CDC Ebola Response Oral History Project

The Reminiscences of

Emily Kainne Dokubo

David J. Sencer CDC Museum

Centers for Disease Control and Prevention

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Emily Kainne Dokubo

Interviewed by Samuel Robson
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Interview 1 of 1

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Q: This is Sam Robson. It is June 7th, 2018, and I have the privilege of sitting here with Dr. Kainne Dokubo. We're at the Hyatt Regency in Atlanta, Georgia, talking with Dr. Dokubo about her experiences as part of CDC's Ebola response, 2014 to 2016, in a project for the David J. Sencer CDC Museum. It's really great that we could get together, so thank you so much for being part of the project.

Dokubo: Thank you, Sam.

Q: Of course. Would you mind just stating at the beginning, "my name is," and then saying your full name?

Dokubo: Sure. My name is Emily Kainne Dokubo.

Q: Perfect. Can you tell me when and where you were born?

Dokubo: I was born in Washington, DC, in 1979.

Q: If you were to describe for someone in just a couple of sentences what your part was in CDC's Ebola response, what would you say?

Dokubo: I worked during the 2014 to 2016 West African Ebola outbreak response as an epidemiologist—that's a disease detective. I worked in Sierra Leone, and I also worked as the response lead for CDC in Liberia. Overseeing all aspects of CDC's response.

Q: Perfect, thank you. And what are you doing these days?

Dokubo: I currently serve as the CDC country director in Cameroon.

Q: Backing up a bit, did you grow up in the DC area?

Dokubo: I actually grew up mostly in Nigeria. As I mentioned, I was born in DC, and my parents were in graduate school at the time. I was sent to Nigeria and lived with my grandparents while my parents were in school. So my initial years, my formative years, were spent in West Africa, and part of the time was spent in the US, as well.

Q: You said your parents were in school?

Dokubo: Yes.

Q: What were they doing?

Dokubo: They were in graduate school. My dad was at George Washington University, he's an engineer, and my mom was at the University of the District of Columbia working on a master's in mass communication.

Q: Could you just tell me a little bit about the area specifically where you grew up in Nigeria? What it was like, what your grandparents were like?

Dokubo: Yes. The part of Nigeria that my parents, my grandparents were from is called Rivers State. That is part of the Kalabari or Ijaw ethnic group that's in the southernmost part of the country. The main capital city is Port Harcourt. Nigeria's main resource is crude oil, and that's what Rivers State was known for. A lot of oil came from the Port Harcourt area.

Q: What kind of kid were you, growing up? What did you like to do?

Dokubo: Probably like most people at CDC, I love to study. Not surprisingly, from a young age I knew I wanted to be in the science field. Initially, I wanted to be a biomedical engineer. I loved school, I loved to study, I loved to read, and just learning generally.

Q: What did you like to read?

Dokubo: A lot of fiction and mystery and trying to solve what was going on.

Q: Cool, cool. Upon going to university, at that point were you still set on becoming—did you say biomedical engineer?

Dokubo: That evolved later on, so probably about—during high school or even before then, probably in elementary school, I decided I wanted to be a physician. So I started working toward that. My grandfather was a nurse in Nigeria, and I had family members who were in the health field. It was something that I aspired to be, so I worked toward that in high school—at this time, I had moved back to the US. High school and college, I took courses in the health field and continued to work toward becoming a doctor.

Q: Do you have any memories of your grandfather talking about working in medicine or watching him at work even?

Dokubo: I have memories of him talking about his time as a nurse. During that period, there were not a lot of formally trained physicians, so nurses acted as de facto clinical providers. I remember he would say people would one day feel ill; someone would call for him, so he would go evaluate the person, assess, and then provide them with medication. It was something that he took pride in.

Q: How did he react when you told him that you wanted to be a physician?

Dokubo: My grandad, like I think the rest of my family, was thrilled, and that was something they encouraged me to do.

Q: So you said you'd moved back to the United States, partially also for high school?

Dokubo: Yes.

Q: Okay. What occasioned that and what was high school like?

Dokubo: It was—I think my parents had always planned that they wanted me to come back to the US. I came back, I was about sixteen, and was here in Atlanta, Georgia, and went to high school. It was the last year of high school, in twelfth grade. In some ways it was a culture shock coming back, even though this was originally where I was from, but I had spent many of my years outside of the US. Just getting readjusted to life in a country that I wasn't as familiar with, and high school is an interesting period. To your earlier question as to what I liked to do when I was younger, I loved to read and I loved to study. High school kids were not necessarily focused on that, so I felt like in many ways I stood out, not necessarily in a bad way. I felt that it was actually to my advantage because there were opportunities, and working hard and studying, I was able to take advantage of those opportunities and be well prepared and positioned to go to college with financial support provided and to do well in school.

Q: What kinds of opportunities did you take advantage of?

Dokubo: Having scholarships provided, and also being able to take some college-level classes while in high school so that I could have a couple of semester credits already before I got in.

Q: So where did you go to college?

Dokubo: I went to Xavier University, which is in New Orleans, Louisiana. At the time, and still is, Xavier was the number one university for getting African Americans into medical school because there was a big focus on the science curriculum and training students along that path, with an emphasis on biology, chemistry, biochemistry. That was also a great experience, having mentors and people who understood and were able to get us on the right track and position us well to be competitive. Throughout college it was a lot of focus on making sure we understood the basics of science and medicine and all.

Q: Did you have any professors who stand out to you when you look back?

Dokubo: Yes, Dr. J. W. Carmichael. [laughs]

Q: Can you tell me about him?

Dokubo: Yes. Dr. Carmichael is known as the one person who probably single-handedly has trained the most African American doctors, getting young Black students like myself

at the time into medical school. He had been at Xavier for many years and saw that this was something that was needed, so developed a curriculum that students came in and went through and helped position us, again, to be competitive as we applied to medical school. And not just the competitiveness, but being well prepared so when we got into med school we already had the skills and the training and the knowledge to excel.

Q: Did you go to medical school right after then?

Dokubo: Yeah. Well, in college, I did a year of study abroad—I was at King's College in London—focused on biomedical sciences. That was through a scholarship that I had received while at Xavier University, and that was also a great experience. From my time growing up in Nigeria and travelling to many countries, I had an interest in international work and being in different places and seeing how people do things. So when there was an opportunity presented for me to do one year of college internationally, I jumped on it and that was great.

Q: And then what happened?

Dokubo: Spent a year in London, and after that, came back to the US, finished my senior year at Xavier, and had applied to medical school. I got into Emory University, so I got to come back here to Atlanta. Medical school was an interesting experience, it was tough, it was challenging, but this was what I knew I wanted to do for most of my life. It was a big commitment, but I was in great company. Emory was a great school and still is. I had

advisors and mentors who helped guide me along the way, and a lot of people who I aspired to be like. I also had friends and classmates who, along the way, we encouraged each other. During medical school, it was—I remember one of my courses, it was a microbiology course. We had a lecturer who came from CDC and came to give a talk and presentation on infectious diseases that are seen in tropical areas. That stood out to me. I saw the slides that he showed and pictures and videos and I was captivated by them, like this is what I want to do. I want to do global health work; I want to work in public health; I want to work with infectious diseases. That was during my second year of medical school when I had that lecture, and unfortunately I don't remember the name of the professor, but I remember talking to him afterward and asked what he had done and what path he followed, and talked a bit more about public health. I decided to apply to public health school. Between my third and fourth year of medical school, I went to Baltimore and got a master's [degree] in public health at the Johns Hopkins University School of Public Health. That was another year of exciting learning, interaction, getting experience, being around other students who were like-minded and who wanted to change the world and make a difference.

Q: I know that Emory has these different tracks like global health and epidemiology. Does Johns Hopkins work a similar way? Were you on a specific track?

Dokubo: Yes, I was in an international health track.

Q: And you're an epidemiologist, of course.

Dokubo: Yes.

Q: So you got some thorough epidemiology training. Can you tell me a little bit more about what you learned in public health school?

Dokubo: Yes, so my concentration was in vaccine science. One of the [focus areas] in public health is vaccine-preventable diseases. With the advances in public health, we've seen and come up with ways to be able to prevent diseases. So looking at how we can scale that up and help prevent diseases by vaccinating susceptible populations. Then one aspect of that was, even when we have effective vaccines, we still have large amounts of populations of people who are infected because they don't accept vaccines. So I looked at vaccine acceptance and what factors are associated with them. During that time, there was, in the news, a lot of discussion about a polio outbreak in northern Nigeria and people refusing to be vaccinated, refusing to take—allowing their children to be vaccinated. I tried to understand a little bit more about them because I think many times we have the mentality of oh, if we build it, they will come, but that's not always the case. Why are people not coming to get vaccinated when this could save their life or save the lives of their children? Understanding how different factors influence them, so people's religion or their education level or other socioeconomic determinants that factor into health. And how, as public health providers, we can try to address those factors to make sure that when we have effective interventions, that people are receptive to them.

Q: Did you feel like having come from Nigeria, that you had some special insight into that?

Dokubo: Not specifically for the polio outbreaks. Northern Nigeria was far removed from where my family is and where I had lived. But just speaking generally, I understood why people would think and feel that way because I think it's human nature—if you don't fully understand, you will question or you will resist. So it's important for us to make sure that we take time to educate people and let them understand the benefits and not just assume that yes, we have an intervention that we know works, so people should be lining up to receive that intervention. No, we also have to take time to explain it to people so they understand the benefits to them.

Q: That was after your third year of medical school, is that right?

Dokubo: Yes.

Q: Okay. And then you came back and—

Dokubo: And then I came back to Atlanta and completed medical school and then went to California to start residency. I went to the University of California, San Francisco, which is one of the top medical institutions in the country. Yes, I am a little bit biased. But at the time, it was highly ranked for research, infectious diseases, global health. When the initial cases of HIV [human immunodeficiency virus] were recognized in the

US, many of the cases had been identified in San Francisco, and many of those cases had been treated at San Francisco General Hospital, which is one of the hospitals where UCSF medical students and residents trained.

Q: Did you feel that history with that impacted your residency? Did you feel it around you? Did people talk about it?

Dokubo: Yes.

Q: Yeah?

Dokubo: Yes, there was a lot of historical knowledge, and many of my professors and attending [physicians] had been around during the start of the HIV epidemic and had treated patients within that hospital and had cared for patients and had done research. It was really inspiring to learn from and engage and interact with many of those. Some of those included Paul [A.] Volberding, who—there's a documentary *And the Band Played On*, he was one of the people who was featured in there in addition to Harold [W.] Jaffe and a number of people from CDC who had been around since those initial cases were reported as PCP, *Pneumocystis carinii* pneumonia. Infections that we were seeing among gay men in San Francisco at that time. So, working with and being in a setting where there was this new disease being described and people not knowing what it was, and trying to have a better understanding of what was going on and trying to find associations and predictives and risk factors. Seeing how far we had come from those times, through a

period after HIV was discovered when there were no known treatments. The development of treatments and preventive measures, and the work that was being done and still is being done for us to find an effective vaccine, really was inspiring.

Q: So what happened after residency?

Dokubo: After residency, stayed a little longer at UCSF, did an additional residency in preventive medicine and public health because at this time, I knew solidly that I wanted to focus on public health and infectious diseases. I did a post-doctoral fellowship in HIV prevention, still in San Francisco. During that time, I got married, my husband was in San Francisco at the time as well, and two of our kids were born, my daughter and my son. We stayed in San Francisco for a number of years; that was our home. A lot of key aspects of our life happened there. And then, post-residency and fellowship I knew I wanted to work in global health, working on infectious diseases, so I decided to come to CDC.

Q: How did you decide to come? In what avenue?

Dokubo: CDC is the premier public health agency in the world, and I can say that. Yes, some may consider that a biased statement. [laughter] But as the nation's leading public health agency, this is where interventions are discovered, research is done. This is where you have the subject matter experts who are improving the public's health. I wanted to come here to train and to work. CDC has a fellowship, the Epidemic Intelligence Service,

which is hands-on field epidemiology training, referred to as "boots on the ground." When there is an outbreak, you're out there investigating, trying to determine what is the cause of the outbreak, why people are getting ill, how do you prevent it, how do you treat cases. It's a two-year applied epidemiology fellowship. I came to CDC in 2011 as an EIS officer and was in the Center for Global Health and at the time, in the Division of Global HIV/AIDS [acquired immune deficiency syndrome], which has since evolved to the Division of Global HIV and TB, tuberculosis.

Q: What within HIV/AIDS were you able to focus on? Were you mostly focusing on specific projects, or were there outbreaks that you were investigating? How did you spend those two years?

Dokubo: All of that. The beauty of being at CDC as an EIS officer is that you get all of that. You get that experience and build skills. I was engaged in outbreak investigation [and traveled to] South Sudan less than a year after South Sudan had become an independent nation from Sudan. There were a high number of [HIV] cases reported in the Western Equatoria region, which is a part of the country that shared a border with the Democratic Republic of Congo and Central African Republic. [There were] high rates of infection among pregnant women and the young population, [especially] among men. I went as an Epidemic Intelligence Service officer trying to determine what factors were associated with that and what potential behaviors or risk factors could account for that increased prevalence. Ultimately, what we determined was cultural practices, in addition to many years of unrest in that region. So along with that, the recommendations being

made to communities were how to implement preventive measures to ensure that there wasn't continued spread of HIV in those communities.

Q: When you're talking about cultural practices, what specifically were some of those practices that perpetuated the illness spread?

Dokubo: A number of things, and all of these are not just specific to that region, but for example, early sexual debut, multiple partners, things that were culturally acceptable. A man could have many wives or many girlfriends, and [the practice] wasn't frowned upon. An older man could have a girlfriend in her young teenage years, and there was exposure to sexually transmitted infection for the young or adolescent woman, who also has another sexual partner who has multiple sexual partners. Those connections and this acceptance of multiple sexual partners, are usually associated with increased risk of transmission. Then, a lot of people had this mentality of, we've been through the war. These were some of the quotes that came from our interviews: we've been through the war and we've seen people dying, and when you get HIV, at least you can still live. In many ways, people understood that yes, HIV is not ideal, but it felt like [they had seen worse things]. So there wasn't that—they didn't really see it as a priority or something that was that big a deal because they felt that there was worse that they had seen and lived through.

Q: Was most of your work then—well, I don't know—were you doing a lot of these key informant interviews?

Dokubo: That was one aspect for that investigation. There were other projects that I was involved in that did involve some key informant interviews. I did an HIV drug resistance study in South Africa. South Africa was a high-HIV-burden country and high-TB-burden country. A significant amount of the population is on antiretroviral treatment for HIV. What we wanted to determine was what the rates of drug resistance were. Many diseases for which there is treatment, at some point, the virus or bacteria can develop mutations and become resistant to the drug that you're using to treat that infection. For HIV, because we [have] a limited repertoire of drugs, we want to try to limit resistance because that then reduces the treatment options for an individual. My project was focused on trying to determine what the prevalence of drug resistance was. So for people who were on treatment, what proportion had resistant virus, and what patterns of resistance we could see, so that recommendations could be made as to what you switch people from, first line to second line, to improve their treatment outcomes.

Q: Were there other experiences that you had in EIS when you look back that you say, yeah, that was really important?

Dokubo: Yes. There were a couple of other outbreaks that I was involved in. There was a fungal meningitis outbreak in the United States which was associated with use of steroids and linked back to a compounding pharmacy. A lot of my work had been done internationally, but it's also important to realize that there are public health threats domestically, and the CDC's work is protecting the nation's health. So working to

determine exposures, people who may have been exposed, and collecting information so that people could be appropriately monitored. And if they developed symptoms, if they became symptomatic, getting treatment. This was a multi-state investigation because it was [linked to] drugs that had been produced in one location but sent across the country, [and many people] had received this contaminated drug. It [resulted in] spinal infection, meningitis that had all come from a fungal contamination of the steroids.

Q: What kind of work were you doing on that study then that was so impactful for you when you look back?

Dokubo: I think at the time it was just the realization that even in a society that is highly developed, in a country that has resources, there are still health threats. We can't be complacent because I think a lot of times when we think of public health, we think of developing countries or places that are low-resourced, and we think, that's where there are issues. And we don't always put as much attention on what happens here in the US. But that's what public health is, and our work as public health providers, practitioners, and epidemiologists is to protect the public, even when they don't realize that there is a health threat. We build health systems and have things in place to prevent disease outbreaks. We have recommended vaccination schedules, making sure that children are appropriately vaccinated before they go to school so that they are not—the risks are reduced for widespread infection and outbreaks for other people who may be at risk. Just working and continuing to build the system, even in places where there's already a strong system. Collecting information, identifying where there were gaps that allowed this to

happen in the first place and how we can prevent that in the future so we don't have something like this happen again.

[break]

Q: So what happened after EIS?

Dokubo: After EIS, I continued on at CDC. I was still in the Division of Global HIV and TB, and I worked as a medical officer, continued supporting countries internationally. I supported eight countries, mostly in sub-Saharan Africa—I provided some support to countries in the Caribbean region and in Asia, working to improve surveillance for HIV and tuberculosis; supporting ministries of health to ensure that persons with HIV were appropriately tested, put on treatment; persons with HIV and TB received appropriate TB and HIV medication to improve their longer-term outcomes; and how to prevent further spread of infection. And ultimately, coming back to capacity building because we want to make sure that through the support we're providing, we're building the capacity of countries and local ministries of health to be able to take ownership of their health needs for the health of their citizens—that they have systems in place to be able to respond to health threats and improve the overall health of their people. A lot of my work was HIV and TB focused, working under the US President's Emergency Plan for AIDS Relief, PEPFAR, which is currently in its fifteenth year, but is the largest public health initiative by any one country and has been focused on addressing the HIV epidemic globally since 2003. And has been successful in saving many lives, getting millions of people onto

antiretroviral treatment. We're currently in an era where we have children being born to HIV-infected mothers, but without being HIV-infected themselves. We've seen the prevalence and incidence—number of new cases trending down to much less than they were in prior years, and people [with HIV] living longer. There's reduced HIV morbidity and mortality because of the work that we're doing to improve outcomes among persons living with HIV.

In 2014, there was the big Ebola outbreak. With that came the opportunity to be able to provide support and respond to the outbreak in the countries that were most affected in West Africa.

Q: Had you spent any time in Sierra Leone or Liberia or Guinea before?

Dokubo: No, I had not.

Q: So how did you get wrapped up in it?

Dokubo: [As an] Epidemic Intelligence Service officer, that's what we're trained to do—to respond to outbreaks and investigate and determine what associations are and come up with interventions to prevent further spread of disease.

Q: Were you still in EIS at that point?

Dokubo: No, I was done with EIS, but that was the training I received [when I came] to CDC. I was now a medical officer focused on HIV and TB. But when this outbreak happened, there was obviously a need for people who were trained as field epidemiologists who knew how to respond to an outbreak. There was a call for people to deploy to West Africa, and I had that familiarity because that's what my background was. I had lived in Nigeria and had understanding of some of the cultures and things that carried across. I also was trained as an epidemiologist, as an outbreak responder, and so I had the skills needed to be able to respond.

Q: So, how does it start?

Dokubo: I was requested to go to Sierra Leone, and I went in November of 2014, a few months after the start of the outbreak. I went to Sierra Leone, had never stepped foot in the country before, and really didn't have much knowledge about the country before then. And was asked to be an epidemiologist in Port Loko District. At the time, Port Loko was the second-most-affected district after the Western [Area] District. We had a high number of cases, and it was a remote area, about a three-and-a-half-hour drive or so from the capital city of Freetown.

Q: Can you tell me what Pork Loko looks like?

Dokubo: Port Loko is—it's a district that had its own established structure. Not a lot of development, so you had houses that were constructed from brick, but you'd also see a

number of houses made from mud, thatch houses. There were people who came or were assigned to work in the district; there were hospitals, health facilities; there were schools. Overall, it provided the basics of what was needed, and a good enough transportation system that you could get around the district fairly easily. People knew what was going on and the health issues with Ebola and the outbreak. There were questions, there were concerns, there was fear, as is normal, which you would expect anywhere when you see people dying or your loved ones getting sick. It's not your standard city as you would see in the US, but it's probably like many small towns that you would expect in a developing country.

Q: How did your work begin?

Dokubo: I flew into Sierra Leone [and arrived late at night.] At that time, there was one airline that was still operating because most of the other airlines had stopped operating in the Ebola-affected countries. The one airline that was still flying arrived late at night. You'd get to the airport, and you'd have to get in a water taxi, a boat, to get to the mainland. And you arrive really late. At that time, CDC was set up in a hotel, and that's where we were operating out of. That's where the CDC operations center was. We stayed in the hotel, and our office was down in the basement. There, we had our CDC response staff working in different technical areas. You had the epidemiologists, you had the health communications team, you had the dead body management team, you had the infection prevention and control team, you had the laboratory team. We also had staff deployed to the districts. Not everybody was in Freetown because obviously, there was

an outbreak going on across the country, and we wanted to be there at the source, getting data, collecting information, responding. The CDC office was based in Freetown, and I was assigned to Port Loko District.

Q: Did you get any briefings on what the situation was like in Port Loko when you arrived? How do you learn about—come up to speed in order to do your epidemiology in Port Loko?

Dokubo: You just jump in there. Before we left Atlanta and deployed to Sierra Leone, we had a general briefing because a number of people had never been overseas with CDC or even personally. The agency made sure to give people briefers on what to expect when you get in a country, what is appropriate, and I think that was very useful for many people who, again, this was their first time going overseas. We got a little bit of orientation to the geography, the economy, political issues, general health issues in the country, so there was some context provided. We also had seen reports coming into—there were daily reports on the outbreak where you could see the country as a whole, and then for each district, number of cases identified. We could see the epi [epidemic] curve. So we had some of that. When we arrived in-country, we got an additional briefing from the CDC team before we deployed out to our districts.

When you got to the districts, you were embedded with the other staff with whom you were working. When I got to Port Loko, I was part of the District Health Medical Team, DHMT, which was led by the district medical officer. Then we had DfID [United

Kingdom Department for International Development] there, so the UK [United Kingdom]-based development agencies. We had staff and responders from IRC [International Rescue Committee]; IMC, International Medical Corps; we had different agencies, multilateral agencies working, all responding. We also had the British military and police helping to coordinate. We had an emergency operations center set up in the district, a district EOC. We had daily coordination meetings in the morning and in the evening, because it was very important to ensure that everybody understood what was going on and there was good coordination among the different groups that were involved in the response.

Q: When you went over there, were you replacing a certain individual, or were you part of a new, fresh set of people for the DHMT?

Dokubo: When I came, there was a CDC epidemiologist who had been there prior to my arrival. Again, at that time during the initial part of the outbreak, people were deploying in four-to-six-week periods, and would go out, come back to headquarters, to Atlanta. Somebody else would go out, do work for that period, come back. It was you go in, you take over from someone, do work, somebody else comes after you.

Q: Did you get to talk with that person when you got there?

Dokubo: No, there was a—I think it was a one or a two-day gap.

Q: Ah, no.

Dokubo: Yes. There was some communication via email, but what we also did well was that we had good hand-off notes. Because each day we were reporting to Freetown from the districts, there would be a summary of these were the key issues, these were the number of cases identified, these were the number of deaths, these were the actions that were taken, these were the key meetings that we had, these are the key things to follow up on. So we had daily reports, daily summaries, and it made it easy for whoever came or somebody to pick it up and get a good assessment of the situation and know what was going on at any point in time. Those hand-over notes were also helpful for whoever was coming on board to see and get up to speed.

Q: You found them helpful too?

Dokubo: Yes. And it also nicely laid out who the key players were in the District Health Medical Team. Of course, it was important to know who the district medical officer was because in our work, all the agencies and countries and foreign organizations that were there working ultimately were supporting the district medical team. It was important to make sure we realized that and worked with them, liaised with them because it was also a way of strengthening their capacity as well.

Q: So what do you do in your first couple days in Port Loko?

Dokubo: Getting a sense of what was going on, meeting people and knowing who the key players were, and then working with the surveillance teams. In my role as the epidemiologist, I was overseeing surveillance, so looking—working with our surveillance officers, collecting information, overseeing people who were going out each day to identify cases, get reports from the communities about people who had fallen ill. And then liaising back with the emergency operations center so that the case management team could send out ambulances to get people who were sick and take them to either an Ebola treatment center or a holding center so that they could be observed. Or if there were dead bodies that were out in the community, liaising with the dead body management team so that the bodies could be picked up for a proper and dignified burial to be conducted. So it was important for us to have data because really, that's the information that we need to know how an outbreak is proceeding. Knowing the number of new cases, we kept track of cases that had been sent to a health facility. We kept track of the number of deaths. We looked at locations within the district, we looked at what areas we had many cases being reported, and all that information helped to guide our response.

Q: I know it's been a few years at this point, do you recall some of the areas that were kind of hotspots in Port Loko at the time?

Dokubo: Some of the names escape me.

Q: That's okay. Can you tell me also, so in the first few days of getting to know people, did you get to spend any time with the district medical officer?

Dokubo: Yes. The district medical officer usually attended the coordination meetings we had in the mornings and in the evenings. CDC, our practice is making sure that we engage with them so that they know we're there as a resource. I would occasionally stop by their office just to check in and see if there was anything additional that they needed or things that had come up that we could assist with. But generally, the coordination meetings were discussion and planning meetings so we could work and we could know who—we could assign tasks and know who was responsible for each task and who was doing what. And then also reporting back to know what had been done and what was still outstanding.

Q: Sure, sure. Can you describe the DMO?

Dokubo: Yes. He was a gentleman, I want to say in his late fifties or early sixties. He was relatively quiet, soft-spoken. There was a lot going on at a time and he was calm and was really easy to work with.

[break]

Q: Where were we? I had been asking about the DMO and what he was like. You had said that he was an older, soft-spoken person, is that right?

Dokubo: Mm-hmm, and calm through everything.

Q: And calm. That's a great quality to have in the middle of an Ebola epidemic.

Dokubo: Yes.

Q: Can you tell me about some of the surveillance officers who you were working with?

Dokubo: We worked with surveillance officers who were all part of the district medical team. We had trainings for them at different intervals, making sure they understood how to go out and investigate a case, a reported case or suspected case; how to complete the case investigation forms; and how to ask open-ended questions in order to elicit more information and gather more information. They also learned how to list contacts, [including] people who had been in close contact with confirmed or suspected cases, so that those contacts could be monitored daily for that twenty-one-day period. In case they developed symptoms, became symptomatic, we could then monitor them to see if they had Ebola and test them to see if they had Ebola.

Q: When you look back, are there any instances that stand out to you when you were doing this training and maybe someone came to you with an experience and was describing it, and you could've told them, did you ask this, did you ask this? I don't know if that's familiar to you.

Dokubo: I don't recall any specifically, but one of the things that stood out was that we had initial trainings and then we'd have refresher trainings, and we'd ask the surveillance officers to share some of their experiences or ways that they would ask a question. Over time, you could see that improvement in their skills, their interviewing skills and elicited information, and asking additional questions to gather the data that they needed. Getting input from their colleagues in a group setting, I think that helped reinforce because they could share experiences or hear somebody else say well, you could ask it this way.

Q: Was it just you and the surveillance officers, or was the team a little larger?

Dokubo: No, we had other staffers who were there. When we had those trainings, even though the surveillance officers were mostly focused on case investigations, contact tracing, it was also important for them to be appropriately trained and know what measures they should take to protect themselves. I had requested for the CDC staffer who was overseeing infection prevention and control to come give a brief training so they knew how to engage with suspected cases or confirmed cases. For example, when they were interviewing people, to keep a certain distance. At that time during the outbreak, we were still being very cautious—actually, throughout the outbreak, we were cautious. But when you go into somebody's house, how do you interact without touching? You try to not sit because you don't know if somebody else in the house who was ill may have sat there. We don't want to come in close contact with clothing and bedding or linen that may have been soiled. Basically, how to do your work, but still be protected so you're not

at risk of getting sick or exposed to Ebola or potentially becoming infected. It was important for us to make sure that our surveillance officers were well trained because we didn't want to lose any staff. Unfortunately, we had two surveillance officers come down with Ebola in Port Loko. One was right before I had been assigned to the district and another was while—right before I left. The person had probably had a family member who was sick and had been in contact, or was in a vehicle and then had become ill and eventually died. It was hard for the team to deal with because for the other surveillance officers, this was somebody who they worked closely with. The surveillance officers were predominantly male, I don't know why that was in my district. But this was one of them, who in their work to prevent people from getting sick and protect health, had now unfortunately succumbed to that.

Q: Did you know him very well at that point?

Dokubo: I did not know that particular surveillance officer. But other surveillance officers who I had worked closely with knew him. I could tell how the whole team was really badly affected and morale had gone down.

Q: What do you do with that?

Dokubo: You obviously empathize for the life that's lost, and also for—you acknowledge the loss to the family, and also to the public health work. You use that opportunity to reinforce the need for our surveillance officers to protect themselves. That was the

message we always sent, saying you need to take care of yourself because you have to be in optimal health to be able to do the work. The work you're doing is important, but your health is also very important, so we need to make sure that you're protecting yourself too.

Q: These two surveillance officers who came down with Ebola, did they both pass away then?

Dokubo: Yes.

Q: Wow, that's tough. How long were you in Port Loko?

Dokubo: I was in Port Loko for about six and a half weeks. Stayed through—I spent Thanksgiving, and through late December I was in Port Loko. We still had a high number of cases coming in each day until we hit our peak. On an epidemiology curve, a peak is when you see the number of cases start to decline. When I got there, we were still on an upward trend. We were having increased number of cases every day, and people were dying. We didn't have enough beds in the Ebola treatment unit, so there were sick people in the community, dead bodies in the community. With that, as is human nature, when your loved one [is sick or] dies, you want to care for them and you want to bury them as is their cultural practices. But those were the risk factors, or the factors that were associated with people getting Ebola. So we had more cases each day. Different organizations and agencies were working rapidly to build up Ebola treatment units so that we could have more beds in the health facilities. The dead body management teams were

responding as best as they could to go into communities and remove dead bodies and perform safe and dignified burials so that other people in the communities would not be exposed. We also had a public health laboratory that was open—that was set up in Port Loko, and that made a big difference because now we didn't have to wait for results to be sent to another district and wait forty-eight hours for results to come back. We could get results, turnaround time in less than a day, so that made a big difference because suspected cases that we had in the holding centers, once we ruled out Ebola, we could discharge them. That reduced the risk for them also getting infected if they were in the same holding center and the same location with cases, actual Ebola cases. That also helped improved our management of cases because once someone was confirmed, then we could start supportive treatment immediately. Once someone was confirmed to not be a case, we could discharge them. All of those factors, with our improved active case surveillance, identifying cases, taking them to the holding center for evaluation, getting people to treatment, infection prevention and control measures, improved case management, contact tracing, dead body management, all of those things came together with the addition of the lab and rapid turnaround of results. With that, we saw effective measures in place and we started to see that turn in the tide and cases started to come down because now we had an effective response.

Q: Can you tell me about when you first started seeing that trend? How long was it into your being in Port Loko? Did you believe it at first?

Dokubo: It was—I think it was about the second—the end of the first week or beginning of the second week in December, and I remember looking at it and thinking wow, things are starting to—we've turned the tide. I remember in my daily notes, report back, I put a statement that Christmas has come early to Port Loko because now we were finally seeing the effect of everything coming together. In the very beginning, it was chaotic, we didn't have things in place. When we worked in all the different pillars, were working effectively, now we could see what an effective response could lead to. Ultimately, sustaining all those measures and continuing all of that active case finding, contract tracing, and all of that, that was what led to the end of the outbreak in Sierra Leone.

Q: A couple of questions. Did you ever go out on a surveillance visit on your own? Like, accompanying a team member?

Dokubo: Yes. Part of my work was also providing field supervision, so I went out with the surveillance teams because I wanted to see how they were collecting information and how they were interviewing and doing contact tracing. I went out with them a number of times during the week, and I would select different teams to go out with. It was good for me to see that because again, as a field epidemiologist, you want to see things and observe for yourself because it gives you a better understanding of what's going on. I could understand the challenges that they were having when they were saying well, I've identified a case, but the person doesn't want to leave their house. When you're not in that situation, you don't understand until you go and you see for yourself that really,

somebody does not want to be removed from what they know to go to a health facility because there are questions about whether or not they will improve.

Around that time, there was a lot of misinformation and suspicion of response efforts and the government, and so it was tough getting people to seek care. One of the visits that I went to, it stood out to me. I just want to mention to you the first one. It was a man, probably in his late fifties, early sixties who had died. We went to his house, his family members had been listed as contacts, and our surveillance officers were doing daily contact monitoring. Going in the mornings, checking their temperature, recording whether or not they had symptoms, going back in the evening.

The team that I went out with, we went to the family home, the man had been dead for a few days. He had three wives, I believe, and a number of children who were all still in the house. The procedure at the time, we'd have the family members come outside, and there was demarcation tape put around the house so people in the community knew not to go into the house. We'd have the people stand and line up outside, and then surveillance officers would talk to them and ask them, have you had any fever, or do you feel hot? Any diarrhea, any vomiting, any weakness? Then we'd use the thermal scan from a distance and check your temperature. Going through, a lot of people reported that they were not symptomatic, and this was something that we saw across the board, that people were denying symptoms because they felt that if they said they were sick, they'd be taken to the holding unit. As we were there, one of the wives of the man who had died, she was the youngest wife, her eyes were red and she looked really weak. The contact tracer,

surveillance officer, was asking questions repeatedly. Do you have this symptom? She said no, she denied everything. He said well, your eyes are red. She said, it's because I've been crying. And while we were there, he's standing, we saw her sort of weave a little bit and next thing, she collapsed. She just fell back on the floor, and for a couple of seconds she was out. The other family members came to her and lifted her back up, and the surveillance officer said see, you're not feeling well. She said no, it's just because she'd been crying because her husband died, and she hadn't eaten, and that's why she had symptoms. We decided to err on the side of caution and called the ambulance to come pick her up. They came. There was a lot of resistance from her and two other members of the family who we felt were not being completely honest with their symptoms. We got them in the ambulance, took them to the holding center where they were tested, and two days later, we had results, she was a confirmed Ebola case. The next day she was dead. It struck me because it really just showed how much the outbreak was affecting lives and how people were impacted. And even in the midst of that, people were still afraid of the unknown. Rather than admit that they were sick and go to a health facility, they would rather deny their symptoms and stay at home because there was just so much mistrust. That was something that we needed to get past. Similar to what I talked about earlier, during my MPH [master of public health degree] year working on vaccine acceptance, it's important to gain the trust of the community that you're working with because it doesn't matter how effective our interventions are and what we do, if we don't get people to see the importance of them. If we don't get buy-in, the work we do is of very limited utility.

Another experience I had that stood out was there was another family, the man, the father in the household had died and his wife, about a week later, had fallen ill and she also died. They had four children: a six-month-old, a boy who was about eight years old, and then two young teenage girls. The father had died, the mother had died, and then the six-month-old baby had died. That pattern was not uncommon because as we expect, when the man was sick, the person that would care for him would be his wife. So she's exposed. And then she's also nursing her child, her young child, so that child is exposed and that child died. The three children left, the eight-year-old and the two young teenagers, I would say maybe they were about thirteen and fifteen, now within a span of a week and a half had become orphaned. Now they were in a community, their house is sort of sectioned off and there's no one to provide for them. What the community was doing was bringing food and water and just leaving it outside, and they would come and get water or whatever the community was able to provide, which wasn't much. On our visits to different communities, we stopped at this facility because we had heard from our surveillance officers that these three children that were left were not doing well. We stopped to figure out what was going on. When we went out to the communities like that, we would often get a big bag and have food that had been catered, packaged, that we would give out in the community. We got to the house and the three children were sitting outside on a bench on the veranda area, which is like a little patio, it was a mud house. One of the district medical team officers was talking to them, and you could see they had been crying, just general appearance was not good. And we asked if they had eaten and they said no. A colleague who was Sierra Leonean opened a bag and brought out food, and they pushed it across to them, to the three children, and they refused to eat it. They

said something in the local language that I didn't quite understand, and I asked what it was, and they said that they suspected that we had put Ebola in the food. And that their mother and father and little brother had died, and so this was an attempt to kill them off, the rest of them, and so they weren't going to eat. Even though they were hungry and starving because they had not eaten, really had any food in days, they would rather remain in that state than eat the food that we were bringing to them. So my colleague opened up the bag, because we had stacks of food. Opened one, got out a fork, and started eating to show them that we weren't bringing food to infect them. We were bringing food because we wanted them to be nourished. And after that, [my colleague] passed the food over, and we could see them eat. That's another example of the mistrust and people not really understanding. So, the very basics of things that we need to overcome in order to reach people. These were many of the challenges that we faced in the response. I don't know what happened to that family after that, but I felt like at least we had gotten through to them, provided them with something, and I don't know whether any of them became ill afterward. But what we could do at that time, we did. And there are so many other stories like that. I think one of the tough things for me was finding that balance of you do a lot, but even at that, there's still limitations.

Q: What kind of food was it that you were bringing?

Dokubo: I think it was a package with rice and something else. It was local food, it was what normally they would eat. It was a local caterer that had provided it.

Q: Do you recall the name of your colleague?

Dokubo: No, I don't. It was a lady who was really, really good, she was part of the social mobilization team.

Q: Ah.

Dokubo: Yeah, because that was another pillar that was important in our work because we needed to make sure that communities were engaged. They were the ones who were going out and talking and reaching out. We had the social mobilization team members going out with the surveillance officers because they helped with community engagement. Yeah, so she wasn't somebody who worked directly on my team as a surveillance officer, but she would accompany the surveillance officers when they went out.

Q: Was it always like that, like from the time that you got there?

Dokubo: Not initially, but we kept getting reports that there was resistance in the communities, and that was making it hard for the work to be done, to get information. So we had a team of maybe three or four surveillance officers paired with one community engagement team member, a community mobilizer. And they would go out together. With that structure now in place, we did see more engagement and uptake and information being provided.

Q: Can you tell me a bit about your interfacing with other organizations that were part of the response? You mentioned a bunch of them, there was IRC, IMC, British military even. Were there some individuals from that—from those partners who you worked with most closely?

Dokubo: Yes, we worked closely with the WHO [World Health Organization] at the time, so we had epidemiologists from WHO as well who were part of the district medical team. When data were collected every day, we entered it into a database from the case investigation forms. Cleaned the information, compiled the data, which we then sent up to be analyzed, compiled in Freetown with data that came from other districts. WHO was also involved in that data cleaning and analyzing the data. It was a collaborative effort as best as we could manage then. Decisions that were being made, supervision of surveillance officers, they were also engaged in those efforts too.

Q: Do you remember what the computer system was that they were using to compile the data?

Dokubo: Yes, it was Epi Info.

Q: Oh, it was Epi Info.

Dokubo: Yes, so we had a VHF module, viral hemorrhagic fever module, and it worked well for us in Sierra Leone. There were a number of revisions that were made during the course of the outbreak, but ultimately it was useful in collecting data. It was easy for us to also train staff. We trained local Sierra Leoneans as data managers, so when our surveillance officers went out collecting information on case investigation forms, the contract tracing forms, they came back at the end of each day, gave the compiled papers to the data management lead, who would then split it out among his staff. They'd sit down at laptops that CDC and CDC Foundation had provided, work in Epi Info, which we had trained them on, entering all of that data, cleaning. It was good to see capacity that we had built being put to work and seeing the difference that it was making, all of that in real time.

Q: When you look back at Port Loko, are there other—I don't know, other stories or other memories that float to the surface of your mind that I haven't prompted you for that you think are important?

Dokubo: Yes. There was one. Towards the end of my stay, I went out with a colleague who worked providing logistic support for the British military, actually under DfID. We went out with the burial teams. There was a woman who had died in the community, and we had received a call, and the team was going out. We decided to go out with the team from the emergency operations center. We rode in our vehicle behind the ambulance. When we got there, my colleague and I, we stood at a distance and watched the dead body management team come out. They had a protocol, and we watched them, observed

how they donned their PPE [personal protective equipment]. Each person checked everybody else to make sure that they were appropriately covered, from their mask, their covers, their gowns, their boots. After the team—I believe it was a team of five—when they were done checking their PPE, I think the whole process took maybe seven to ten minutes, they all inspected each other. Then they went into the house, got the body, came out, put it in the vehicle, and then proceeded to take off their PPE. At each step, there was somebody who was standing and observing to make sure that there was not accidental contact. For example, they didn't use their gloved hand to scratch their face and potentially transmit infection. They went through that whole process, their boots and shoes were sprayed off with bleach solution to kill any viruses that potentially had gotten on. The whole community, you could see people gathered around and looking, and people were crying. It's just this fear, and it was just very emotional for the community and even for us just there observing.

We followed the vehicle as they went to the burial ground for the body to be buried in a safe and dignified way. We got to the cemetery, and it struck me, there were rows and rows and rows of freshly dug graves. It was hundreds. I wasn't expecting that. I knew the impact based on the epidemiology curve; I knew we were having many cases die, and I could see it on the computer screen as we graphed it; I could see it on paper. But being in the cemetery and seeing all those graves, you could see the red earth and then the mounds that they had been filled. And I realized this was—this is the reality. So many lives have been lost in a short period of time, that communities were being—sometimes whole communities had died off. While the burial team was off in the distance burying, I just

decided to walk around and was reading grave markers, and I could see many names. One of the common names in Sierra Leone is Kamara, and you walk through and you would see, X name Kamara, X name Kamara, and I wondered how many of those were from the same family. I had heard reports that sometimes a whole family—I think I had heard a report of fourteen people in the family had died within a span of three weeks. The grandparents, the parents, all the children, so three whole generations had been wiped out. Just looking at all the names, it was very emotive. Then I stopped, I saw a marker of a—I don't remember whether it said "anonymous" or "unknown," and it was a nine-month-old baby. It was a bit overwhelming for me, and I just broke down crying because I have kids. I left my kids back here in Atlanta and travelled to Sierra Leone, and it made me think about my children. It made me think about families that had been lost. It made me think about the child whose potential the world will never know. It just felt like it was a horrific thing that was going on in Sierra Leone and the other countries in West Africa, and even though we were working and doing our part to address that, I felt like there should be more done. I felt like this was unnecessary and—yeah.

Q: I remember that there was a photo of yours that took first place in one of the contest things that CDC does, and I think it's of a gravesite. Is that from that day?

Dokubo: Yeah.

Q: It's a brilliant photo.

Dokubo: It's a really sad photo. It's a sad photo and—yeah.

Q: How did it feel to get recognized for it?

Dokubo: I think the recognition was more for the lives that were lost and people who would never get the recognition. People who were affected by the outbreak for no fault of theirs. There are a lot of things we can't explain. I felt like many people were helpless in the situation, and I don't know—there's just a lot of things that didn't make sense. Yeah.

Q: Did you ever feel that CDC could have done things differently?

Dokubo: No, I felt CDC did—we did what we do best. We got in there even when we didn't know really what was going on, and we started responding. We didn't need to have all the data points to know this was what was happening. We knew people were dying, we knew we needed to find ways to prevent that, and so we jumped in. I remember one of my colleagues said, the thing about CDC and public health folks is when somebody yells "fire" or "danger" and other people are running away, we're running toward it, and that's what we did. The experience was why we go into public health, and it just reinforced that we go in because we want to make a difference in the world. Because we want to help prevent diseases, and we want to make the world a safer place. We want to improve health outcomes for people, we want people to live healthier and longer lives and reach their full potential. And when something affects that, we look for ways to correct it. We want to prevent diseases, we want to prevent illness, we want to overall, improve health

here in the US, globally, because ultimately what happens in one small, remote location could affect somebody here in Atlanta. So it's important for us to improve health overall for us to really feel safe.

Q: Can you tell me about wrapping up the deployment in Port Loko?

Dokubo: Yes. It was almost Christmas—actually, I think it was a week before my birthday. I had extended my time already by about a week and a half so that there would not be too much of a gap between me and the next person who was coming in. At that time, I was exhausted. We were working close to one-hundred-plus hours a week. You're up at 6:00 in the morning and you're working until 11:00 pm at night. It was physically draining and emotionally, as well. When it came time for me to leave, it was hard for me to leave. The short amount of time, the six-plus weeks I had spent there, which was considered relatively short, I felt like a lot had happened. I had seen and experienced a lot with the team. And I felt like we had done a little bit to help make things better. I felt a sense of loss, I don't know if that's the right word, but yeah. I felt like I was losing something by leaving. I wished I could have stayed longer to do more, but I didn't have the physical or emotional bandwidth at the time to carry on. But, I had colleagues coming in who would carry on and do the great work that had already started before I got there and which continued on and helped us to end the outbreak in Sierra Leone and in the other countries. The day before my departure, I wrapped up, exchanged contact information with many of the colleagues who had now become friends from other

organizations, other Sierra Leoneans that we'd worked with. I came back to Freetown and then prepared and flew back to Atlanta.

I was able to return, I had an opportunity to return to Sierra Leone about a year after that. The outbreak had come to an end, but there was a new case that had occurred that was linked or suspected to be due to sexual transmission. At the time, they needed epidemiologists who were already familiar, who had worked in the setting, to come back and help respond. I went back, and I was in a different district this time, in Kambia. But I had to drive past Port Loko. On my way to Kambia, I stopped in Port Loko and went to the District Health Medical Team office, and there was just a handful of faces there then—people who I knew and faces that I recognized. I said hello to people, went to the office where CDC staff were during the main outbreak, and looked at how much things had changed and how far we had come: from a widespread outbreak to the end of widespread transmission in the country, and now just a few cases we were working on. It was really different how the response looked now.

Q: How long were you there the second time?

Dokubo: I was there for almost three weeks. I actually was in Liberia at the time. When I left Sierra Leone the first—after my initial deployment, I came back and continued my work, my HIV and TB work at headquarters. And then CDC decided to open up offices in the three most-affected countries: Sierra Leone, Guinea and Liberia. And I had the opportunity to go work in Liberia. I moved to Liberia, and during the process, before my

relocation, I had gone there and was working. When the new cluster of cases or outbreak occurred in Sierra Leone, they asked if I could come over.

Q: Can you tell me more about the decision to move to Liberia?

Dokubo: Yes. It was one that came—it was easy for me because it was—I felt like that's what my heart wanted to do. As I said, when I left Port Loko the first time, I felt a sense of loss, that this is where I needed to be, where there was a need, where I would be able to do something that would be of value and make a difference. When the opportunity came to stand up a CDC office from the ground up in a place that obviously had a need, I jumped at that. It had to take a little convincing for my family and extended family and friends. I think the most common question I got was, are you crazy? [laughter] But really, that's what drives us is making a difference, going and doing what is needed. I saw it as a great opportunity, and it was what I wanted to do. So I did.

Q: Absolutely. Sorry, I didn't mean to abandon—was there anything else that you wanted to talk about, about that second time in Sierra Leone?

Dokubo: The second time in Sierra Leone, the experience was—there were some similarities, but also a lot of differences. The similarities were, it was a confirmed Ebola case, and then someone had gone to another district and had been in a household where other people, family members, had been in contact with that case. These were contacts who needed to be monitored, and when the surveillance officers tried to do that, many of

those people fled. They left the house, they didn't want to be monitored, and people went off into the bush. We had reports that people had crossed into Guinea because Kambia shared a border with Guinea. I did some reflection, I thought well, it's been a year and a half plus since the main outbreak, and people are still suspicious of our efforts and people still distrust and—yeah.

Q: Yeah. What progress were you able to make while you were there?

Dokubo: Well, we tried to do what we could. We had some health communication messages that were put out on the radio, trying to encourage people to come back, or if you knew where people were, to share information. Or if people were sick, to contact the health facility. Then we went out in the community and tried to incentivize people, I think there was some food that was provided. Sometimes you have to do what's necessary, it's something minimal that you're doing, but that encourages people to open up so you can help prevent more people from getting sick. We'll do that. We weren't able to get all the contacts back. Some people returned. We didn't have any additional cases confirmed from those, which was great.

The differences that I saw, and these were positive, different changes, were the capacity that we had built was still in place. The surveillance officers who had worked during the main outbreak knew what to do, they jumped right into it, doing their active case finding, case investigations, contact tracing, all the different pillars were stood up right away. The case management, the social mobilization, infection prevention and control, dead body

management, all of that. Things that had been put in place carried on. It goes to show the importance of building capacity because now these communities were not waiting for us to come do the work, they already knew what to do. That's what's important in sustainability of programs and systems, is while we're doing, we're teaching so that that work can be carried on even when we're not there.

Q: What similarities and differences did you find then when you went to Liberia?

Dokubo: Interestingly, a lot of similarities in Liberia. Still that mistrust of efforts, question of whether Ebola was real or if this was something that was made up, and people refusing to go to the health facility when they were sick. And instead they would go to a traditional healer or go off into the bush or stay at home. We had to keep working to overcome that. One of the things I recall was, I think someone who—a contact that was being monitored said they noticed that when the ambulance comes and picks people—people are at home and sick, and when the ambulance comes and picks them up and takes them to the holding center or the Ebola treatment unit, the person never comes back because they die. The way they interpreted that was that people are sick but still alive at home, and once they get in that ambulance, we take them somewhere where they die. The way we interpreted it was you're sick and the ambulance gets them when they're at a very late stage of illness where not much can be done, and that's why they died. So we now had to find a way to encourage the public that once someone is ill, don't wait for them to get very sick because if we can get them to treatment earlier, then they have a higher chance of survival. To help support our story, when we had survivors, we brought

them back to their communities so that they could help tell the story. Say look, I was sick and I went to the treatment unit and I got treatment, and look, I'm alive and well. We had to look for ways again to get through to the community because remember, that's the important piece. If we don't engage the people we're trying to serve, then it's of limited utility. Making sure that message was shared widely and people understood and accepted that was key to what we were doing. The response was similar, and aside from the attitudes and practices in the countries, they're neighboring—they're in the same area—aside from the similarities in people's beliefs and perceptions, the response of CDC across the board was still top notch. We built capacity in Liberia so that the government and the Ministry of Health [and Social Welfare] had the capacity to carry on the work. We worked closely with partners, other US government agencies, other international multilateral partners to put systems in place so we could have an effective and well-coordinated response. Liberia was the first of the three Ebola-affected countries to be declared free of the outbreak. We subsequently had a resurgence of cases, but for each one, we had systems in place and capacity built, so the response was shorter because we were able to detect cases earlier and respond more effectively and prevent further spread of infection. In the last clusters of cases, transmission was usually limited to one generation. So one person is infected and then they infect close contacts, but those sick people infected don't infect other people because we had good measures and systems in place to prevent further spread of infection.

Q: Can you tell me, when was it that you originally went to Liberia?

Dokubo: I arrived in Liberia in November of 2015, that was the first time.

Q: Were those subsequent clusters, were those all related to sexual transmission then?

Dokubo: The first one, we still don't know definitively. We have a paper that should be coming out soon, and for that one we suspect that it was probably due to—transmission was from a survivor, somebody who had been infected in 2014 and had persistence of virus, and eventually, about a year later, had resurgence and then transmitted to family members. We don't know if it was sexual transmission or just close contact with those family members.

Q: Wow, okay.

Dokubo: Yeah, and that was the outbreak in the end of November 2015 through December of 2015. Then after that, our last cluster was in the end of March of 2016, and that was a case from Guinea. They had a cluster there related to sexual transmission, and one of the cases in Guinea came across the border into Liberia. That's how the cases were—the cases we had in Liberia came to be. But even at that, the response was rapid and we were able to quickly get a handle and respond. I believe June 16th of 2016 was when Liberia was again declared to be Ebola free. And there have been no additional cases, knock on wood, that was the last. What's today June 7th?

Q: Mm-hmm.

Dokubo: Yes, so in about a week and a half will be the two-year anniversary since Liberia was last declared free of Ebola.

Q: I had the chance to interview both Denise Allen and Desmond Williams at various points, and of course you must have worked with both of them quite a bit. Can you tell me about working with them?

Dokubo: As we set up the new CDC office in Liberia, there were a few of us who were CDC staff at headquarters who went to work in-country. Dr. Desmond Williams was the country director. I served as the deputy director for programs, so I oversaw all the technical work, and I also was the outbreak response lead for Ebola and other infectious diseases. Dr. Denise Allen was my colleague; she's an anthropologist and a behavioral scientist, so we all worked closely together. For the last clusters of cases we had, we worked within an incident management structure, so we'd get into a response mode where our CDC staff worked as part of the National Incident Management System within the different pillars, supporting the response. When there was no response, we were working under the Global Health Security Agenda to build capacity of the government to be able to prevent disease outbreaks, detect rapidly, and respond effectively to any health threats that came.

Q: How did your family transition to living in Liberia?

Dokubo: It was an interesting experience. My husband and kids were—is the word "fascinated?" Or "incredulous," when I came and said, I think we're moving to Liberia. [laughter] My family was supportive when they realized—and they knew that this was really where my heart was and what I wanted to do. Our kids were still really young at the time and saw it as another adventure. My husband and I have done a lot of traveling internationally and we've taken them on trips. I just said we're moving to another country. We'll come over holidays, and you'll still see family and you will see your friends. So for them it was an adventure. My daughter was seven years old and my son was five when they moved to Liberia. I had come a couple of months earlier. The initial reaction, which is normal when you move somewhere, is to notice the differences. Like, this is different from what I'm used to, or it's different from back home. After they did that, we tried to get them to move past that and try to notice the similarities. As you go to school, on your way to school, you notice other children going along too. Where do you think they're going? They're going to school. What are they're wearing? They're wearing clothes that all look the same. That's called a uniform, because many kids outside the US wear uniforms to school. And you notice kids that are walking, some in taxis, some in cars; there are different ways children get to school. We started teaching them to see the similarities, and we also wanted them to experience what life was like outside the US, which is all they knew, which was that's their home, and to appreciate those differences and learn from it. And as best as we can, use it to teach us to probably be more appreciative of what we have, and also appreciate people who may have less than, but yet are still happy and content. So, we settled in Liberia and it became home, and we made friends, we formed a community, which I like to call our village. The kids are resilient,

they get to school, they were in the American school, and they made friends. There were a lot of other expat kids and Liberian children. My kids got a kick out of learning how to speak Liberian English. They had a really, really good experience. We loved life in Liberia and fully embraced what the culture was, the food, learned about people, their history. For me, it was an opportunity to do really good work. We had a number of other outbreaks, not Ebola, but other infectious diseases, and what was great to see was the systems that we had put in place from the Ebola response now being used to respond to other diseases.

Q: What were some of those diseases?

Dokubo: In May of 2017, we had a cluster of deaths after a number of people had attended a funeral. Many people had come in sick in a county that's about seven hours away from Montserrado, the main county. Sinoe, Sinoe County. People had come in sick and many people had died within the span of twenty-four to forty-eight hours after attending a funeral. What do you think people are going to be worried about or think? Ebola. In less than twenty-four hours, we were able to collect samples, test locally at the national lab, and know that it wasn't Ebola. So Ebola was ruled out, but now the question was, if it's not Ebola, then what is it? So did additional testing and sent samples to headquarters, CDC headquarters here in Atlanta, and were able to confirm that it was due to meningococcal infection. Meningococcal infection is from a type of bacteria that can cause meningitis, which is an infection, inflammation of the brain, fluid around the brain and spinal chord, and the lining. So we had a meningococcal disease outbreak. Seeing

those response systems in place, cases had been identified, contacts were listed, were being monitored, infection prevention and control measures were put in place, social mobilization was put in place. Seeing all of that immediately kick in, and the response was handled at the county level. So even before we were able to respond at a national level, before I arrived in Sinoe County, they already had all the structures, the pillars up and were already working. That's what we want to see. That's why we do the work that we do. Again, to the point I made earlier, for us to really feel safe in the world, we really have to make sure that everywhere in the world is safe. We build systems and build capacity and put things in place so that if anything happened, or any disease, anything else comes up, there can be capacity to respond right away and respond effectively. So seeing it all play out and work the way we envisioned has really been rewarding.

Q: So what happened that you're in Cameroon now? [laughter]

Dokubo: While I was in Liberia, an opportunity came up and I was offered a position—I applied and was offered a position as the country director in Cameroon. I was honored to be considered for the position, and transitioned from my position working on global health security within the Division of Global Health Protection in Liberia. I transitioned back to the Division of Global HIV and TB, back to working on HIV and TB, which was my initial background and my initial work in CDC. I moved from Liberia in early February of 2018 and moved to Cameroon, where our work is focused on HIV prevention, care and treatment, working to achieve HIV epidemic control in Cameroon, and we also have a global health security program, so also working to build capacity and

supporting the government of Cameroon to be able to prevent, detect and respond to health threats.

Q: Is there anything I haven't asked about, any memories you'd like to highlight before we cut off the mic [microphone]?

Dokubo: Probably more of a reflection. At every point, I think it's important to stop and take stock of where you are and reflect back. A lot of times we plan and think forward, but it's also important to stop and look back and see where you were and where you currently are, if this is where you envisioned yourself, and also look at how far you've come. I do that twofold, for myself. I think back to when I was a medical student and when I was in college and before that in high school and as a kid, and wanting my life to be one that helped people. I wanted to be in the health field, I wanted to be a doctor, I wanted to care for people, I wanted to do global health work. What I'm doing right now is what I always dreamt and wanted to do, and I was able to achieve that with support along the way from mentors and my family and my parents and with encouragement from my husband and my kids and friends, and just so many people who influenced me along the way and helped me get where I am. I don't take any of that for granted. I also see it as it's a privilege to be in this position, so it's important to also find ways to reach out to people, young kids or public health trainees or people who envision themselves to be in a similar position, and how I can help them the way others helped me.

Then the second point of reflection is looking at the countries where I've worked, in Sierra Leone, Liberia, now Cameroon, and other countries that I supported before I moved overseas from headquarters, looking at where the countries are compared to where they were a couple of years ago, and seeing how CDC's mission is being fulfilled. We're setting out, we're working to improve the health and safety of our nation, and as part of that we're building health capacity in countries across the world. We're working with governments and enabling them to be able to respond to health threats that may come up, and ultimately, they will get to a point that they don't need the US to come in to lead a response, they can do that on their own. And once we have that capacity built across the world, then I think we can feel a bit more safe knowing that really, there's improved health globally.

Q: Thank you so much, Dr. Kainne Dokubo, for sitting here and reflecting and sharing some of your experiences. This has been great.

Dokubo: Thank you very much, Sam.

END