

Updates from the Field

Protecting Health and Building Capacity Globally

Improving GHS and Containing Ebola – A global health imperative

Dear Colleagues:

As we come to the close of 2014, I want to thank our U.S. Centers for Disease Control and Prevention (CDC) staff in Atlanta and around the globe for your expertise and commitment to helping Ministries of Health build essential systems to meet their own public health priorities and requirements of the International Health Regulations. I also want to thank our international partners – World Health Organization (WHO), United Nations International Children’s Emergency Fund (UNICEF), World Bank, other U.S. Government agencies and the numerous indigenous and international non-governmental organizations (NGOs) and volunteers for working with CDC to strengthen the public health infrastructure and build disease detection and response capacity to contain the spread of Ebola and prevent the spread of other diseases.

As Dr. Tom Frieden said in the summer 2014 issue of this newsletter, “Working with other nations to ensure global health security is not an option, it’s imperative. And it’s the right thing to do.”

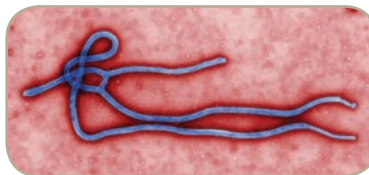
When the Global Health Security Agenda (GHS) was launched earlier this year we knew that it was the right thing to do. Our experience has taught us that in today’s highly mobile and interconnected world, emerging pathogens of public health concern can be threatening. They also prove to be costly to developed nations, and devastating to countries that have a weak public health infrastructure and are unprepared to effectively prevent, detect, and respond to such threats. Only a few months after the GHS was launched, the Ebola outbreak in Guinea spread to its neighbors in Liberia and Sierra Leone. All three of these countries are now experiencing widespread community transmission. This epidemic has taken an enormous toll on the social and economic framework of these countries and impacted travel throughout the region.

As of December 15, WHO reported more than 18,000 confirmed, probable and suspected cases of Ebola in Guinea, Liberia, Sierra Leone, and Mali. The death toll now exceeds 6,500 across West Africa. (Please visit the CDC’s website for [updated case counts](#).)



Captain Jordan W. Tappero, MD, MPH
Director, Division of Global Health Protection,
Deputy Incident Manager, 2014 CDC Ebola
Response, Center for Global Health, CDC

“When CDC works with ministries of health and other partners to strengthen the public health infrastructure and build disease surveillance and response capacity in other countries, we also help keep the U.S. and the whole world safe and save lives.”



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Seeking Submissions:

If you would like your program to be featured in an upcoming issue of *Updates from the Field*, please send a 200-400 word summary of your program’s activities and photos to Ruth Cooke Gibbs at icn6@cdc.gov.

Highlights of Investigations

Experiences from the field: CDC Disease Detectives and the Ebola Response

Submitted by: Meaghan Novi, Emory University, Rollins School of Public Health Intern; and Julia Smith-Easley, MPH, CHES, CDC-Atlanta

As the Ebola response continues, the U.S. Centers for Disease Control and Prevention (CDC) is deploying its own “ground troops,” officers of the Epidemiologic Intelligence Service (EIS), on rotating tours of 4 to 6 weeks. EIS Officers in the field work to strengthen response efforts in Guinea, Liberia, Sierra Leone, and neighboring countries. Four EIS Officers with CDC’s Emergency Response and Recovery Branch share some of their experiences with the Ebola response.

MAX NERLANDER

Physician and first-year EIS Officer, Max Nerlander, spent 29 days in Guinea improving data collection, assisting in technical troubleshooting, and supervising contact tracing. Nerlander observed that contact tracers were “gung-ho, but had no thermometers.” One of the many challenges Nerlander noted was that in one case the tracers found that two people in a household were feverish but didn’t have a thermometer to check temperatures. A week later they were both dead. Nerlander also identified many cultural barriers to the Ebola response, stating that “there are myths going around that people go into communities to spread Ebola and kill off people. A glimmer of hope is that [the response] has changed a bit because the international community has mobilized.”



EIS Officer Nerlander supervises contact tracing in Guinea. Photographer: Negar Aliabadi.

MICHELLE DYNES

Michelle Dynes, a nurse midwife and second-year EIS Officer, spent over five weeks in Sierra Leone working with the Kenema District to address psychosocial issues of those responding to the outbreak. One of the most pervasive issues is reuniting families after a death from—or surviving—Ebola. “There was one young woman who lost her husband,” Dynes said. “She has two children and was kicked out of her village when her husband got sick. After he died, we helped relocate the family to a different village. The new village was more accepting because they had been hit hard by the outbreak.”



EIS Officer Dynes training local nurses on donning and doffing PPE. Location: near Kenema, Sierra Leone.

Dynes also established a counseling center at the local Ebola treatment facility for healthcare workers and survivors. “This treatment center had lost 20 nurses already so we cleared a back room and set up a counseling center,” Dynes reflected. “What stood out to me most was seeing their level of dedication and compassion at the hospital. We get to come back [home to the United States], but they have been there the whole time and will continue to be there.”

Dynes has also trained nurses on various aspects of working in field Ebola treatment centers working with the International Federation of the Red Cross. “These were very young women and men who had just finished training and were asked to do something pretty brave,” Dynes said.

RAINA PHILLIPS

Raina Phillips, a physician and second-year EIS Officer, was in Lokolia, a village in the Democratic Republic of the Congo (DRC). The villagers are primarily hunter-gathers. However, touching dead animals or eating bush meat are potential modes of Ebola transmission. To help lower the risk of new Ebola infections, authorities issued a blanket ban on hunting. The ban also meant a severe decline in food. The widespread malnutrition intensified the outbreak. “We saw a lot of malnutrition—babies with light brown hair and swollen bellies,” said Phillips. “These villages are very, very isolated. They have a travel ban and weren’t allowed to cross the river for basic supplies.”



Motorcycles are used by EIS Officer Phillips and local contact tracers in remote regions near Lokolia, DRC.

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Highlights of Investigations

Profile on Dr. Ndadilnasiya Endie Waziri – Nigeria FELTP Graduate and Epi Lead for Nigeria EOC Ebola Response

Submitted by: Ruth Cooke Gibbs, MIS, MPH, CDC-Atlanta

Dr. Ndadilnasiya Endie Waziri currently serves as the Deputy Coordinator of the National Stop Transmission of Polio Program (NSTOP) at the African Field Epidemiology Network Office (AFENET, www.afenet.net) in Nigeria. As a graduate of the first group of the Nigeria Field Epidemiology and Laboratory Training Program (NFELTP, www.nigeria-feltp.net), a program geared toward building in-country health care capacity that is supported by the U.S. Centers for Disease Control and Prevention (CDC), Dr. Waziri is the leader for NFELTP outbreak response. She also teaches, mentors, and supervises residents of the program. In her role as Deputy Coordinator of NSTOP, she supports Nigeria's high-risk states in polio eradication and strengthening of childhood routine immunization, especially in settlements that have been neglected by health care services.

When Ebola made the sudden leap from Liberia to Nigeria from an imported case, Dr. Waziri and her colleagues were at the heart of Nigeria's response.

This is her story.

When I initially heard that Ebola Virus Disease (EVD) was in Nigeria, I felt depressed. The fact that Ebola was new to Nigeria was very disturbing and I wasn't sure that we could handle it. EVD was imported to Nigeria by a passenger on an airplane coming from Liberia.

As our team began to mobilize and strategize, our many years of experience working on all kinds of infectious disease outbreaks in Nigeria and other countries kicked in. Very quickly, my outlook changed and I began to see the Ebola outbreak as an opportunity for us to strengthen our surveillance systems, especially at the points of entry where the disease was imported into Nigeria.

In the early stages of the outbreak investigation, we faced major challenges: logistics and staffing. Some challenges included difficult contacts that didn't want to be seen or wanted to travel out of Lagos, potentially increasing the risk of spreading the virus even further. There was inconsistent and incorrect information from contacts and lack of coordinating with multiple partners. Despite these and other challenges, we were determined to do what was necessary to stop the spread of Ebola in Nigeria.



*Ndadilnasiya Endie Waziri, DVM, MSc, MPH
Nigeria Ebola EOC, Epi/Surveillance Team Lead*



Dr. Waziri, Nigeria FELTP focal point for NFELTP outbreak response engages in discussion with NFELTP residents and graduates engaged in the Ebola outbreak response in Nigeria.

Working through the Emergency Operations Center (EOC) Incident Management System in Lagos, we mobilized residents and graduates of NFELTP. These residents and graduates were already in the field working to eradicate polio and on other public health national priorities such as HIV and malaria. The team was expanded with support from the World Health Organization (WHO), CDC, Médecins Sans Frontières, United Nations International Children's Emergency Fund, the Nigeria Federal Ministry of Health, the Lagos State Ministry of Health Teaching Hospital, the Red Cross, and a host of other partners. When the virus spread to Port Harcourt, additional support was received from the federal and state governments in Nigeria. Within our surveillance team, we created a "swift action team," mandated to handle difficult contacts and involve the community leaders and security personnel if issues were not resolved. To keep everyone on the team informed, we held debriefing meetings every morning and afternoon, seven days a week, with all partners. During the meetings we discussed issues and developed action plans. On each visit, contacts were interviewed to obtain more detailed information. The methodology we used was in accordance with WHO standards and was very effective with regard to finding and monitoring contacts. Contacts were monitored for 21 days through the support of the case management team, and if contacts became symptomatic of Ebola, they were isolated in their homes for immediate evacuation to the Ebola Treatment Center where they received supportive care.

Epidemiologists are sometimes referred to as "disease detectives" because our objective is to find or "detect" the source of the disease, trace how it is spreading, and determine the geographic area in which it is manifesting – all so that we can stop the disease from spreading.

While the Ebola virus has been contained in Nigeria, considering the route through which the virus came into Nigeria, and that the outbreak is ongoing in several West African countries, there is still the possibility that the virus could again be imported to Nigeria. To guard against this possibility, we have to remain vigilant in strengthening our surveillance systems, especially at the borders and points of entry.

To fight the scourge of Ebola and break the chain of transmission, swift and effective contact tracing through a team of well-trained and motivated field epidemiologists is essential. Thorough contact tracing requires contact identification, listing, and follow up.

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Highlights of Investigations

CDC and NIH establish a mobile laboratory in Monrovia, Liberia

Submitted by: Beth Skaggs, PhD, CDC-Atlanta

Dr. Barry Fields is a microbiologist by training and has worked for the U.S. Centers for Disease Control and Prevention (CDC) for more than 34 years in various capacities. He currently serves as a laboratory advisor with CDC-Kenya's Diagnostic and Laboratory Systems Program (DLSP). DLSP has 30 staff in each of two cities in Kenya and tests for more than 60 different infectious diseases. Setting up a molecular diagnostics laboratory in the field without utilities or infrastructure is quite a challenge. In August 2014, Barry, a DLSP deputy director, and Dr. Clayton Onyango were deployed to Liberia to support the Ebola outbreak response. Upon arrival in Monrovia, the CDC team met with the Ministry of Health and other partners on the ground to assess the situation and realized very quickly that the outbreak had reached the informal settlements of the city. A laboratory was critically needed in Monrovia to deal with these cases.

The CDC team was joined by Drs. Heinz Feldman, David Sanfronetz, and Andrea Marzi from National Institutes of Health's (NIH) National Institute of Allergy and Infectious Diseases at the Rocky Mountain Laboratory in Hamilton, Montana. The CDC-NIH team worked quickly to establish a mobile laboratory in close proximity to the Ebola Treatment Unit (ETU) set up on the grounds of the Eternal Love Winning Africa (ELWA) Hospital. This ETU was built in early August by Médecins Sans Frontières (MSF) and has been working with CDC and other partners to support the Ebola response in West Africa. During those first days, challenges became apparent, such as tracking the laboratory equipment, setting the laboratory up, establishing protocols, conducting trial runs, and gaining a clear understanding of the team's roles and responsibilities.

During the early days of the ETU's operation, Barry recalls it was difficult to know who was doing what or to differentiate the patients from the health workers. He said, "One of the visual images that stood out was a Liberian family, who were huddled together waiting to receive treatment." It was very clear to Barry that they were sick, frightened, and needed help. That image, along with so many other images of despair, kept him and his team motivated to work harder and faster to get lab results to the MSF doctors. The only other existing laboratory, run by the Liberian Institute of Biomedical Research, was working as hard as they could, but the demand for Ebola testing completely overwhelmed their capacity. Fewer than three weeks after becoming operational, the CDC-NIH lab tested 750 specimens with a turn-around time of three hours. This was a marked improvement and critical to getting infected patients into the ELWA ETU and uninfected people out.

Although Barry has worked in many outbreak investigations, the situation in Liberia was particularly challenging for him. One of his greatest concerns was the proximity of the laboratory to the ETU and the many patients walking back and forth. This foot traffic posed contamination risks for him and his team. According to Barry, having a team in which all members had international experience and knew how to work in an emergency situation with limited resources, made a



The initial mobile lab set up by the CDC-NIH team in Monrovia, Liberia to support the Ebola outbreak response, taken August 20, 2014.



Team 2 members: Dr. Bonventure Juma (CDC-Kenya) and Dr. Bob Fisher (NIH) performing extractions in the "new" lab in Monrovia.



Barry Fields and other members of the first NIH-CDC laboratory team deployed to Monrovia to establish mobile labs in support of the Ebola outbreak response in Liberia. From left to right: Drs. Heinz Feldman; Andrea Marzi (back); Barry Fields; Clayton Onyango; and Dave Sanfronetz.



Dr. Marzi, from NIH, NIAID, Rocky Mountain lab, Hamilton, Montana, preparing PCR (polymerase chain reaction) reagents in the mobile lab in Monrovia to support the Ebola outbreak response, August 21, 2014.

huge difference. Because of their collective experience, they were able to quickly assimilate and set up more than 700 pounds of laboratory equipment that had been shipped to Liberia by CDC-Kenya. Although this was no easy feat, Barry's advice to others preparing to deploy to Liberia and other parts of West Africa to support the Ebola response is this: know what your role is; pack accordingly, don't assume you'll have access to what you need, hope for the best, prepare for the worst, and have a back-up plan.

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Partnership Matters

CDC partners with ministries of health, the World Bank, and others to re-launch and expand FETP in West Africa

Submitted by: McKenzie Andre, MD, MPH, CDC-Atlanta; and Kate R. Scully, MPH Candidate, Emory University, Rollins School of Public Health, Intern, CDC-Atlanta

When an infectious disease outbreak occurs in any part of the world, it is critical for every country to have the capacity to detect the disease, respond quickly, and prevent it from spreading across borders. The Ebola outbreak in West Africa is the largest in history. Ebola is a deadly virus that is affecting several countries in West Africa and has been imported to the United States and other countries through travelers. Thousands of lives have been lost, and the death toll continues to rise. To address this public health challenge, the U.S. Centers for Disease Control and Prevention (CDC), in partnership with the World Health Organization (WHO), ministries of health, and many other international partners and volunteers, has been engaged in an aggressive outbreak response to contain the epidemic, save lives, and build in-country capacity.

The Field Epidemiology Training Program (FETP), modeled after CDC's Epidemic Intelligence Service, supports countries in building sustainable capacity for detecting and responding to health threats like Ebola. Increased capacity strengthens surveillance, contact tracing, data analysis, risk communication, and other areas so that disease outbreaks can quickly be detected and contained. More than 80% of FETP graduates stay in their home countries. Many of the graduates obtain leadership positions within the public health system within their home countries. The Ebola outbreak in West Africa highlights the urgent need to build regional capacity.

CDC, in collaboration with the ministries of health in the eight French-speaking countries in West Africa and the University of Ouagadougou, will re-launch and expand the West Africa Field Epidemiology Training Program (WAFETP) in January 2015. This program was originally established in 2010. The World Bank, via

the West African Health Organization (WAHO) and the CDC Foundation, has provided \$2.5 million to support this program for three years.

"The World Bank is honored to be partnering with the countries of West Africa to expand the West African FETP and to increase the region's capacity for fighting disease at this critical juncture in our history," said Enias Baganizi Senior Health Specialist at the World Bank and Task Team Leader for the Project.

The program will enroll two cohorts consisting of 15 residents each. The first cohort will include residents of Burkina Faso, where the WAFETP will be based, Côte d'Ivoire, Guinea, and Senegal. The second cohort will include residents of Benin, Mali, Niger, and Togo.

The West Africa program will be the largest regional FETP in Africa that CDC has helped support and is serving a region that has long struggled with significant public health challenges. Since the program started in 1980, FETP residents and graduates have worked tirelessly to assist in responding to infectious disease outbreaks and other health risks. Residents and graduates of the expanded West Africa program will work to improve population health by addressing the region's most important health problems, conducting disease surveillance, and using systematic mechanisms to collect, analyze, interpret, and communicate health information.

For more information, contact: **Dr. McKenzie Andre** at mia8@cdc.gov.



WAFETP workshop participants. University of Ouagadougou, Ouagadougou, Burkina Faso, September 24, 2014.

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CDC and NIH ...

Because of the heavy rains at that time in Monrovia, the mobile laboratories have now been transferred to a house formerly occupied by Samaritan's Purse on the ELWA grounds. According to Barry, this facility is ideal, especially when compared to the tent they were in before. The building is air conditioned and provides a more efficient environment for conducting tests and analyzing data. Six laboratory scientists have been deployed to Liberia from Kenya as part of the first three laboratory teams. Now that the laboratories are up and running, the next team will be comprised of laboratory scientists from CDC-Atlanta.

For more information, contact: **Dr. Barry Fields** at bsf2@cdc.gov.



Dr. Heinz Feldman, from NIH, NIAID, Rocky Mountain lab, Hamilton, Montana, working in the glove box. The glove box was used to neutralize the virus using extraction buffer and ethanol.

Dr. Melvin Korkor – Ebola Survivor Continues to Battle Stigma

Submitted by: Kenisha Peters, MPH Candidate, Emory University, Rollins School of Public Health, Intern, CDC-Atlanta

I had the privilege of meeting Dr. Melvin Korkor shortly after my internship at the U.S. Centers for Disease Control and Prevention (CDC) began. Dr. Korkor, a rural physician and lecturer from Liberia, became infected with Ebola while treating patients. Unlike thousands of patients with Ebola, Dr. Korkor lived to share his story of survival and his challenges with stigma and discrimination.

During his presentation at the Global Health Matters Seminar at CDC on the morning of October 10th, Dr. Korkor spoke of his recovery and the stigma he and his family experienced after his diagnosis. He recalled that he began to display signs and symptoms of Ebola a few days after checking a nurse's temperature with the back of his ungloved hand. Initially thinking he had malaria, Dr. Korkor took quinine, a medicine to treat the parasite. Unfortunately, the quinine did not relieve his symptoms. Knowing that treating patients with Ebola may have put him at risk, Dr. Korkor decided to get tested.

Dr. Korkor had seen several of his colleagues die from Ebola and knew that if his test results were positive, early detection and treatment were essential to his survival. When he received the results confirming he had Ebola, he immediately asked his colleagues to send for his wife so that he could give her the news and reassure her that he would survive.

As a man of tremendous faith, he asked his wife to bring his Bible. "I had been reading medical books for years, but now it was time for me to read my Bible," Dr. Korkor said. He knew that survival would be difficult. He also knew that he would be subjected to stigma even while he fought the disease, like so many of his colleagues and patients who had been diagnosed with Ebola. However, Dr. Korkor was not fully prepared for the stigma he and his family would face.

When his community heard he had Ebola, his children were shunned at school and told not to return. The time he spent in the Ebola Treatment Unit was hard as he fought for his life, but he was determined to be among the 10 percent who survived. The nausea and stench from other patients' excrement was overwhelming at times. He had to hold his nose and force himself to drink oral rehydration solution. He even forced himself to eat so he could fight the effects of the virus. The voice of the physician who admitted him to the treatment center replayed in his mind—"90 percent of the patients that come here don't make it." Korkor knew, as a physician himself, that forcing himself to drink and eat would be key to his ability to survive.

After Dr. Korkor recovered, he faced discrimination as an Ebola survivor as soon as he left the treatment unit. "A driver picked me up wearing personal protective equipment and instructed me to sit in the back of the vehicle," Dr. Korkor said. "Although I was cured and no longer displayed any signs or symptoms, the driver told me to sit in the back. I told him, 'I am cured you get in the back and I will drive!'" The driver got into the passenger side of the ambulance, but sat on the far edge of the seat.

Dr. Korkor explained that the Ebola outbreak in Liberia has heightened the level of fear and discrimination against survivors like himself. He went on to explain that life is now very different. "Ebola has broken down our culture. We are used to shaking hands, but no one shakes hands now. They just wave to you."

Hearing Dr. Korkor's testimonial was insightful and inspiring, but it was painful to learn that he is suffering from the psychosocial effects of stigma after giving so much of himself as a physician and Ebola survivor. Despite his challenging experiences with Ebola and the discrimination he endured, Dr. Korkor remains committed to medicine and to the patients and healthcare workers with whom he works. He plans to return to Liberia and continue to practice medicine, lecture, and become an infectious disease specialist. I am honored to have made his acquaintance and hope his message will educate others about Ebola to help reduce stigma.

For more information, contact: **Ruth Cooke Gibbs** at icn6@cdc.gov.



Dr. Korkor greets Director Dr. Thomas Frieden at CDC's All Hands meeting, October 10, 2014. Dr. Korkor shared his testimonial of survival from Ebola.



Dr. Korkor sharing his story of survival with CDC staff, at CDC's All Hands meeting, October 10, 2014.



Dr. Korkor with Kenisha Peters, CDC intern and MPH candidate, after his testimonial at CDC's All Hands meeting, October 10, 2014.

Building Capacities



Strengthening Guinea's Emergency Management in Response to Ebola

Submitted by: Lise Martel, PhD, MEd, MPH, CEMR, CDC-Atlanta; and Jamila Aboulhab, MD, MSc, FFPH, CDC's Presidential Malaria Initiative Resident Advisor, Guinea

The Guinean Ministry of Health (MoH) requested the U.S. Centers for Disease Control and Prevention (CDC) support for developing its emergency management capacity as it struggles with the Ebola response. Dr. Lise Martel, Dr. Roodly Archer, and Daniel Brencic of CDC's Division of Global Health Protection (DGHP) were deployed to Guinea in September 2014 to support the MoH in setting up its emergency management and Emergency Operations Center (EOC). Emergency management is an evolving concept for the MoH. In Guinea, the emergency management functions include data management, communication, logistics, and partner coordination. DGHP worked closely with the National Coordinator, Dr. Sakoba Keita, to support him as he leads Guinea's public health response to Ebola.

The EOC in Guinea supports the country's public health response with resource management (staff, materials, and finances) and partner coordination. Staff in the EOC track information to inform decisions, deploy and manage critical resources, and maintain communication between partners and field staff. These activities support the MoH in managing multiple aspects of this response, including infection control, contact tracing, epidemiology and surveillance, isolation and quarantine, communications, field response teams, and laboratory.

The EOC has been established in a building owned by the MoH and has permanent and backup power systems, high-speed wireless internet, and conference hosting capacity (large conference room with chairs and projection screen). Staff have been hired and trained to use the emergency management and Incident Command System (ICS). A major victory was achieved the first week of November when the daily national coordinating meetings were moved from the World Health Organization headquarters building to the newly established EOC. A national Ebola response hotline was launched in November to aid in dispatching ambulances and hearses to remote areas of the country to help with the Ebola response efforts.



Dr. Martel discussing renovations for the expansion for the MoH's EOC in Guinea with Mark Hansey (CDC/OSTLIS/DPHDP).



Dr. Aboulhab (sitting), working with Guinean staff from the Coordination Cell to set up new computers that will be used to support the EOC's Ebola response. Standing beside Dr. Aboulhab is Mr. Coyate from the MoH.



Dr. Aboulhab (left), and Guinean staff from the Coordination Cell moving furniture into Guinea's new EOC. Mark Hansey is in the doorway.

DGHP staff have been embedded in the MoH EOC (also called the Cellule) since it was formed in early September. CDC has provided technical expertise and assistance to Dr. Keita as he works to improve his understanding of emergency management, identify key resources, and integrate ICS principles into the existing MoH structure. This strong partnership has provided a platform for DGHP to help build Guinea's emergency management capacity quickly. DGHP continues to work with the Guinean MoH to increase its capacity for emergency management under the GHSA and to increase its International Health Regulations compliance.

For more information, contact: **Dr. Lise Martel** at diz0@cdc.gov.

CDC - Increasing Capacity for Ebola Response in Unaffected Countries

Submitted by: *Kate Klein, MA, MPH, CDC-Atlanta; and Christina Craig, International Association of National Public Health Institutes*

The West Africa Ebola outbreak is one of the most challenging global public health emergencies in recent times. The outbreak highlights the importance of strong, sustained national public health capacity to detect and confirm disease threats, address outbreaks, and prevent their spread.

The World Health Organization (WHO) has prioritized 15 countries for technical assistance for Ebola preparedness including Benin, Burkina Faso, Cameroon, Central African Republic, Cote d'Ivoire, Democratic Republic of the Congo, Guinea Bissau, Gambia, Ghana, Mali, Mauritania, Nigeria, Senegal, South Sudan, and Togo. Coordinated efforts are underway to quickly identify and address their needs. A major contributor to these preparedness efforts is an ongoing partnership between the International Association of National Public Health Institutes (IANPHI) and the U.S. Centers for Disease Control and Prevention (CDC) to assist low-resource countries in developing National Public Health Institutes (NPHIs).

IANPHI is an association of the world's 100+ NPHIs, including CDC. NPHIs use scientific evidence to inform policy and resource allocation and are accountable to national governments and the public. Their key functions – disease surveillance and detection, outbreak investigation and control, analysis/policy development, research, training, and laboratory science—are particularly critical in quickly identifying and controlling infectious disease threats in low-resource nations. Through this partnership, and a Congressionally-funded cooperative agreement, IANPHI and CDC have leveraged and mobilized new resources and activities in response to the current outbreak.

By augmenting their existing NPHI development activities in more than 10 countries, IANPHI and CDC are supporting the efforts of WHO to assess the needs of unaffected countries and help to develop and strengthen their disease surveillance and control capacities. As part of this, IANPHI and CDC, along with other international partners, provided the WHO with assistance in preparing a *Checklist for Ebola Preparedness in Unaffected Countries*. Using this checklist, WHO is conducting Ebola preparedness support team visits to 15 WHO-prioritized countries with partners such as CDC. In late October,

WHO, with IANPHI and CDC, conducted the first visit to Mali. Mali was on the list of unaffected countries at the time, but has since been re-categorized due to the multiple outbreaks on-going there. CDC experts provided in-depth technical assistance in contact tracing, epidemiologic surveillance, and laboratory science. CDC experts have also been providing support to several other unaffected countries on incident management systems and emergency operations centers.

CDC's Ebola Response, through the Unaffected Countries Team of CDC's Emergency Operations Center, has also deployed epidemiologists to work on Ebola preparedness activities with Ministries of Health in 11 of the prioritized 15 unaffected countries.

Furthermore, CDC's Unaffected Countries Team has a liaison officer assigned to WHO-AFRO in Brazzaville helping facilitate CDC's contributions toward the WHO coordinated effort on Ebola preparedness in unaffected countries.

IANPHI has used its network of 100+ NPHIs to disseminate the latest information and updates about Ebola, and to link members for technical assistance, training, and other necessary assistance. It has created an online resource site, which provides national public health institutes with up-to-date Ebola resources from CDC and other organizations in Spanish, French, English and Portuguese. IANPHI funded Ebola education

and prevention training in Cameroon, and is assisting other NPHI directors to identify and support their urgent needs including Cote d'Ivoire, Guinea-Bissau, and Togo.

The IANPHI network of NPHIs has used existing strong regional networks to collaborate in responding to public health challenges. Through support from Oswaldo Cruz Foundation also known as Fiocruz in Brazil, the Network of National Public Health Institutes of the Union of South American Nations (RINS-UNASUR) and the Community of Portuguese Language Countries (RINS-CPLP) will offer regional RINS-UNASUR and CPLP Ebola trainings. The workshops will be held in Brazil in late November and in Cape Verde in December.

As CDC continues to expand its portfolio of partner countries by working with IANPHI and the CDC Unaffected Countries Team, there will continue to be assessment and consideration of capacity building in the areas of surveillance, detection and response, emergency management and operations, and long term control and prevention of Ebola.

For further information, contact: **Shelly Bratton** at bwp8@cdc.gov.



Team from Nigeria (from left to right, Dr Peter Adewuyi, Dr Patrick Nguku, Dr Akin Oyemakinde and Dr Ndadihnsiya Endie Waziri) attended the preparedness workshop in Ghana to share lessons learned from their country's successful Ebola response.



Dignitaries open the Preparedness workshop in Accra Ghana, October 7, 2014.

Building Capacities

CDC's International Task Force assists priority unaffected countries in preparing for possible cases of Ebola

Submitted by: Fred Angulo, DVM, PhD, Lead, Unaffected Countries Team, International Task Force, CDC Ebola Response

As of October 31, 2014, the U.S. Centers for Disease Control and Prevention's (CDC) Ebola Response has deployed more than 400 epidemiologists, public health analysts, communication specialists, and other staff to help control the spread of Ebola in the three most affected countries: Sierra Leone, Liberia, and Guinea. In a parallel effort, CDC is also providing technical assistance to priority countries that are still unaffected so they can rapidly detect and contain Ebola if introduced. This technical assistance has been coordinated by the Unaffected Countries Team of CDC's Ebola Response International Task Force. The goals of the Unaffected Countries Team include preventing Ebola from entering countries and rapidly detecting, controlling, and eliminating Ebola if it is introduced.

The World Health Organization has identified 14 priority countries to receive assistance with Ebola preparedness. The highest priority countries are Guinea Bissau, Cote d'Ivoire, Senegal, and Ghana, chosen based on their proximity to countries with widespread disease and air traffic. Others on the list include Mauritania, Burkina Faso, Nigeria, Cameroon, Gambia, South Sudan, Central Africa Republic, Congo, and Democratic Republic of the Congo.

CDC's strategic approach is two-pronged. The first strategy is to help priority unaffected countries strengthen their ability to rapidly detect cases of Ebola should they occur within their borders. The second strategy is to increase these countries' ability to rapidly contain the disease if it is detected. Effective laboratory infrastructure is central to preparing countries for rapid detection. Adequate laboratory support includes timely access to appropriate laboratory testing and the technical knowledge and infrastructure to ship specimens. Six of the 14 countries currently have the capacity to test for Ebola in their own laboratories – Nigeria, Ghana, Cote d'Ivoire, Senegal, Democratic Republic of Congo, and Cameroon. The remaining countries – Togo, Burkina Faso, Benin, Gambia, Guinea Bissau, Congo, and South Sudan – rely on arrangements with laboratories in other countries. Priority unaffected countries also need adequate alert systems to identify suspect cases. CDC is working to assess health centers in districts sharing borders with Liberia, Guinea, and Sierra Leone and helping countries develop standard approaches for assessing the adequacy of their alert system to identify suspect cases.

To rapidly contain Ebola, countries need strong incident management systems, including Emergency Operations Centers and contact tracing plans. CDC's "Ready Teams," preparedness training, and Field Epidemiology Training Program (FETP) are resources that are being fortified throughout West Africa at present to prepare for a potential introduction of Ebola into one of the unaffected countries.

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During an EVD preparedness simulation exercise in Yaounde, Cameroon, ETU staff waits for a confirmed case patient. This exercise was conducted as part of a WHO Preparedness Support Team visit, November, 2014. Photographer: Julia Painter.



After an EVD preparedness simulation exercise, Monique Tuyisenge-Onyegbula (CGH/DGHP) shakes hands with Dr. Alain Eroundi Mballa, Cameroon Director of Disease Control, Epidemics and Pandemics, and Dr. Omotayo Bolu, CDC Cameroon Country Director, November, 2014. Photographer: Julia Painter.



Members of CDC's International Task force at an Ebola Treatment Unit that is being established to prepare for possible Ebola cases in Ghana. Accra, Ghana. September 2014.

Building Capacities



Members of the CDC International Task force walking into a construction site for a future Ebola Treatment Unit to assess the building's current status. Accra, Ghana. September 2014.

Contact tracing has been used in each of the previous 20 Ebola outbreaks for the past 40 years to successfully control Ebola and is being implemented in this outbreak as well. Success stories from Nigeria and Senegal demonstrate how contact tracing can be effective in the current outbreak. Recognizing the importance of contact tracing, the Unaffected Countries Team has created contact tracing guidelines, curricula, and training materials to assist each at-risk country in preparing for an outbreak of disease. CDC staff deployed to priority unaffected countries are providing these resources to ministries of health and other partners.

Training for effective contact tracing is just one part of the multi-pronged approach to prevent the spread of Ebola into neighboring countries around Liberia, Sierra Leone, and Guinea. Other elements include assessment visits, preparedness workshops, and simulation exercises. Additional preparedness tools include assessment of laboratories, evaluation of alert systems, updating of country maps, simulations and exercises, and a checklist of overall preparedness. CDC's country preparedness checklists and surveys help each country identify strengths and gaps in surveillance systems, rapid response teams, healthcare system, diagnostic laboratory capacity, border and travel measures, health protection awareness, and emergency response management.

For more information, contact: **Dr. Fred Angulo** at fja0@cdc.gov.

Improving GHS and Containing Ebola ...

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Despite barriers to overcoming this outbreak, we are already seeing the benefits of the international community working together to improve global health security in response to Ebola. Countries are sharing technical expertise on infection control, collaborating on best practices in health promotion, and using technology to access information and share it more broadly. Field Epidemiology Training Program (FETP) residents and graduates from Cameroon, Democratic Republic of the Congo, Kenya, Morocco, Nigeria, South Africa, and Tanzania have responded to the current Ebola outbreak. In addition, the West Africa regional FETP is being re-established and expanded and will launch in Burkina Faso in early 2015 to support the eight French-speaking countries in West Africa. We are also working closely with the African Union, African Field Epidemiology Network, and other regional networks in Africa to train and deploy public health workers to support the Ebola response. Throughout West Africa and elsewhere, National Public Health Institutes are working with CDC and other partners to combat the Ebola crisis.

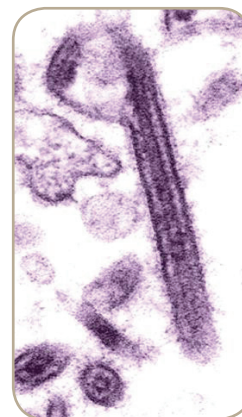
In the months and years ahead, I am confident the GHSA will help us prevent, detect, and respond to infectious disease outbreaks more effectively and we will see even more benefits from launching this Agenda.

Through GHSA—besides implementing the objectives outlined under prevent, detect, and respond—coordination and communication among nations will be strengthened and streamlined, laboratory capacity will be increased, new disease detectives will be trained, and more countries will be equipped with networked Emergency Operations Centers that will allow an effective response. These capacities will allow a more unified response and will facilitate the ability of partner countries to quickly deploy experts to affected areas so disease outbreaks are contained effectively while they are still small in scope.

The lessons we have learned and continue to learn from working to contain Ebola are invaluable. Based on our experience in Senegal and Nigeria, two previously affected countries, we know that even nascent capacities can lead to effective detection and response. To the many epidemiologists and other public health workers who are working on the response at the headquarters or who have been deployed to West Africa and other priority countries—and to those that are still on the frontlines—you are the public health heroes and deserve our gratitude and respect for your courageous efforts. Your efforts to improve public health and save lives underline the importance of global health security and why it is the right thing to do.

I wish you and your families a peaceful and healthy holiday season and look forward to working with you in 2015.

Captain Jordan W. Tappero, MD, MPH



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Experiences from the field ...

Several other Ebola “hotspots” were within 60 km of Lokolia. Phillips worked with the WHO surveillance team doing contact tracing by motorcycle with local nurses and doctors. She noted that what impacted her most was witnessing the resilience of the human spirit.

“Villagers were welcoming even though I was an outsider. International organizations paid local women to supply food and water to our camps and they brought in supplies tirelessly to us every day from the jungles. Because of the language barrier, we could usually only exchange a smile. These villagers had been untouched by the ‘outside world’ for over 25 years. They live a life that may seem austere, but the human spirit resiliently rises and manages to find comfort and grace in small things, like a smile from a stranger.”

As the Ebola outbreak continues, CDC and the many courageous front line health workers in West Africa work endlessly restore health and wellbeing to those impacted.



Burial team for those who have died from Ebola. Location: Monrovia, Liberia. Photographer: Aimee Summers.

AIMEE SUMMERS

First-year EIS Officer, Aimee Summers, has traveled from Atlanta to Liberia to Dallas, and is currently in Senegal. At CDC in Atlanta, Summers worked in the Emergency Operations Center to help identify secondary health effects of the Ebola outbreak. Her team examined health issues endemic to West Africa including measles, malaria, TB, HIV, maternal morbidity, malnutrition, meningitis, and cholera. In Dallas, Summers conducted contact tracing and in Liberia, Summers assisted with outreach and communicating with those affected by Ebola. Noting the many cultural barriers to be addressed in larger cities and remote villages, she feels that as the international response has progressed, “I would hope that the communication is better and that people are more informed about Ebola and how it’s spread and what you can do to prevent it.” Now in Senegal, Summers is developing standards of practice for all areas of the Ebola response and to strengthen the country’s preparedness for any new Ebola cases.



Local ambulance used to transport suspect Ebola cases. Location: Monrovia, Liberia. Photographer: Aimee Summers.

For more information, contact: **Julia Smith-Easley** at zrc2@cdc.gov.



Bridge in Sinoe County, Liberia depicting the types of roads that must be crossed to reach villages. Photographer: Aimee Summers.

Profile on Dr. Waziri ...

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To improve timeliness of reporting of suspected cases and prompt evacuation to the isolation facility, the use of innovative technology such as GPS is critical. Creating an isolation facility as soon as possible and equipping the facility with physicians and staff experienced in handling Ebola is extremely important to patient care and saving lives. Ensuring that operational funds to support logistics are readily available increases the response team’s ability to function and provide essential services to the public.

My hope for Nigeria is that the ongoing efforts to build capacity and improve the public health system will result in the formation of a strong public health workforce, strengthened public health surveillance, and the infrastructure needed to effectively respond to public health emergencies.

For more information, contact: **Dr. Patrick Nguku**, Nigeria FELTP Resident Advisor at dmguku@gmail.com.



Dr. Waziri, Nigeria FELTP focal point for NFELTP outbreak response engages in discussion with Epidemiology surveillance team colleagues – Dr. Miriam Nanjuma, WHO Uganda; Dr. Abisola Adebayo, Lagos State University Teaching Hospital; and (standing) Dr. Anthony Omoko, WHO Nigeria, during the Ebola outbreak response in Nigeria.