

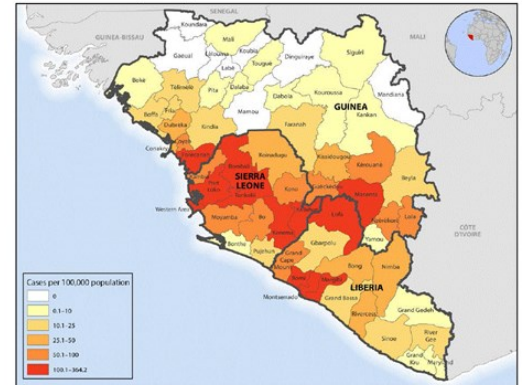


## FACING EBOLA-A PERSONAL ACCOUNT

Stephen White, MS, MLS(ASCP)\*

The Ebola virus disease (Ebola) epidemic in West Africa ([Figure 1](#)) began in late 2013 in Guinea and quickly spread to neighboring countries during early 2014. The epidemic is believed to have originated as an epizootic case of Ebola in Guinea that led to local person-to-person spread of disease, initially in remote semirural areas of West Africa. However, with subsequent introductions of Ebola into urban areas, new cases occurred rapidly, and contacts moved across borders, facilitating uncontrolled spread.<sup>1</sup>

FIGURE 1. Number of Ebola cases per 100,000 population – Guinea, Liberia, and Sierra Leone, December 2013–March 31, 2016



Abbreviation: Ebola = Ebola virus disease.

By mid-2014, the situation had evolved into an international public health crisis as the first documented multicountry Ebola epidemic. Ongoing transmission occurred in multiple districts in Guinea, Liberia, and Sierra Leone, including in these countries' densely populated urban areas.<sup>1</sup>

The Centers for Disease Control and Prevention (CDC) activated its Emergency Operations Center (EOC) and deployed staff including epidemiologists, data managers,

(Continued on page 2)

### Inside this issue:

<i>Biosafety Risk Assessment and Laboratory Biosafety Training</i>	5
<i>Flu Season is Coming</i>	6
Chemical Threat Training	7
Biological Defense Training	7
Bureau of Public Health Laboratories Directory	8

### Special points of interest:

- *Biosafety Risk Assessment Training*
- *Flu Prevention Tips*
- *Chemical Threat Training*
- *Biological Defense Training*

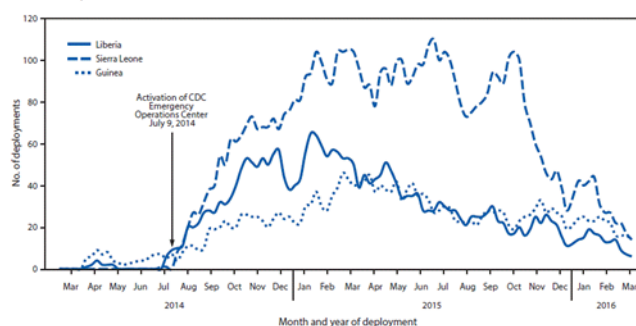
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public health advisors, laboratory scientists, communication experts, logistic and administrative support staff, and diverse technical support staff.<sup>1</sup>

CDC staff provided technical support and guidance to the working groups involved with epidemiology and surveillance; case investigation; laboratory capacity; safe transport of patients suspected of having Ebola, dead bodies, and laboratory specimens; infection control; community engagement; and safe burials. As the response evolved the number of CDC staff in each country increased (Figure 2).<sup>1</sup>

To maintain the large number of personnel for a long period, CDC drew on staff from its headquarters in Atlanta, Georgia, and from other CDC offices and institutes across the United States and from the many CDC offices in countries around the world. In addition, CDC recruited domestic public health professionals from state health departments, fellowship programs in the United States, and other agencies within the U.S. Department of Health and Human Services.<sup>1</sup> Stephen White, one of the Bioterrorism Coordinators with the Florida Department of Health, Bureau of Public Health Laboratories (BPHL)-Miami, was among those selected to provide assistance in Liberia.<sup>1</sup>

FIGURE 2. Number of staff deployments by CDC for the Ebola epidemic, by country and month — Guinea, Liberia, and Sierra Leone, March 2014–March 2016



Abbreviation: Ebola = Ebola virus disease.

Here is Stephen's firsthand account of his experience:

"In February of 2015, I left my family, including our six-month old daughter, and stepped onto a plane headed for West Africa to assist in controlling the largest outbreak of Ebola the world has ever seen. Like you, I had seen images on TV, heard reports on the radio, and had been involved in some preliminary planning, but I had no idea what to expect when I reached my final destination, Monrovia, Liberia.

Upon arrival a day and a half later, a chaotic and seemingly disorganized scene at customs greeted me. I remained in Monrovia another three days before a helicopter flight chartered by the United Nations took me into the interior of the country. It was here, in Tappita, Nimba County, in the north-central portion of the West African nation of Liberia that I would call home for the next five months.

My seemingly simple mission was to take over a laboratory that had been operating under the United States Army since December. However, as I would soon learn, very few things were simple in Liberia during the Ebola outbreak. The turnover with the

(Continued on page 3)

## FACING EBOLA-A PERSONAL ACCOUNT (CONTINUED)

*(Continued from page 2)*

American Army personnel was scheduled to take two weeks to ensure equipment was in place and that we were prepared to make a seamless transition from a military presence to the civilian contingency hired to fill their roles. However, three days after my arrival, the Army departed.

A week later, the laboratory was up and running again. In those early days, the BioFire Film Array was our workhorse. However, this severely limited our capacity as the Film Array can only test one specimen at a time. In April, the CDC sent us a CFX96 Touch Real-time PCR detection system, which is a 96-well thermal cycler platform manufactured by Bio Rad. As I mentioned earlier, nothing was simple. It took another month to get assay reagents to the lab and another week or two to get controls after that.

Of course, safety was the primary overriding concern while in Liberia. Having been a Bioterrorism Coordinator in Miami for the previous three or so years, I was accustomed to working with select agents in a high containment laboratory. Despite the fact that we had tested several specimens to rule out Ebola while in Miami during the previous year, the first time I was ever truly scared in the laboratory was in Liberia when I opened up a package containing a syringe full of blood from a patient thought to have died from Ebola.

Early on, we had a separate room for processing specimens. We wore enhanced personal protective equipment (PPE), including full Tyvek suits, double-gloves, and powered air-purifying respirators (PAPRs). To exit this room, one would step through a trough of bleach and be sprayed with additional bleach using a hand-pumped pesticide sprayer. The day we received our first glove box was one of the happiest days of my life. The glove box allowed us to keep specimens in an enclosed environment where they could safely be manipulated while wearing normal PPE. Everything came out of the glove box decontaminated with bleach in its antechamber.

Complicating everything was the country's infrastructure, including electricity, roads, and logistics. For example, the hospital where the lab was located used three large generators to produce its electricity and rationed its output daily. As a result, electricity to the lab was off for about three to four hours every day usually in the middle of our busiest time, forcing some creative workflow solutions. Ordering supplies was a very different experience, as there are no lab supply companies in Liberia. Turnaround time for reagents and supplies ranged from one to three months, depending on the items ordered and shipment method. Once supplies arrived in port, they had to be driven to the lab, which, at best, took about eight hours. At worst, such as during the rainy season, this trek could take days to maneuver over the unpaved roads.

*(Continued on page 4)*

## FACING EBOLA-A PERSONAL ACCOUNT (CONTINUED)

*(Continued from page 3)*

While in Liberia, I coordinated operations for the second-busiest laboratory that served the lower half of the country. By the end of my tenure, we had tested over 9,000 specimens. Of course, I had the opportunity to work with an amazing team of Liberian technicians and American and Kenyan expatriates who were invaluable to the lab's operations and the resulting control of the epidemic. The friendships made and the experiences shared will undoubtedly last a lifetime."

Thanks to the efforts of selfless people such as Stephen, cases declined substantially, enabling focus on individual transmission chains. The last known chain, in a community near Saint Paul River Bridge, was investigated and contained in early 2015. Liberia was first declared free of Ebola transmission by the World Health Organization (WHO) on May 9, 2015, and on two subsequent occasions (September 3, 2015, and January 14, 2016), only to have other clusters or cases subsequently detected and contained. CDC staff are now concentrating on strengthening epidemiology, laboratory capacity, infection prevention and control, and restoration of routine health services. Stephen has recently rejoined the BPHL Miami laboratory team resuming his position as one of the Bioterrorism Coordinators.<sup>1</sup>

### References:

1. Dahl BA, Kinzer MH, Raghunathan PL, et al. CDC's Response to the 2014–2016 Ebola Epidemic — Guinea, Liberia, and Sierra Leone. *MMWR Suppl* 2016;65(Suppl-3):12–20. DOI: <http://dx.doi.org/10.15585/mmwr.su6503a3>

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The Bureau of Public Health Laboratories biosafety outreach officers (BOOs) are currently offering a course in biosafety risk assessment and laboratory biosafety to clinical laboratory institutions. The training consists of two sessions that are approximately one hour each and offered on-site at no charge to the facility. The first session discusses biosafety risk assessment and the second session focuses on biosafety in the clinical laboratory.

Biosafety risk assessment is a systematic process of evaluating the potential risks involved in a laboratory procedure and determining the measures needed to manage any gaps or risks identified. The BOOs have created standard operating procedures and resource documents to assist clinical hospital laboratories in biosafety risk assessment and laboratory biosafety. This session will train clinical laboratory personnel how to use these documents to perform risk assessments in their laboratory.

The second session is for anyone who works in the laboratory or is responsible for a safe working environment. Topics include general laboratory biosafety, the use of biological safety cabinets (BSCs), choosing correct personal protective equipment, proper use and removal of gloves, and spill cleanup. This training awards Florida clinical laboratory and nursing continuing education credits.

For more information or to schedule training, contact the biosafety outreach officer in your region.

### **For sentinel clinical laboratory locations in Central and South Florida:**

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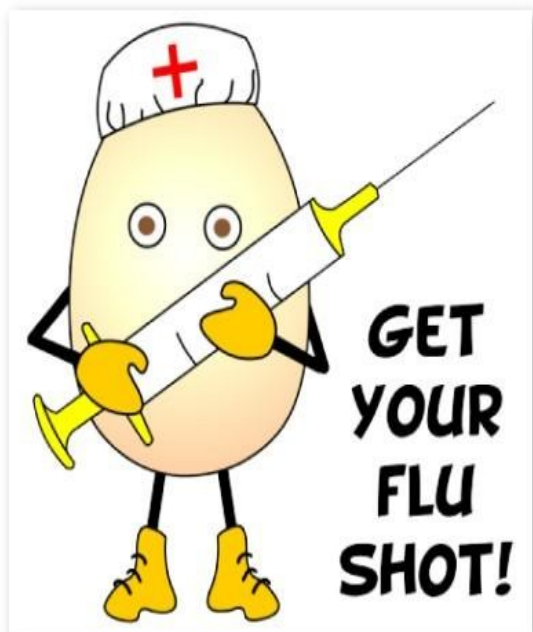
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**This publication is funded by the Health and Human Services Centers for Disease Control and Prevention Cooperative Agreement for Public Health Emergency Preparedness.**

**Editor - Betty Wheeler**



How can you protect yourself and your loved ones from influenza? The flu vaccine is the first and most important step in protecting against this serious disease. The CDC recommends a yearly flu vaccine for everyone 6 months of age and older. While there are many different influenza viruses, the seasonal flu vaccine is designed to protect against the main viruses that research suggests will cause the most illness during the upcoming flu season. People should begin getting vaccinated as soon as the flu vaccine becomes available, ideally by October, to ensure that as many people as possible are protected before flu season begins. Remember, health care workers and laboratory personnel who work with flu specimens are at a higher risk of contracting the virus and should be vaccinated as early as possible.

## Flu Prevention

Follow these simple steps to prevent the flu:

1. Get Vaccinated!
2. Wash your hands often—the most common way to catch the flu is to touch your own eyes, nose, or mouth with your hands.
3. Keep your hands away from your face.
4. Keep your distance from others when you are sick.
5. Keep your distance if you are around someone else who is sick.
6. Stay home if you are sick.
7. Cover your mouth and nose with a tissue when sneezing and coughing.
8. If you don't have a tissue, cough or sneeze into your upper sleeve or elbow, not your hands.
9. Be aware you can still spread germs up to 7 days after getting sick.

Vaccinate—get your flu shot. Additionally, Pneumococcal vaccine is available and recommended for persons at increased risk for serious Pneumococcal infection, including those age 2 years or older with certain chronic medical conditions and all persons aged 65 years or older.

For the most current information about influenza in Florida, please see Florida's weekly surveillance report, the Florida Flu Review, which can be found at: <http://www.floridahealth.gov/diseases-and-conditions/influenza/florida-influenza-weekly-surveillance.html>



## CHEMICAL THREAT (CT) PREPAREDNESS TRAINING



The CT laboratory coordinators continue to reach out to the health and medical community by offering training for CT preparedness at hospitals and county health departments (CHDs). This training covers chemical terrorism awareness and the collection of clinical specimens after a chemical terrorism event. Hospital and CHD staff play an important role in the response to a chemical exposure event since clinical specimens will be collected for analysis. For your convenience and to increase participation, this training can be presented at your facility. Each course lasts approximately one hour with one 15-minute break between courses. Florida clinical laboratory and nursing continuing education credits will be offered. Training manuals, “hands on” exercise materials, and CT preparedness kits will be provided. This training is recommended for physicians, nurses, epidemiologists, emergency department personnel, phlebotomists, hospital and health department laboratory personnel, and others who may collect clinical specimens. Contact the CT laboratory coordinators in your region for more information (see the Bureau of Public Health Laboratories Directory on the back of this document for contact information).

## LABORATORY RESPONSE NETWORK (LRN) TRAINING— BIOLOGICAL DEFENSE

The Bureau of Public Health Laboratories is currently offering an LRN sentinel laboratory training course at no cost to you at your facility. This training follows the American Society for Microbiology (ASM) Sentinel Level Clinical Laboratory Protocols for Suspected Biological Threat Agents and Emerging Infectious Diseases. Scheduling the training at your facility is a relatively easy process.

Determine when you would like to have the training and how many people will be attending. A time will be set up that is convenient for all. The training materials are provided, as well as the biodefense reference manuals for your laboratory.

The training syllabus includes: 1) an overview of the LRN; 2) the ASM protocols for ruling out potential bioterrorism agents and how to refer a sample to the state LRN Public Health Reference Laboratory when a bioterrorism agent cannot be ruled out; 3) the role of the sentinel laboratory in responding to pandemic influenza; 4) a brief introduction to packaging and shipping of infectious substances; 5) an introduction to the CDC Select Agent Program; and 6) the College of American Pathologists Laboratory Preparedness Exercise (CAP LPX).

*“at no cost  
to you at  
your facility”*

This class awards Florida clinical laboratory continuing education credits based on five hours of instruction. Please contact Betty Wheeler at (904) 791-1568 (Betty.Wheeler@FLhealth.gov) to schedule a class for your facility.

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