC employees were deployed to support GOARN partners in the implementation of the Go.Data project, a data collection and analysis tool for outbreaks.

Since June 2021, CDC has also been a member of the Integrated Outbreak Analytics (IOA) Global Network, a new partnership under GOARN. IOA utilizes a multidisciplinary approach to understanding outbreak dynamics and informing outbreak response. It aims to drive comprehensive, accountable, and effective public health and clinical strategies by allowing communities and national and subnational health authorities to use data for operational decision-making.

CDC continues to work alongside GOARN to improve response capacity for future public health emergencies with a stronger country-level focus, as well as enhanced regional development and network operations.

Surveillance Moving Forward

CDC is collaborating with countries and partners to utilize disease surveillance innovations to save lives. Disease detection, testing, and monitoring can save lives if work efforts are quickly shifted to meet current needs and surveillance is strengthened to be timely, complete, and representative. Continued investment in surveillance, diagnostics, and safety also allows countries to respond to future public health emergencies more effectively.

CDC's Ray Arthur (top) helps install a radio antenna to transmit Ebola messages and songs at an Internally Displaced Person camp in 2000 for those escaping Joseph Kony's Lord's Resistance Army in northern Uganda. Photo: WHO (World Health Organization)

BUILDING *a* GLOBAL WORKFORCE *to* COUNTER *the* NEXT PUBLIC HEALTH THREAT

A well-trained public health workforce is necessary to protect health, recognize disease threats, and make effective decisions when an outbreak occurs. To help attain this goal, CDC works with ministries of health, global partners, and experts across health sectors to build a skilled global network of public health professionals in the regions where CDC works. CDC currently engages in workforce development programs in more than 55 countries by conducting both formal and informal training opportunities that address all primary workforce functions needed to prevent, detect, and respond to public health threats. Training programs build local capacity in disease surveillance, laboratory systems, emergency preparedness and response, outbreak investigation, emergency management, and public health leadership. CDC trains people to solve urgent challenges facing their countries to then become leaders in vital public health programs.

Zambia: Strengthening Emergency Rapid Response Capacity

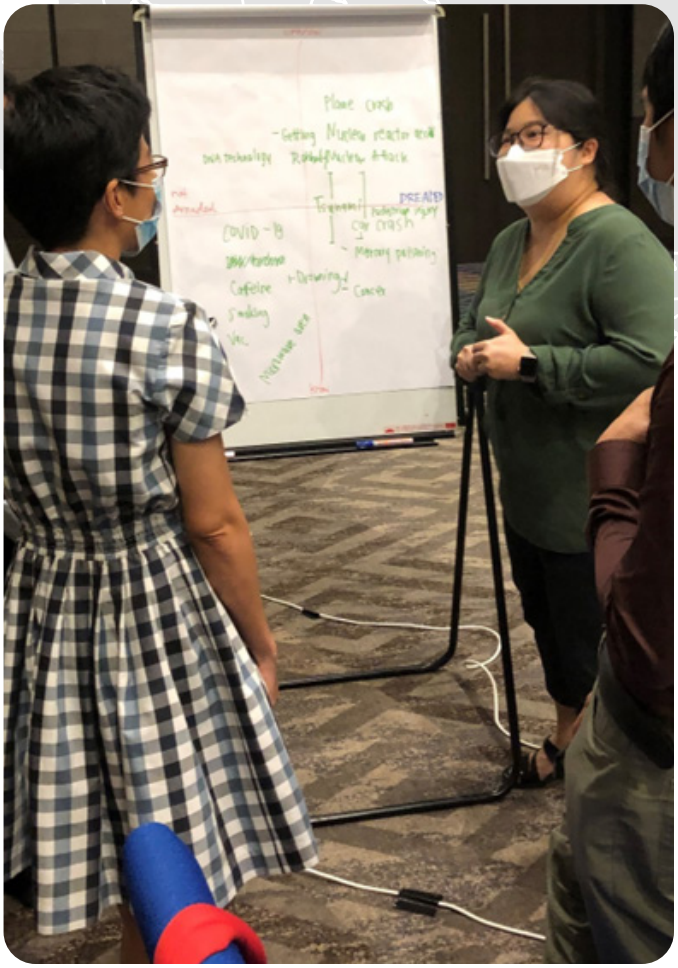
International Health Regulations (IHR) require that member states have the capacity to respond quickly and effectively in emergencies. As public health emergencies often begin and end at the local level, the Zambia National Public Health Institute (ZNPHI) recognized the need to build a formalized public health Rapid Response Team (RRT) program which would empower provinces to address outbreaks quickly. ZNPHI worked with CDC's Zambia Country Office and the CDC Emergency Response Capacity Team (ERCT) to identify and train RRT program managers to establish and maintain staff recruitment, ensure roster maintenance, training, deployment processes, and perform program monitoring. ZNPHI national RRT managers and CDC co-facilitated an RRT program design and management workshop in two provinces. CDC subsequently supported ZNPHI in leading the workshops in two

Mays Shamout, CDC Response Capacity Specialist, provides tailored technical assistance to Zambia National Public Health Institute's RRT program management team in the development of their National RRT Preparedness and Response SOPs at ZNPHI, Lusaka, Zambia. Photo: Dr. Chikama Mukwangole/ZNPHI

additional provinces. ZNPHI then delivered the workshop in Zambia's eight remaining provinces. Through this 'cascade' training approach, 59 personnel were selected and trained as RRT managers, and all provinces drafted standard operating procedures (SOPs) as the foundation for implementing the RRT programs locally. By increasing provinces' ability to respond to and recover from emergencies, ZNPHI is strengthening the resiliency of Zambia's outbreak response capacity in the face of any hazard that may arise. ZNPHI's work positioned Zambia as a regional leader with technical expertise in emergency response management and the development of emergency response SOPs within the Southern Africa region. Zambia's SOPs are currently being used to establish the elements of their RRT program, along with being an example to other countries interested in strengthening their own RRT programs. In Spring 2023, ZNPHI plans to engage key partners to establish an RRT management network to continue improving this national and local RRT model with the expansion to regional response.

Southeast Asia Region: Strengthening Capacity to Handle Public Health Events Through Regional Risk and Crisis Communication Workshops

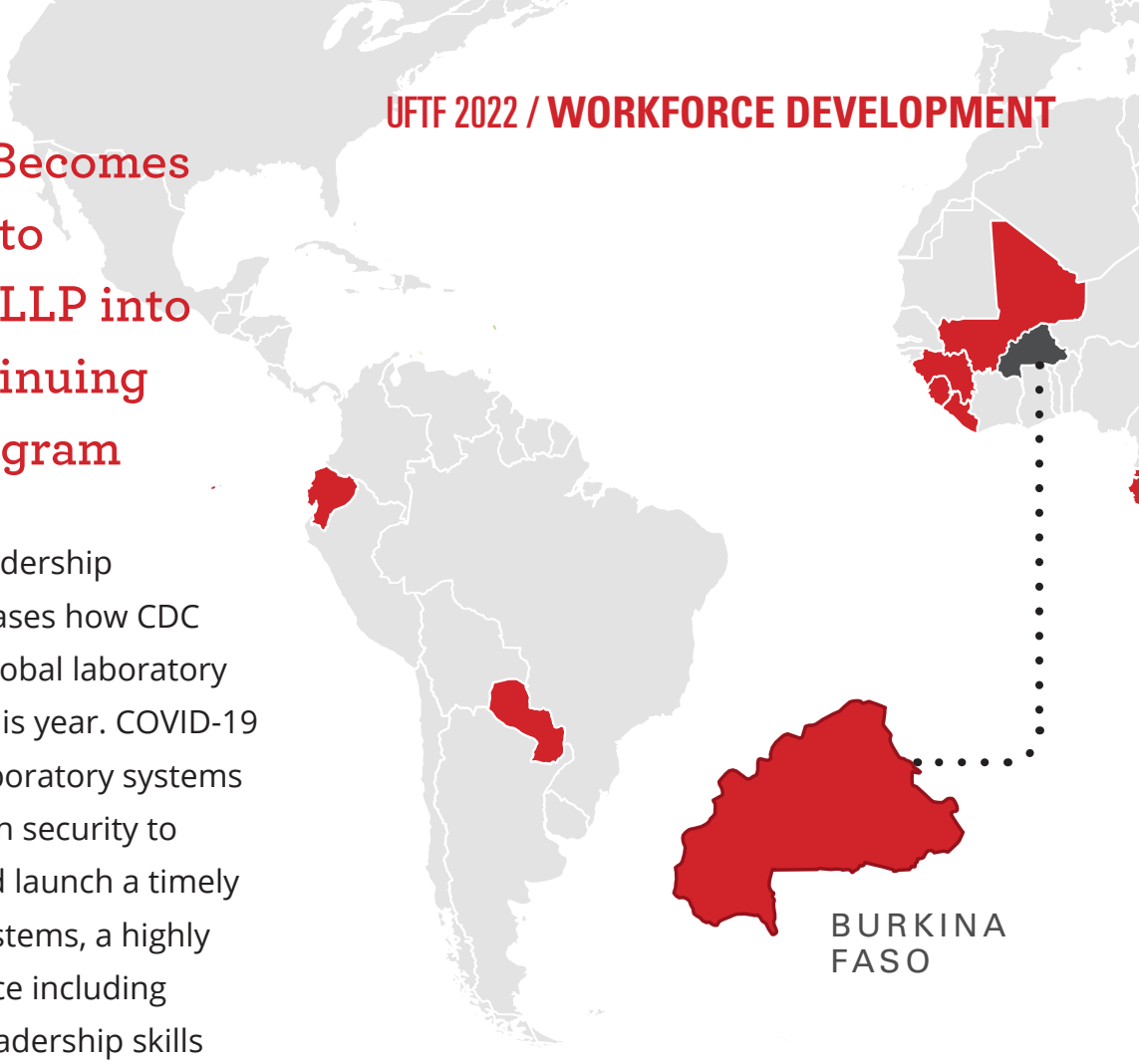
CDC's Field Epidemiology Training Program (FETP) trains "disease detectives" in disease surveillance, emergency response, and outbreak investigations. Since the inception of FETP in 1980, FETPs have trained more than 21,000 disease detectives in more than 80 countries. As the COVID-19 pandemic unfolded, public health authorities worldwide struggled with providing information and guidance to the public. To address this challenge, Thailand FETP held a regional workshop on risk communication for Southeast Asia FETP mentors in August 2022. Approximately 30 epidemiologists who supervise FETPs in Cambodia, Indonesia, Japan, Laos, Malaysia, South Korea, Thailand, and Vietnam attended the three-day workshop, held in Chiang Rai, Thailand. The workshop covered the challenges and opportunities that arise during emergencies and how to communicate with various audiences. Instructional sessions and case



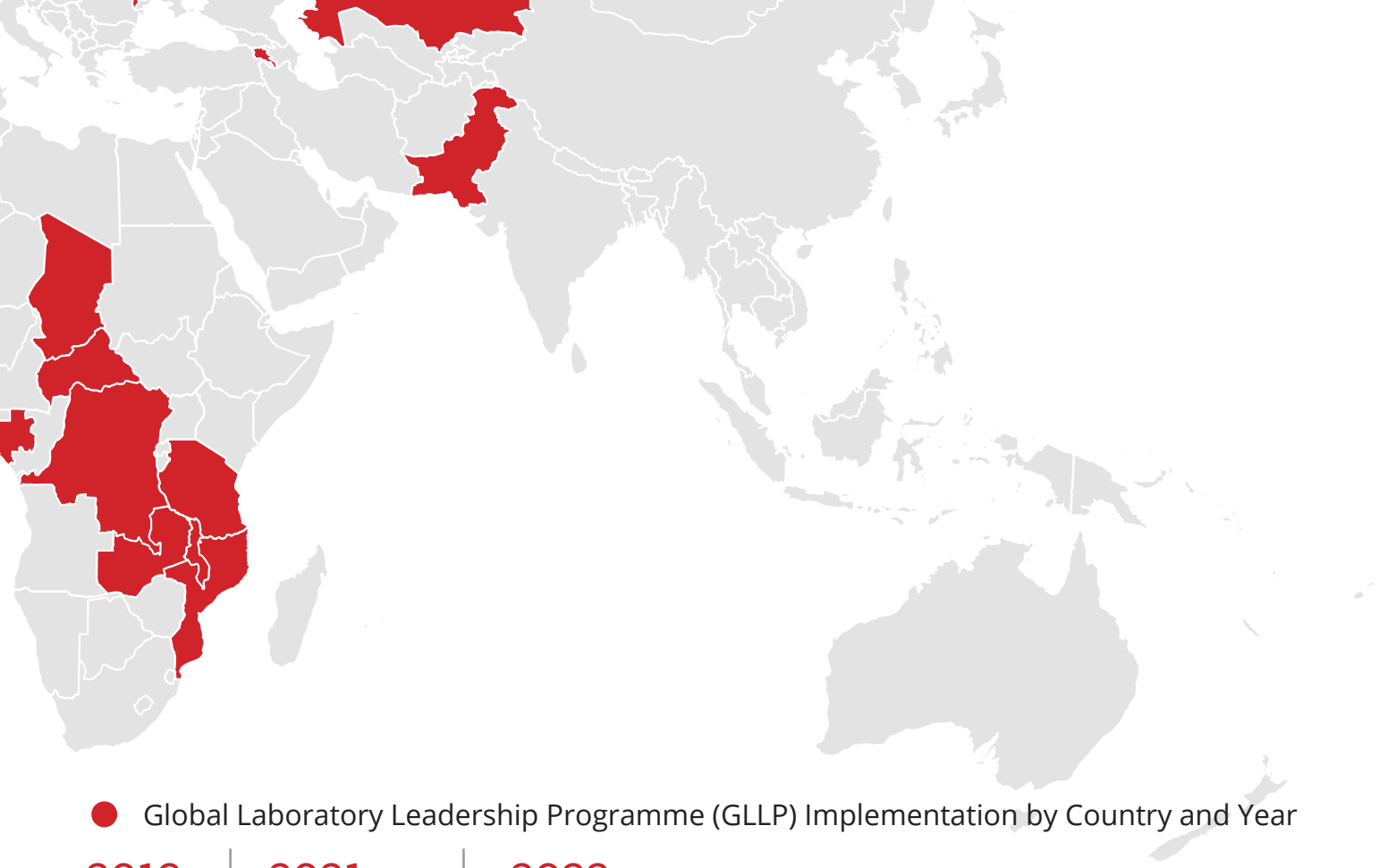
Field Epidemiology Training Program (FETP) participants work on a risk communication exercise during a workshop held in August 2022 Chiang Rai, Thailand. Photo: Pascale Krumm/CDC

studies allowed participants to practice what they learned. Five groups addressed issues raised in different public health case studies: flooding in the Chiang Rai region of Thailand, the effects of cannabis legalization on Thai teenagers, road traffic injuries among food delivery drivers in Bangkok, depression among women in South Korea, and Nipah virus among pig farmers in Malaysia. Participants performed audience analyses, crafted public health messages, conducted simulated media interviews, and created a communication plan. Dr. Panithee Thammawijaya, Director of Thailand FETP, remarked, "Thailand has a long history of being proactive when it comes to disease surveillance and outbreak response, having created the first FETP outside of North America in 1980. So, it made sense for us to offer this workshop, which will strengthen the risk communication skills of epidemiologists in Southeast Asia and help us be better prepared when the next public health crisis unfolds."

Burkina Faso Becomes First Country to Incorporate GLLP into National Continuing Education Program



The Global Laboratory Leadership Programme (GLLP) showcases how CDC invested substantially in global laboratory workforce development this year. COVID-19 highlighted how strong laboratory systems are critical for global health security to detect outbreaks early and launch a timely response. Within those systems, a highly skilled laboratory workforce including laboratorians trained in leadership skills are needed to ensure sustainability of day-to-day laboratory operations and timely response to outbreaks or emerging disease threats. Following the creation of the Global Health Security Agenda, CDC collaborated with the Association of Public Health Laboratories, the European Centre for Disease Control and Prevention, the Food and Agriculture Organization of the United Nations, the World Organization for Animal Health (WOAH), and the World Health Organization to develop the GLLP. This program fosters and mentors laboratory leaders and managers to build, strengthen, and sustain public health laboratory systems in their own countries. The curriculum and training for the program incorporate the concept of One Health, recognizing the connection among people, animals, plants and their shared environment.The program grew from a pilot program in Liberia in 2017 to 20 countries implementing the program in 2022. One key objective of the GLLP is developing a sustainable program owned by the country. Burkina Faso is the first country to incorporate the program into existing continuous education programs. By working with Burkina Faso's ministries of higher education and health in 2022, CDC began the process to integrate the program into the Joseph Ki-Zerbo University Diploma in Ouagadougou. Planning is underway to implement the program in several East African countries in 2023.



● Global Laboratory Leadership Programme (GLLP) Implementation by Country and Year

2019

- Pakistan
- Liberia

2021

- Kazakhstan
- Armenia
- Moldova
- Burkina Faso

2022

- Ecuador
- Paraguay
- Central African Republic
- Chad
- Congo
- Democratic Republic of the Congo
- Gabon
- Guinea
- Mali
- Mozambique
- Zambia
- Malawi
- Tanzania
- Sierra Leone

Workforce Development Moving Forward

These CDC workforce development programs and activities train professionals responsible for improving health and taking the lead in emergencies. They also have fostered strong, mutually beneficial relationships with CDC, ministries of health, and other global partners. Ultimately, an enhanced well-trained workforce and the links created between that workforce and the public health systems they support will better prepare countries to prevent, detect, and respond to outbreaks in the years to come.

DGHP

DIVISION OF GLOBAL HEALTH PROTECTION

UPDATES *from* THE FIELD

STRENGHTENING PUBLIC HEALTH SYSTEMS TO PROTECT COMMUNITIES AROUND THE WORLD

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