



UPDATES FROM THE FIELD

GETTING AHEAD OF THE NEXT PANDEMIC

WINTER 2017 | ISSUE 26

THE POWER TO PROTECT



CDC stands ready to join the fight against life-threatening epidemics, whenever and wherever they strike.

This year alone, our global health protection work helped contain the spread of Ebola in the Democratic Republic of the Congo (DRC), meningitis in Liberia, Marburg virus in Uganda, and other threats too numerous to list. Thanks to early detection, millions were vaccinated against measles, cholera, and other vaccine-preventable diseases. And we continue to

detect new threats – outbreaks that could become the next devastating news headlines if not stopped in time.

The Division of Global Health Protection helps eliminate threats before they spread widely. Our primary mission is to protect Americans and people worldwide from public health threats by working with partners to build capacity, advance research, and respond in times of crisis. We empower countries to eliminate outbreaks abroad, so we don't have to fight them here at home.

In 2017, our global disease detection programs tracked hundreds of outbreaks, while CDC-trained disease detectives investigated over 300 threats in other countries. Every day, our scientific and technical experts strengthen vital prevention, detection, and emergency response capabilities, even in the most challenging parts of the world. We do this work in close collaboration with other experts from across CDC and through vital U.S. and international partnerships. And we are making incredible progress together with our partners, with significant achievements in our 17 Phase 1 countries in the first two years of the Global Health Security Agenda.

Because the next emergency can arrive on our doorstep any moment, our work to fight epidemics must continue forward – even in the absence of a crisis. Investments in global health security are our best chance for heading off a future pandemic and protecting our national wellbeing, both from naturally occurring outbreaks and potential acts of bioterrorism. It's estimated that a flu pandemic that reaches our country could cost the U.S. as many as 200,000 lives and over 60 billion dollars – and even outbreaks in other countries put us at risk and threaten our economic stability by disrupting travel and trade.

As the world continues to mark the road ahead for global health security, we can look closely at the accomplishments highlighted in this report to see how CDC is making a difference. Through strong partnerships around the world, we truly have the power to protect America.

CAPT Nancy Knight, MD

*Director, Division of Global Health Protection
Center for Global Health, CDC*

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INQUIRIES: Send story inquiries to: dghpcommunication@cdc.gov

READ ONLINE: <https://www.cdc.gov/globalhealth/healthprotection/>

CS289416



WHY IT MATTERS: THE PANDEMIC THREAT

While we can't predict exactly when or where the next epidemic or pandemic will begin, we know one is coming. Many challenges exist today that increase the risk that infectious disease outbreaks will occur and spread rapidly, including:

- Increased risk of infectious pathogens "spilling over" from animals to humans
- Development of antimicrobial resistance
- Spread of infectious diseases through global travel and trade
- Weak public health infrastructures
- Acts of bioterrorism
- Environmental disasters (like hurricanes, mudslides, or earthquakes)
- Humanitarian emergencies (like war or famine)

Global health security is how we stop outbreaks from becoming widespread pandemics that threaten us all.

U.S. NATIONAL SECURITY AT RISK

When Ebola, flu, or another infectious disease can travel from a remote village to major cities on all continents in **36 hours**, the threat to our national security is greater than ever. Even if the disease never reaches the U.S., a global infectious disease outbreak can have a catastrophic impact on the U.S. economy in three main ways:



Jobs: In 2015, the U.S. exported over **\$300 billion** in material goods and services to 49 health security priority countries. These exports supported over **1.6 million jobs** across America in sectors like agriculture, manufacturing, and natural resource extraction.



Travel and Trade: Fear of contagion can impact travel, tourism, and imports, especially if cases occur in the United States, as they did during the 2014-2016 West Africa Ebola outbreak.



Cost: Estimates show that pandemics are likely to cost over \$6 trillion in the next century, with an annualized expected loss of more than **\$60 billion** for potential pandemics. However, investing **\$4.5 billion** per year in building global capacities could avert these catastrophic costs.

HOW DO WE STOP POTENTIAL PANDEMICS FROM SPREADING?

Our global health security work focuses on building public health systems that work hand-in-hand to help countries detect and contain global health threats:

- **Surveillance systems** to rapidly detect and report cases
- **Laboratory networks** to accurately identify the cause of illness
- **A trained workforce** to identify, track, and contain outbreaks
- **Emergency management systems** to coordinate an effective response

In 2017, stronger public health systems meant **faster, smarter response** to contain potential pandemics and threats of international importance:

- JAN:** Uganda's emergency operations center (EOC) responds to first cases of highly pathogenic avian influenza in the country
- FEB:** Guinea's EOC coordinates rapid response to a measles outbreak
- MAR:** Cameroon's EOC responds in record time of under 24 hours to contain a meningitis outbreak
- APR:** Liberia's new EOC and disease detectives respond to a deadly meningococcal disease outbreak
- MAY:** Democratic Republic of the Congo's frontline disease detectives help rapidly contain Ebola
- JUN:** Nigeria's EOC helps contain a widespread meningitis outbreak
- JUL:** Guatemala's hospital surveillance systems identify two outbreaks of Dengue
- AUG:** Kenya's new mobile surveillance system detects an anthrax outbreak
- SEP:** Georgia's disease detectives help contain a measles outbreak
- OCT:** Kenya's IMPACT program fellows respond to an outbreak of cholera
- NOV:** Uganda's EOC coordinates rapid response to a deadly Marburg virus outbreak
- DEC:** Bangladesh's disease detectives respond to a diphtheria outbreak

2017 BY THE NUMBERS: HIGHLIGHTS FROM THE DIVISION OF GLOBAL HEALTH PROTECTION

PREVENT



20 countries supported in building or strengthening their National Public Health Institutes



~80 public health managers trained to make effective decisions through IMPACT



10 countries reducing cardiovascular disease through the HEARTS technical package

DETECT



2000+ Frontline disease detectives trained in health security partner countries



~300 events of public health importance tracked by global disease detection systems



40 countries received technical assistance in surveillance, epidemiology, research, and laboratory systems to identify and contain outbreaks

RESPOND



140+ mobilizations of CDC's Global Rapid Response Team to more than 50 countries



300+ outbreaks with pandemic potential investigated by FETP-trained disease detectives



150+ outbreak responses in 14 countries supported by GDD Centers

AND BEYOND



~60% of completed Joint External Evaluations received support from CDC experts



17 One Health Prioritization Workshops helped countries identify their biggest zoonotic threats



200+ scientific papers in peer-reviewed journals used data to inform public health action

PREVENT

DID YOU KNOW?

CDC is America's National Public Health Institute (NPHI). Building on more than 70 years of experience, CDC is helping countries around the world develop and strengthen their own organized, well-functioning NPHIs to protect the public's health and contain disease close to the source. Over 5 billion people across five continents are reached by various NPHIs, which provide leadership and coordination for public health at the national level.

“ Learning from the Ebola virus disease outbreak, my government is taking action to build a resilient health system that is well positioned to prevent, detect, and respond to any public health threat of either the same or of similar nature to Ebola ... An Emergency Operations Centre and a National Public Health Agency for capacity-building have been established to coordinate field activities during outbreaks. ”

Dr. Ernest Bai Koroma, Former President of Sierra Leone, in an address to the Sierra Leonean Parliament (2016)

A refugee camp resident uses a newly installed portable handwashing station.



THREE WAYS NCDs IMPACT GLOBAL HEALTH SECURITY

Noncommunicable diseases (NCDs) are the leading cause of death and disability worldwide. Here are three reasons why prevention and control of NCDs and their risk factors are important for global health security:

1. **A safer population:** Reducing NCDs can also reduce susceptibility to infectious disease outbreaks. For example, uncontrolled diabetes increases the risk and severity of infectious diseases like dengue and malaria, and makes tuberculosis even harder to treat. Tobacco smoking is a risk factor for all leading NCDs and also increases risk and severity of influenza, tuberculosis, pneumonia, and hospital-acquired infections.
2. **Stronger health systems:** A health delivery system that ordinarily addresses NCDs can be a first line of defense when a communicable disease emergency occurs. For example, Brazil's strong system for managing NCDs helped the country respond to the Zika virus epidemic. Additionally, reducing the rate of NCDs keeps health systems from being overburdened when large outbreaks happen.
3. **Meeting global goals:** NCD initiatives contribute to international development goals by reducing the economic burden of illness and death and improving overall capacity for emergency response.

WHAT CDC IS DOING

CDC's global NCD activities advance global health security goals to prevent, detect, and respond:

- **Prevent:** Global Hearts strengthens primary care capacity and medication supply chains that can support emergency response activities.
- **Detect:** Data for Health NCD mobile phone surveys use innovative technology to rapidly and inexpensively conduct disease surveillance and detection – information that is crucial during infectious disease outbreaks.
- **Respond:** FETP-NCD programs train disease detectives to recognize and prevent both noncommunicable conditions and emerging threats to health security.

For more information, read our article in the Emerging Infectious Diseases journal supplement on Global Health Security (see back cover).

FETP investigator Kouawo Laurent Mariame (right) conducts an interview during a maternal child health study.



HOW COLOMBIA SIMULATED A DEADLY OUTBREAK TO PREPARE FOR THE POPE'S VISIT



Public Health Threat: With a visit from Pope Francis expected in several cities across Colombia in September, responders needed to make sure they could effectively coordinate action in the event of an emergency. Exercising the country's new Public Health Emergency Operations Center (PHEOC), which had just opened in January 2017, was an important step in preparing the country for the throngs of visitors.

Exercises are a key part of global health security, providing valuable lessons and revealing gaps before an emergency occurs.

Response: In July 2017, Colombia worked with CDC to put its new PHEOC to the test by simulating a real-life emergency to make sure its responders are ready.

The full-scale exercise took place from July 26-28 and had two components: activation of the PHEOC in Bogota and a field investigation in Cartagena. The scenario included suspected cases of cholera in the port city of Cartagena – an event that would warrant the immediate activation of Colombia's PHEOC.

Since emergencies require many different kinds of responders to work together efficiently, the PHEOC used the simulation to practice coordinating efforts between the Cartagena Port Authority, local Rapid Response Teams, and the local Field Epidemiology Training Program. Colombia's National Institute of Health (INS) showed full commitment to the exercise, even testing mock lab samples to explore Colombia's current outbreak response capacity.

Impact: Lessons learned from Colombia's exercise were put into action when the PHEOC was activated during the Pope's September visit.

The PHEOC is part of a wider Emergency Management System in which many systems work hand-in-hand to rapidly respond to public health events of national and international concern. The successful launch of the PHEOC is the culmination of years of planning between INS and CDC's Emergency Response and Recovery Branch and National Public Health Institute program.

Colombia's dedication to public health preparedness sets an example for other countries who are strengthening their own systems to enhance global health security.

(Left photo) Actors pose as patients to test real-time response capacity in hospitals. (Below photo) A news headline in Colombia announces the simulation exercise.

Simulacro probará reacción ante epidemia

Con el fin de poner a prueba el proceso de atención inicial de un evento en salud pública, este miércoles y jueves se simulará la aparición de una epidemia.

MÓNICA MEZA ALTAMAR
EL UNIVERSAL

¿Está Cartagena lista para actuar ante la aparición de una epidemia? Para resolver ese interrogante...



ACROSS THE GLOBE: CHOLERA AT A WEDDING

In September 2017, Cameroon conducted the first large-scale international public health response exercise in Africa, working with experts from across CDC and partners to stage a complex simulation of a cholera outbreak that began at a wedding. As actors playing sick wedding guests turned up at hospitals, Cameroon's responders swung into action, doing their jobs exactly as if the scenario were real.

The week-long exercise challenged Cameroon's outbreak response capabilities, testing the country's improved laboratories; its ability to share information in real time; the performance of its new Public Health Emergency Operations Center; and other systems that have been installed to better prevent, detect, and respond to disease outbreaks.

(Right) Hospital workers treat "sick" patients during the exercise.

(Below) Health care workers treat traveler at the Duala International Airport. Photo Courtesy: CDC's Global Emergency Management Capacity Development Branch (OPHPR/DEO)



DID YOU KNOW?

Every case and every death from cholera is preventable with the tools we have today, putting the goal of ending cholera within reach.



REDUCING THE RISK OF BIOTERRORISM AND LABORATORY DANGERS

Public Health Threat: We cannot effectively stop epidemics without critical information from labs. In an outbreak, laboratory testing can help quickly and accurately pinpoint the cause, monitor treatment, and guide the response.

In order to save lives, laboratory workers must sometimes handle dangerous pathogens – like the organisms that cause anthrax or plague – or deadly toxins like ricin. If accidentally or intentionally released, some pathogens could pose a severe threat to human and animal health, threatening both laboratory workers and their surrounding communities.

Response: Biosafety and security systems are how we minimize the risk of theft, loss, or mishandling of specimens used by laboratories as they conduct their lifesaving work.

To reduce the global risk of an accidental release from a lab or a bioterrorist threat, CDC helps its partner countries implement biosafety and biosecurity programs within laboratory networks. CDC experts offer technical assistance to laboratory networks by working with partner countries to make plans at the national level, as well as by conducting trainings to ensure laboratories operate safely and securely.

Impact: CDC's work is helping countries keep laboratories safe and secure as they handle the world's most threatening pathogens. For example, in partnership with CDC and the U.S. Department of Defense, Ethiopia has embarked on a program of reducing the risk of an accidental or intentional release of hazardous biological materials. To help protect the citizens of Ethiopia, the region, and the international community, Ethiopia identified its most dangerous biological agents and toxins to create national requirements for all laboratories possessing, using, or transferring these hazardous materials.

In Southeast Asia, CDC's Strengthening Laboratory Capacity Program in Thailand helps train workers who can certify laboratory biological safety cabinets (BSCs). BSCs protect both workers and the surrounding community when laboratories work with infectious materials. The Asia Pacific Biosafety Association found that many of BSCs tested in the region were poorly designed, installed incorrectly, not certified, or operated incorrectly. CDC supports critical programs that provide user training, as well as licensing of technicians who can certify BSCs within Asia and around the world. BSC certifiers across Southeast Asia play an important role in keeping laboratory workers and the public safe.

Lab workers in Thailand.



Global Disease Detection experts in Guatemala collect specimens from bats to determine the prevalence of pathogens.

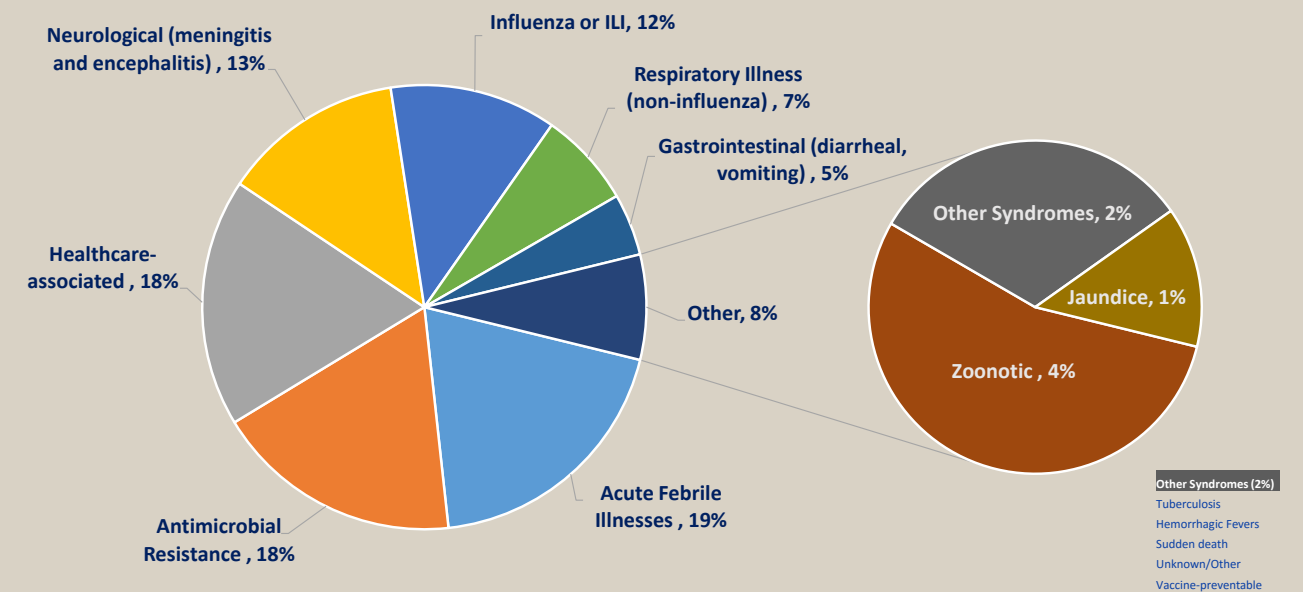
DETECT

DID YOU KNOW?

CDC's Global Disease Detection (GDD) program provides critical surveillance and research data as a foundation for a sustainable global protection strategy. The reach of the GDD network helps countries quickly identify and respond to diseases within their region. GDD surveillance systems focused on one or more diseases or syndromes cover more than 109 million people in 10 countries.

In 2017, the GDD program conducted surveillance at more than 288 unique sites, tracking deadly threats like flu, fevers, and antimicrobial resistance. Below is a snapshot of disease syndromes tracked this year by GDD surveillance systems across the globe.

Illnesses and Syndromes Included in Surveillance Conducted through the GDD Program, 2017



MOTORCYCLES HELP SPEED DIAGNOSIS IN LIBERIA

Public Health Threat: When infectious diseases strike, getting a fast and accurate laboratory diagnosis is critical to stopping an outbreak from becoming a widespread epidemic. Before the West Africa Ebola epidemic, Liberia had no system in place for getting clinical samples from remote areas to diagnostic labs – a journey that could take as many as eight hours on public transportation or over difficult terrain.

In remote areas, transporting samples from local healthcare facilities to diagnostic labs can be a risky process. Sending sick patients to faraway labs risks passing disease to others along the way. Using healthcare workers to transport samples can leave local clinics short-staffed for long periods. Delays in getting an accurate laboratory diagnosis can lead to improper precautions or incorrect treatment – all of which give opportunities for outbreaks to spread.

Response: Motorcycle couriers offered Liberia an innovative solution for safely getting samples from local clinics to diagnostic labs. Riders for Health has trained a fleet of couriers who crisscross the country to transport samples between local health facilities and laboratories, allowing lifesaving results to be obtained and used faster by healthcare workers. The program operates with support from CDC Foundation, the U.S. Agency for International Development, the World Health Organization, and CDC.

Riders are trained in infection prevention and control and in motorcycle safety and maintenance. Because of the long distances between health facilities and laboratories, the program uses a relay system of collecting and batching samples and handing them off between riders, who ensure that samples are safely handled and kept in conditions that help preserve the samples for testing.

Impact: CDC's post-Ebola global health security work is enabling better public health response in Liberia. As of September 2017, more than 50,000 samples have been transported by Riders for Health over a total of more than three million kilometers. Before Riders for Health, only 25% of samples in Liberia reached a laboratory within 24 hours. Today, that number has increased to about 80%.

With the help of Riders for Health, 90% of specimens from all of Liberia's 15 counties are now transported to laboratories by motorcycle. After laboratory analysis is conducted, results are promptly dispatched from the laboratories to the referring health facility through email or by mobile phone. The service enables rapid diagnosis and prompt medical intervention.

This program is operated and managed by Riders for Health for the Ministry of Health in collaboration with, and in integration with, the Liberian public health system. CDC's Division of Global Health Protection (DGHP) is strengthening laboratory diagnostics in Liberia through the development and implementation of a robust, rapid, flexible specimen transport system that can be fully integrated into Liberia's public health system as a model for long-term success.

A motorcycle courier delivers laboratory samples over rough roads in Liberia.



EARLY WARNING FOR INTERNATIONAL OUTBREAKS IS CRITICAL

Since 2007, CDC's Global Disease Detection Operations Center has monitored and reported over 1300 unique outbreaks of more than 140 diseases occurring in over 150 different countries.

Using event-based surveillance (EBS), the center detects and monitors global public health events of international importance. EBS is a type of public health surveillance that looks at reports, stories, rumors, and other information about health events that could be a serious risk to public health. This information is then verified by health experts. Communities can play an important role in EBS by learning how to identify and report suspected outbreaks or unusual health events.

EBS is one of several types of surveillance used to detect diseases. Other types include population-based surveillance, sentinel surveillance, facility-based surveillance, and non-human animal (zoonotic) surveillance.



CDC staff train local healthcare workers in routine maternal and newborn health surveillance. Photo Courtesy: Alaine Knipes, CDC

VIETNAM TRACKS MULTI-DRUG RESISTANT BACTERIA

Public Health Threat: High levels of antimicrobial resistance (AMR) are found in every region of the world, threatening our ability to treat even the most common infectious diseases.

In Vietnam, rates of AMR are among the highest in Asia, with multi-drug-resistant infections causing thousands of deaths annually. The region has recently seen the emergence of serious antimicrobial resistance in tuberculosis, malaria, and bacteria commonly associated with hospital-acquired infections (HAI).

Response: Detecting, preventing, and controlling drug resistance requires coordinated efforts from all countries. CDC collaborates with WHO-Vietnam, Oxford Clinical Research Unit, Association of Public Health Laboratories, and PATH to directly support implementation of Vietnam's National Action Plan to Combat Antimicrobial Resistance.

Because detecting and tracking dangerous infections is key to stopping AMR, Vietnam's National Action Plan includes an AMR sentinel surveillance system involving 16 laboratories and six model hospitals. The system tracks and reports levels of healthcare-associated bloodstream infections and urinary tract infections. Vietnam's National Action Plan also includes monitoring the use of antibiotics while encouraging antibiotic stewardship, as well as developing regulations that will protect human and animal health.

Proper infection prevention and control (IPC) practices are also critical to stopping spread of resistant germs in healthcare settings; a "champions" initiative strengthens these practices among healthcare workers by training a core group of professionals who can then train others.

Impact: The AMR sentinel surveillance system is the first national surveillance for multi-drug resistant bacteria in the country. This is a critical step in monitoring the spread of antibiotic resistant bacteria.

The country has also assessed the quality and capacity of their AMR surveillance laboratories and has provided training and mentoring for selected labs. At the national level, Vietnam now has guidelines for microbiology and antibiotic susceptibility testing. They also have a national program to build capacity in infection prevention and control.

Although Vietnam has made significant progress in setting policies to combat AMR, there is much to be done to better detect and prevent resistant germs, both in and outside of healthcare settings. Ensuring that every country is able to rapidly and effectively detect AMR is critical to protecting the health of the global community.

DID YOU KNOW?

To combat AMR, CDC's work with countries focuses on:

- Creating sound national policies
- Strengthening AMR surveillance
- Developing and deploying infection control strategies
- Establishing antibiotic stewardship programs to improve the appropriate use of antibiotics



Maintaining hand hygiene is one aspect of (IPC) practices, which are critical to stopping the spread of resistant germs in healthcare settings
Photo Courtesy: David Snyder, CDC Foundation

TANZANIA'S DISEASE DETECTIVES CRACK A COMPLICATED CASE

In March 2017, a mystery illness struck in Tanzania. In the village of Kajana, children at Munyika Primary School began to get sick. First a few, then a few dozen, and then more than 100 children reported symptoms that included headache, abdominal pain, and fever. The government of Tanzania dispatched a team of disease detectives from the country's Field Epidemiology and Laboratory Training Program to pinpoint the cause of the illness and determine how to stop it.

Disease detectives know that getting to the bottom of an outbreak isn't always simple. In this case, the children's symptoms could have been caused by several common pathogens.

Only half of the schoolchildren tested positive on a Malaria Rapid Diagnostic Test. After sending additional samples to the laboratory, the disease detectives used their training to gather and analyze data about the affected children: How old were they? How many were girls? Boys? How many houses had mosquito bed nets or screens? How many had toilets? They looked at the sanitation facilities in the school. They interviewed community leaders.

They used this information to create charts and graphs. Through analysis, they found that illness was most often associated with being female, not sleeping under a mosquito bed net, washing hands without soap, or using river or stream water instead of tap water.

Further laboratory testing revealed that about 70% of children were infected with malaria, but some of the children also had dengue virus or Bartonella. Some children tested positive for more than one of these infections at the same time. Stool samples revealed that a high number of them also suffered from infection with other pathogens like Schistosoma, Giardia, and Campylobacter. Finding out that there were multiple causes of the sickness helped the disease detectives make recommendations. These included increasing surveillance for cases of fever; distributing long-lasting, treated bed nets; improving water and sanitation; de-worming; and encouraging the community to regularly use the bed nets and to seek early medical attention if they or their children get sick.

Since 2008, the Tanzania Ministry of Health, Community Development, Gender, Elderly and Children – in partnership with CDC, USAID, and the World Bank – has trained over 100 disease detectives through its two-year program on surveillance and response. Graduates work at all levels of the public health system, from local surveillance officers to national-level epidemiologists.

DID YOU KNOW?

CDC-supported Field Epidemiology Training Programs have trained over 10,000 disease detectives around the world to serve as "boots on the ground," helping track, contain, and eliminate outbreaks before they become epidemics.

Field investigation of an outbreak affecting schoolchildren in Kajana Village, Tanzania, 2017.



RESPOND

RAPID RESPONSE PROTECTS AMERICANS AND SAVES LIVES

In addition to offering expertise in all critical areas of emergency response including health; nutrition; infectious diseases; mental health; reproductive health; risk communications and community engagement; surveillance; coordination; logistics; and water, sanitation and hygiene, CDC's Emergency Response and Recovery Branch also coordinates the Global Rapid Response Team (Global RRT).

The Global RRT is a unique resource that can rapidly respond to global public health concerns. The Global RRT responds to emergencies when and where they occur to stop health threats before they reach our shores.

*After Hurricane Matthew, a healthcare worker examines cholera registers at the Moron health center in Haiti.
Photo Courtesy: Coralie Giese, Global RRT, Epi*



RESPONDING FASTER THAN EVER IN THE HOT ZONE

Public Health Threat: Uganda is a “hot zone” for infectious diseases. Without the ability to quickly detect and respond to threats, a local outbreak could spiral into global crisis.

Response: With support from CDC and partners through the Global Health Security Agenda, Uganda is responding faster than ever to contain outbreaks at the source. The country's national public health emergency operations center (PHEOC) coordinates strong surveillance and response systems that work hand-in-hand to tackle emergencies.

- Multi-level surveillance systems watch for alerts and monitor information in real-time
- A strong and efficient in-country laboratory network accurately identifies threats within hours
- A national system gets samples to labs from anywhere in the country in 1-2 days
- A trained workforce, including a National Rapid Response Team and FETP-trained disease detectives, can deploy quickly anywhere in the country
- A National Task Force stands ready to take direct action
- Collaboration and partnership with national and international stakeholders builds capacity and ensures efficient use of resources

Impact: The important work being done in Uganda has dramatically reduced the time it takes to detect and respond to outbreaks. While it took over 40 days to confirm a 2010 yellow fever outbreak through outside laboratories, global health security improvements enabled Uganda to detect and confirm a 2016 outbreak in-country in only 10 days. Today, the country responds even faster – usually within 1-2 days.

In November 2017, Uganda staged a rapid and effective response when three deadly cases of Marburg virus disease were reported in Eastern Uganda. CDC Uganda assisted with tracing, monitoring, and testing of 297 people in Kween and Kapchorwa Districts who had been in contact with sick patients. One suspected case traveled across the border into Kenya, raising additional concerns about the virus spreading; CDC Kenya supported emergency preparedness activities to prevent a potential outbreak there.

CDC also participated in a mobile laboratory deployment exercise in Kapchorwa Hospital in preparation for future Marburg or Ebola outbreaks. This exercise was supported by the Global Outbreak Alert and Response Network and coordinated by WHO with support from the European Mobile Lab Project and Médecins Sans Frontières. This outbreak further demonstrated the need for the international community to work closely together to ensure rapid and effective response to disease threats.

DID YOU KNOW?

Deadly outbreaks in Uganda have included viral hemorrhagic fevers (Ebola, Marburg, yellow fever, Rift Valley fever, and Crimean-Congo hemorrhagic fever), cholera, meningitis, plague, and anthrax, among others.

Newly emerging viruses have been discovered in Uganda, and the threat remains for re-emergence of pathogens like West Nile virus and Zika. In 2017, Uganda saw its first cases of highly pathogenic avian flu in migratory birds from Europe.

Uganda is particularly vulnerable to epidemics because of its unique location near the Congo Basin; its close connection with other countries; the risk from natural disasters; and the ever-present threat of evolving pathogens or antimicrobial resistance.

A member of Doctors Without Borders (left) and a Ugandan health worker prepare kits for Ebola survivors to take home upon discharge from the hospital.





International Task Force conducting a meeting concerning Hurricane Irma (2017).

HURRICANE SEASON 2017: EMERGENCY RESPONDERS AT THE READY

Public Health Threat: Natural disasters like hurricanes can leave people vulnerable to a multitude of risks, including diseases. When the unthinkable happens, people may not have access to medical care or clean water. Normal routines are disrupted, and crowded living conditions provide fertile ground for diseases to spread.

The 2017 Atlantic hurricane season was particularly active and destructive. On September 6 – not long after Hurricane Harvey ravaged the United States – Hurricane Irma hit the Leeward Caribbean islands as a Category 5 storm. The powerful storm damaged or destroyed 95 percent of Barbuda’s buildings before heading toward Hispaniola and eventually reaching the southeastern coast of the United States.

Response: By September 5, CDC’s emergency response and recovery experts had already begun preparing for Irma’s international landfall. They stood up an Incident Management System (IMS), which is an internationally recognized system used to coordinate emergency responses. Two days later, when CDC’s Emergency Operations Center activated for the domestic and international Hurricane Irma response, the existing IMS plugged into the agency-wide activation as the International Task Force (ITF).

Having managed the extensive Hurricane Matthew response in 2016, the CDC Haiti country office was ready. They initiated early conversations with CDC headquarters to identify and plan for potential needs. On September 8, CDC Haiti officially requested assistance. In response, the ITF sent a geographic information systems (GIS) specialist to assist Haiti with mapping hurricane-affected water systems. The GIS specialist created maps and engineering documents for 30 water systems, five of which Hurricane Irma had damaged. Haiti’s National Directorate of Potable Water and Sanitation used the maps to advocate for emergency financing to repair the damaged systems. Logistics and health communications experts on the ITF provided additional response support from CDC headquarters to help maintain a smooth running response.

Impact: Early and frequent communication between the CDC Haiti country office and emergency response experts at CDC Atlanta ensured that an efficient, coordinated response was in place. This hurricane season’s responses also strengthened interaction between CDC experts in domestic and international crises. After Irma, the ITF stood down – only to be reactivated when Hurricane Maria struck.



PREVENT



DETECT



RESPOND

... AND BEYOND

HEALTH SECURITY FOR ALL: THE KAMPALA DECLARATION

In October 2017, the U.S. and more than 60 other countries declared their support for extending the Global Health Security Agenda (GHSA) until 2024.

The GHSA was launched in 2014 to establish a set of common international standards to

- Prevent and reduce the likelihood of outbreaks – natural, accidental, or intentional;
- Detect threats early to save lives;
- Respond rapidly and effectively using multi-sectoral, international coordination and communication.

The full declaration, which was issued following the 4th Annual High Level GHSA Ministerial Meeting in Kampala, Uganda, reaffirmed the global commitment to a world safe and secure from threats posed by infectious diseases, but also acknowledged that “significant work remains to fully achieve and sustain health security.”

Responders in Uganda put on personal protective equipment (PPE) during a 2012 Ebola outbreak.





JEEs: CHARTING THE COURSE FOR GLOBAL PREPAREDNESS

Public Health Threat: In 2014, more than 70% of countries remained underprepared to handle a crisis, leaving dangerous gaps in the world's health security. To help close the gaps, countries needed a better way to identify and direct resources toward the most urgent needs within their health systems.

Response: In 2016, the World Health Organization, working with CDC and Global Health Security Agenda member countries, developed the Joint External Evaluation (JEE) tool. The JEE is a voluntary, multi-sectoral, and comprehensive process to evaluate a country's capacity to prevent, detect, and rapidly respond to public health risks. The JEE is a standardized assessment and evaluation process that looks across 19 technical areas in line with the required IHR (2005) core capacities. JEE results are shared openly and can help countries use limited resources wisely.

JEEs are designed to:

- Establish a baseline measurement for a country's capacity
- Inform national policy and planning
- Target resources to areas of greatest need
- Track progress toward IHR compliance
- Highlight priority areas for improvement

When a country requests a JEE, the country conducts a comprehensive self-assessment using the JEE tool. Then a team of international experts is sent to independently validate the assessment. The JEE process generates a report that captures priority actions for improvement and measures health security capabilities in the 19 technical areas on a 1-5 scale: 1. No capacity; 2. Limited capacity; 3. Developed capacity; 4. Demonstrated capacity; and 5. Sustainable capacity.

Impact:

The standardized, transparent results from JEEs are making it easier for countries to identify gaps and set priorities. As of January 2018, 67 countries have completed JEEs, and CDC experts have participated in ~60% of these.

Importantly, JEEs help countries develop costed action plans, which can open the door for partnership by matching needs with resources. As one of many examples, after Ghana's needs were identified through their JEE assessment, the Korea International Cooperation Agency (KOICA) dedicated over \$7M dollars, working alongside CDC to strengthen Ghana's capabilities in the areas of laboratory, workforce development, and emergency response.

By measuring progress on specific targets, JEE results help us understand where and how improvements are being made, and point us in a clearer direction toward a world safe and secure from infectious disease threats.

JEE RESULTS SHOW ACHIEVEMENT

In 2017, Uganda's JEE showed marked improvement from an earlier assessment in the Workforce Development and Emergency Operations technical areas. With CDC support, the country dramatically reduced its response times by training and deploying multidisciplinary rapid response teams, and by demonstrating effective coordination of emergencies through its public health emergency operations center.

(Above photo) Joint External Evaluation Team discussing preliminary results of Vietnam's self-evaluation with Vietnam's General Department of Preventive Medicine (CDC staff pictured: Daniel Stowell and Peter Rzeszotarki). Photo Courtesy: Alex Costa, WHO

PRIORITIZING AND PREVENTING DEADLY ZOOONOTIC DISEASES

Public Health Threat: Diseases shared between animals and humans (zoonotic diseases or zoonoses) pose one of the greatest threats to our health, safety, and security. Stopping the spread of zoonotic diseases requires a One Health approach that brings human, animal, and environmental health sectors together.

Response: CDC led the development of the One Health Zoonotic Disease Prioritization tool to help countries with limited resources focus their most urgent global health security efforts. DGHP has supported 17 One Health Zoonotic Disease Prioritization Workshops across the globe, using the tool to help countries identify which zoonotic diseases are of greatest national concern.

Workshop participants include a wide range of people who protect health—of people, animals, or the environment. Together, they select the country's top five diseases to target for One Health collaborations. Commonly prioritized zoonotic diseases include rabies; influenza viruses; viral hemorrhagic fevers like Ebola virus and Rift Valley fever; brucellosis; and anthrax.

One Health teams then develop strategies to tackle the newly prioritized diseases. For example, having a rabies vaccination campaign for dogs can lead to fewer rabies deaths in people in a country.

Impact: CDC is now working with disease experts in countries, using the prioritization tool to guide improvements in laboratory capacity, surveillance, outbreak response, and prevention activities for prioritized diseases. By building One Health capacities and strengthening partnerships, countries will more effectively address priority threats and respond to new and emerging zoonotic diseases.

DID YOU KNOW?

- 6 out of every 10 infectious diseases in humans are spread from animals
- 3 out of 4 new or emerging infectious diseases come from animals
- Zoonotic diseases are responsible for an estimated 2.5 billion cases of illness and 2.7 million deaths worldwide each year

Conducting laboratory disease testing on a waterfowl.



READ ALL ABOUT IT!

EID JOURNAL HIGHLIGHTS GLOBAL HEALTH SECURITY

The threats keep coming: SARS in 2003; pandemic influenza in 2009; the largest Ebola outbreak in history in 2014; Zika in 2015. Since then, there have been regional outbreaks of chikungunya, yellow fever, and H7N9 influenza, among hundreds of others. And multidrug resistant superbugs have emerged globally in just the past few years. How does CDC fulfill its mission to keep America safe from dangerous diseases?

The first-ever special supplement to CDC's Emerging Infectious Diseases (EID) journal details progress made in preventing, detecting, and responding to public health threats around the world.

EID is a peer-reviewed journal established to promote the recognition of new and reemerging infectious diseases around the world. The special supplement on global health security includes

more than 30 articles with details and examples of how CDC is advancing global health security in collaboration with Ministries of Health, the World Health Organization, U.S. governmental agencies, and external partners.

Articles in the supplement demonstrate how CDC's global health security work has strengthened public health response capabilities, particularly in the areas of surveillance, laboratory, workforce, emergency management and response, and timely evaluation and research.

Learn more about these accomplishments and the key ideas behind our work at <https://wwwnc.cdc.gov/eid/page/global-health-security-supplement>.



Alana Mermin-Bunnell, 28,616, 2017

“ We have witnessed firsthand the heart-wrenching effects of infectious diseases like HIV, Ebola, and Zika – diseases that have traveled across countries; devastated families and economies; and resulted in millions of lives lost. In the Division of Global Health Protection, we work closely with partners to stop outbreaks from spreading across national boundaries and becoming pandemics. ”

CAPT Nancy Knight, MD, Director, Division of Global Health Protection, Centers for Disease Control and Prevention

For additional stories and information, or to partner with us, visit the Division of Global Health Protection's website: <https://www.cdc.gov/globalhealth/healthprotection/>



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