CDC Ebola Response Oral History Project

The Reminiscences of

Desmond E. Williams

David J. Sencer CDC Museum

Centers for Disease Control and Prevention

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Desmond E. Williams

Interviewed by Samuel Robson
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Interview 2 of 2

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Q: This is Sam Robson, here today with Dr. Desmond Williams. Today's date is June 9th, 2016. We're here in the audio recording studio at CDC's [United States Centers for Disease Control and Prevention] Roybal Campus in Atlanta, Georgia. This is my second interview with Dr. Williams as part of the CDC Ebola [Response] Oral History Project. Dr. Williams, thanks again for being here with me today. The last time we spoke, you just had mentioned the [Sierra Leone] president's decision that you guys had two weeks to come up with something for the Ebola response. And you just mentioned coming up, with partners, the idea of this Western Surge. Can you take it from there?

Williams: Well, thanks, and thanks for having me again, Sam.

Q: Of course.

Williams: Yes, I think the last time we spoke, we spoke about getting into country and then seeing that we arrived just around the time when the outbreak was actually peaking in Freetown, which is the capital city of Sierra Leone, a population-dense area with a lot of slum areas. We were very concerned about what the virus would do in a heavily populated area like that. I remember it was a Monday morning, we're going to work, and

suddenly we hear the president on the radio saying, “We will do something in two weeks,” because the numbers for November were really scary. We had over two hundred cases a day, a thousand cases a month, about twenty thousand contacts to follow, which is virtually impossible, and we were identifying more cases than we had holding center beds for. We were going in, identifying potential cases, suspect cases of Ebola, and leaving them in their houses. We had a radio campaign called “Staying Safe While You Wait” to teach families how to stay safe whilst they wait with their sick family members. Trying to care for them, but at the same time, protecting themselves from being infected with Ebola.

Q: That’s actually something I haven’t heard about before, this Staying Safe While You Wait. What kinds of advice were you giving to people?

Williams: This was part of a larger media campaign, because what we realized was, we needed to give the information to the people so that we can get them on our side. Community engagement was key in turning around this outbreak. We came up with a Big Idea of the Week campaign, and every week we had one major topic that we spoke about all over Sierra Leone. It was really amazing to see. The first week was “Safe Burials.” The second week was “Early Treatment Saves Lives.” The third week was “Stay Safe While You Wait.” That was where we were. We were talking about what they could do, isolating the patients within the home, even if that home is a one-bedroom room. How you isolate a patient without actually getting exposed yourself, and providing care for that

person. It was really difficult leaving people at home, but there were no holding center beds for them.

So, the Western Area Surge was born. The president wanted us to do something because here we are in the middle of the capital city, a thousand cases a month, and everybody was really, really concerned about what would happen if we didn't control the virus at that time. If this thing had gotten hold in the slum areas—and you need to understand that—maybe I could give you a picture of what the slum areas were. There is no sanitation in these areas. There's no traditional roadway or anything like that within these slums. All the houses butt onto each other. It's population dense, but you have families of four or five living in one shanty—corrugated roof building. It was just very scary to everybody. The potential for this thing to explode and just take over the capital city was real. It got to the political leaders' ears, they saw the maps. We were, at that time, doing maps. [R.] Ryan Lash was one of the CDC TDYers [staff on temporary duty assignment] who was with us. He was doing these maps, GIS [Geographic Information Systems] maps, just showing how the virus was moving in the capital city. It was very scary, especially since some people used to think that it was only in the poor areas, it wasn't in the affluent areas. But the maps were showing we have cases in the affluent areas, including the area where the president stayed. He [President Ernest B. Koroma] went on the radio and said, "This is a very serious thing and we have to do something. Within two weeks, we will announce what we will do." We get to the Western Area emergency response center, and everybody was looking at everybody and saying, "Did he say what we're going to do?" [laughter] It was a very interesting moment. Everybody was looking

at everybody, and they were like, well, I guess we need to come up with something, and we started brainstorming. We had a brainstorming session with CDC. We had some EIS [Epidemic Intelligence Service] officers with us who were working in the Western Area, and some seasoned epidemiologists, as well. We had some folks from WHO [World Health Organization] in the team, and we had the British military, led by Andy [Garrow], Lieutenant Colonel Andy Garrow. Then we had the Ministry of Health [and Sanitation], led by a very talented guy called Charles Keimbe. He was so good at mustering support for what we needed to do in Freetown that we gave him the title of "general." We referred to him as General Keimbe, and his assistant was James Bangura. Very, very talented people. Very dedicated to the work. Unlike us—we were rotating in twenty-eight days, in my case, seven weeks—they were there, they were living with this thing. They didn't get a break. They were just putting everything they had into this outbreak.

We sat down, had a brainstorm, and started thinking, okay, if we were going to do something different, what would that be? It was very clear to us that, number one, we had to increase the number of holding center beds, because the quicker we could identify a case, the quicker we could isolate the case, the more we'd reduce the possibility of that person infecting their family members. The second thing we needed to do was try to look at the lab [laboratory], to see how quickly we can get the results from the suspect cases. Because at that time, we were getting one positive Ebola case for every two people we isolated, at that time. The quicker we could identify whether or not this person was an Ebola case or this person wasn't an Ebola case, the quicker we could release that center bed, that holding center bed, and the quicker we could bring somebody in again. We had

a team—I think it was led by Oliver [W.] Morgan, who was looking at, how can we make the lab results cycle a little bit more efficient? We had to design different types of lab runs, to try to see if we can collect samples quicker, get the results to the nearest lab, get that analysis run, and then turn around quickly.

Then we had to look at the question, how are we going to identify people with Ebola when people are scared to come out and report that they had Ebola? Because by that time, there were serious stigmatization issues. If a family identified themselves as having Ebola, or even if the ambulance came to their house, the community would ostracize them. I remember, I actually interviewed a suspect case. This man traveled about eight miles away from his house, and then called us, and then waited for us on the street because he didn't want us to go to his house. This man was sick. He didn't want us to go to his house, because he didn't want to stigmatize his family. What he didn't know was, once we knew he was a suspect case, we had to go to his house to identify the contacts. He had two kids who were living with him. Fortunately, they were well, but we had to go there and check and see whether or not they were okay. There was a host of issues that we had to deal with: number one, how do we identify these patients? How do we win their confidence? How do we win the confidence of the community leaders? Because without their support, we really can't go into these neighborhoods. And if we had to go to these neighborhoods, what was the best approach for us to use to get into these neighborhoods? This is all part of active surveillance and active case finding.

We decided that we were going to use the electoral wards that are in Freetown. You have forty-nine electoral wards in Freetown, and they were divided roughly into Western Rural—that's the rural parts of the Western Area—and Western Urban. Within each of these wards, we decided that we needed to put an active surveillance team inside that ward whose primary responsibility is only to find cases inside that ward. If there were no cases inside that ward, then they can go into surrounding wards and help out the other teams if there were cases in there. Having had the active surveillance team inside each ward, we then needed a way to coordinate all the activities of these, at this time, forty-nine teams. We had to think of how. Do we have a local coordinating committee? This could actually be at the Western Area emergency response center. We thought we should build a forward operating base in the rural area that would take care of the [rural wards—the rural and an urban base] as well.

Each active surveillance team, we thought, should have two district surveillance officers and, most importantly, should have three community members who we called "community monitors," who would be trained to identify triggers that they can use to identify suspect houses that we will then send the district surveillance officers to, to go investigate whether or not there was a sick person in that house. At that time, we had seventy district surveillance officers. Obviously, that was not going to be enough. We needed about two hundred, two hundred forty. No, one hundred forty district surveillance officers. And then, because we needed three community monitors for each ward and there were forty-nine wards, we needed to have at least one hundred fifty to two hundred community monitors. Remember, we had two weeks to do all of this, [laughter] and these

were people who have never been exposed to Ebola. The primary responsibility in that case was to make sure that if we send them into the community, that they are safe and they do not get infected. So, we had to train them. We hurriedly recruited about five hundred people.

Q: Where did you find them?

Williams: We went to a number of things. First of all, for the district surveillance officers, we needed somebody who had some medical training, somebody who could go in and assess someone and quickly make a decision about whether or not the symptoms that that person had were consistent with Ebola. For those, we looked at—the medical school at that time was closed. We looked in the medical school, College of Medicine and Allied Health Sciences. We looked at people who recently graduated from that. We also recruited some of the already established district surveillance officers in to train as well. I think it took about four days for us to identify all the district surveillance officers. Then, we asked the Western Area coordinator—because we had two Western Area political appointees who were the Western Area coordinators—to identify three to four people from each ward. Because it was important that the people came from the ward where they were going to be working, because they needed to have the community's trust. They needed to be able to know where to go to get information. They needed to be able to engage with the community and get them to tell them what was going on within that community. If there were suspect issues in that community, to be able to raise them without feeling intimidated by those folks. They had to come from those wards.

What we did was, using the counselors who were operating in the ward—these are all political appointees—we were able to identify four to five potential community monitors from each ward. From that, we selected, I think, four for each, and brought them in to IPAM, the Institute of Public Administration and Management, because it had—this was another learning institution, but there was nothing going on and these classrooms were there. We developed a curriculum with the rest of the group, and we trained almost five hundred district surveillance officers and community monitors on how to identify people with Ebola, how to protect themselves, and what was a communication strategy to get that information back into the response to initiate an action. Because then we needed to send out the district surveillance officers, we needed to send out an ambulance if the person was a suspect case. We needed to coordinate with the response center to assign holding center beds and to send folks to, etcetera.

So, five hundred people. We broke them out into sets, and we were teaching all through—I remember one day, this was an all-court-press issue. Everybody who had time was recruited to train because we had so many people to train and we had to do it well. By the time they went out, they would be confident they would be able to do their job without being infected themselves. I remember one day, we finished a class and we're going home. It was a good thing we had contract drivers who were driving us, because this was, I would say, a four-mile drive from IPAM to the Radisson [Blu Mammy Yoko] Hotel where we all stayed. By the time we got there, we were all asleep. It was terrible. Anyway, it was also very exciting, and we knew what we were doing. We knew this was

our one opportunity to get it right. Everybody was willing to put in everything they had to make it work. It was just exciting.

Then we hit one of the other issues that we had with this epidemic. That is, the virus was moving so quickly that we had to respond quickly, as well. Sometimes, responding quickly meant we needed to be able to get money quickly to do our programs. For example, this was a scale-up of the whole system. We were lifting the system, we were trying to encourage the development of more holding center beds. The president was going around to all the holding centers that were being built and encouraging people to finish on time. December 14th was the deadline, and we had to get it done by then. We were doing the lab runs, and that was already funded. We were just trying to make it more efficient. We needed to get contract cars to help with getting the samples around, and that needed money.

We were recruiting all these people—as I said, about five hundred new people who were not on staff before. We had to find a way to give them a stipend, to provide some support for them whilst they work for us. Because we were doing all these cells, each of these cells had to have two bicycles, motorcycles in there to move them around within each of the wards. We needed to find money to rent the motorcycles, and a host of other things. We needed money. All our CDC funding systems are too slow to respond like that. We needed money, like, in two days. We need money in two days.

We had to put a proposal together, a proposal for the CDC Foundation, who I think was a lifeline within this whole outbreak. I remember we started working on that the night before. We got something, shared it around, got some comments, finalized the draft of the proposal by about twelve o'clock or something like that, that afternoon. Casey, who was the response deputy at that time, sent the proposal to the CDC Foundation—I think it was around one forty-five or something like that. I was in class, and then I got this call and I saw it was Casey. I excused myself and I went out, said, "Casey, what's going on?" Said, "Des, we got the money!" [laughs] Oh, man, I tell you, that was a good feeling. [laughter] A goodwill philanthropist saw the proposal—the CDC Foundation took it and sent it to all their donors. "This is what we need to do. We need to save Freetown now." One lady, one philanthropist decided to send a message to the CDC Foundation and say, "Do it, I will fund this." That woman may have saved Freetown. It's just amazing. Just like that, she provided all the money for us. Then, there was of course a lot of movement to get the money through, but it was really amazing that somebody could, out of the goodness of their heart, look at a situation that was going from bad to worse and decide to help, with their own money, and send that money through the CDC Foundation. I'm really thankful to that lady, and I'm also very thankful to the CDC Foundation for being there for us to be able to get that kind of money going quickly.

We had the people, we had the funding. We didn't have a lot of time to turn this around, but we were working around the clock to make it happen. The British military was upgrading everything. They were bringing in more ambulances, they were adding in new staff members to help with the coordination of all these different cells. They were helping

us with field provisions, as well, because what we did was—all the forty-nine wards were assigned to an international epidemiologist and a local country health officer. We drove to each of these wards—I think I had five wards—and you had to go to those wards every day, communicate with all those guys, supervise them on the spot, help them triage the different cases, and send them out and all that. Then there was a big media campaign accompanying all of this, which I think was also essential. At that time, the Big Idea of the Week was in its sixth week or something like that. By that time, it was an interactive show, where people could send in comments and they could call in. We could hear them saying what we'd been trying to get them to understand. That was just amazing because when we started, there was a lot of resistance, a lot of people questioning what we were saying. But at this time, the community realized this is serious, we need to do something.

It was a transformational time for the whole outbreak in Freetown. I remember I went to a town in Goderich to do a field supervision visit. This was on a Saturday, and it was a dry run. We were doing a dry run there, just to make sure everything was right before we had to launch. We went in there, and the whole town was empty. I was, like, what's going on? It's not usual. This is a market day. Why is the town empty? Then we started seeing people walking around with blue T-shirts, "Community Task Force." The chief of that village decided that he had to do something, too. He engaged members of the community and deputized them, and they all became community monitors, and everybody was walking around, spreading the word about Ebola and trying to identify cases and all that. So basically, the Western Area Surge was a catalyst for action for community engagement, and I think it was amazing the way it turned out. That day, they were going

out, calling us, "You guys need to come here." [unclear] It was one of those moments where you play a big role in designing something, you get it going, and then you see it unfolding in your hand, and then you see a bigger action being taken by the community itself that amplified whatever you were thinking you were doing. It was really electrifying just to see that. I was like, wow! That was the first time I said, this is going to work. [laughs]

What we realized in the outbreak was, when the community realizes that they have a problem, they have an existential threat called Ebola in their community, they harden. And when they harden, they do what they need to do to take care of the outbreak. What CDC was doing was acting as a catalyst. Not CDC, but the international community, the whole response architecture. We were acting as a catalyst for action. Instead of waiting for people to die before they realize they had an issue, we were providing the information to them, prepping them, giving them the tools and the knowledge that they needed to go out and do something. We were acting as a catalyst for action. And community engagement just went through the roof. Every community wanted to do something. They wanted to do something. The president was out and about, more political leaders were talking about this. Every single radio station you were looking at was saying, we need to kick Ebola out, you need to kick Ebola out. It was just a very electrifying time. Imagine you're very exhausted, but every morning you wake up, "Let's go! We're going to get this, we have to get this done." It was one of the most moving times for me within the outbreak itself, seeing people actually going out and doing it.

We got to the point where we had a spreadsheet, and then had [a big meeting to decide] if we were good to go or not good to go, and whether or not we're ready to launch or not. The military was running this meeting, the British military. They had this very detailed spreadsheet. Every single thing was on it. [laughs] I remember we had a meeting and they were walking through this. "Where are we with this, where are we with this?" [laughter] Every single detail, every—it was being done almost like a military operation. "Where are we with this? Where are we with this? Are we good to go with this one?" It was amazing. I feel humble to be part of that whole process. It was just one of those moments where you realize that okay, we've got to get it done. If we miss this opportunity, we might never get it again. Everything was aligned. Political will was aligned and resources were there. All of the international partners were aligned around this central plan called the Western Area Surge, which was an uplift. Basically, we were putting the response on steroids. We were going to go and try to see if we can identify cases as early as possible and get them into isolation as quickly as possible so they don't have an opportunity to infect a second person. That was really the premise of the Western Area Surge.

I remember at that last meeting where we were running through all the briefings, and [Lieutenant] Colonel Garrow said, "How are we going to know if this is working?" [laughs] I did exactly what you just did. I scratched my head. I'm like, "Well, hmm. Okay, I need to tell you something that I think you might not like, but this is part of what we expect to happen. If this works, we're going to identify more Ebola patients earlier in the course of their disease. We're going to have an upshoot in the number of cases that are going to be brought in every week. The first thing that's going to happen is, for the

first two weeks, we're going to have an increase in the number of cases that we're going to identify. Then, after about two weeks of that, we should start seeing a decline in the number of new cases that would happen over time." He's like, "An increase in the"—I said, "Yes," I said, "but understand, these cases out there anyway. We just need to get to them first, and we need to make sure we get them out of the community and into isolation as quickly as we can, first of all to increase their chances of surviving, and secondly to make sure they do not infect their relatives." And he's like, "Okay, okay." And that's exactly what happened. Yes. I mean, even from the start of the dry run—and as I said, when we started the dry run, the community was already engaged. The community was already going out and identifying people and calling us and saying, "Come get this person. We think this person has Ebola," and stuff like that. That first week, I think the numbers jumped from about thirty or forty a week to about sixty to seventy cases in that first week.

Q: This is sometime in December?

Williams: Yes. And if you look at the epi [epidemic] curve, you can actually see all of this happening. You could actually see the data supporting what was happening with the Western Area Surge. I don't think it was just the Western Area Surge that did that. As I said, the Western Area Surge, I think, was a catalyst for action by the community itself. So it was a combination of the public awareness campaign that we'd been doing, the Western Area Surge, the community engaging, the political leaders aligning and pushing for action. Everything was aligned. The stars were aligned at that time. I realized if we

can't get it right this time, we will never be able to get it right again. The numbers started going up, and then the first week, numbers had gone up. People were like, what does this mean? Da-da-da-da. The second week, the numbers continued to go up. I think we had just under eighty cases that week from the Western Area alone, or something like—no, no, eighty a day. Eighty a day, that week. And then, the third week, the numbers crashed. You can see it on the epi curve the week of, I think, December 22nd or something like that. You could just see the numbers just go down. Was, like, about fifty percent drop in the number of cases. That continued into the fourth week. It dropped again. And the president was like, "Wow! This is working!" [laughs] Everybody was so excited.

The Western Area Surge initially was planned for four weeks, because this was putting the response on steroids. We didn't think it was going to be sustainable over a long time, maintaining five hundred people out in the field, bringing in extra resources. First of all, we didn't have an established stream to maintain that, and secondly, we just thought that it might be difficult to maintain over time. Then, they decided, okay. By the time I had left Sierra Leone—I came back to the US, a decision was then made: this is working, we need to continue this, we need to find the money to do it. So Sara Hersey, Oliver [W.] Morgan, and them applied for more money, and they continued the Western Area Surge, and it became the Western Area Surge Two. [laughs] Yes, and then there were many other iterations to that. As we got the numbers down to manageable numbers, we started going after individual cases and tracing every single transmission chain, right from its source all the way to all the contacts who were contacted. Then it was easier for us to do contact tracing, to do very, very close monitoring of high risk contacts and to try to make

sure we found all the high risk contacts and monitor them for symptoms. And if they do start developing symptoms, get them into isolation quickly. It was just amazing. It was really amazing. That was Western Area Surge. You could see the curve, and the numbers speak for itself.

I came back. I was here for a few weeks, and then I got a call to see if I wanted to go to Liberia. Because in Liberia, the outbreak was a little bit further along than in Freetown. But we needed to hold Liberia at zero. Well, we needed to get to zero at first, and then we needed to hold it at zero until we got to forty-two days. There were a number of reasons why this was important. First of all, we needed to get a handle on the situation in Liberia. As I said, the community engagement and the political will in Liberia peaked a lot earlier than it did in Sierra Leone. They, at that point in time, were having, I think, one major chain of transmission going on in the St. Paul Bridge area. I went to Liberia with Kevin [M.] De Cock, who got there in March. I was the deputy response lead and he was the response lead. It was a good thing I was with him, because he had been there, I think, at that time—that was his third visit to Liberia. He had already won the trust of the Liberian government and the rest of the international response team, so he was a great mentor for me. He introduced me to everybody, we got plugged into the response architecture over in Liberia. And after three and a half weeks, he left and I became the response lead. Every morning I would wake up and I would say, please, please, one more day. One more day.

We got to the last case, we discharged the last case sometime in March. It was a big celebration, but we knew that we still had forty-two days to go—forty-two days is equivalent to two incubation periods of the disease—just to make sure there weren't other unknown chains of transmission within the community that we were not tracking at that time. I remember we [unclear] every day, and we go to battle, wake up in the morning thinking, okay, are we ready? If something happened, can we jump on it? Yes, okay. And I would go back to bed that night and I would say, okay, fine, one more day down. Then I'll think about it, how many days to forty-two days? It was just like that. It was very tense. We needed to get Liberia to zero as a demonstration that it can be done. It was important for the psychology of the whole region for them to understand that we can control Ebola. If we do everything we've been talking about, if the community was engaged, all partners were aligned around a central strategy to control Ebola, we should be able to get it to zero.

I remember March 28th, I think. Yes, March 28th. I need to make sure I get the date right, but I think it was March 28th. I woke up that day—actually, I had to do a presentation at a meeting. It was a community awareness meeting that was being organized in central Monrovia. I was there with the chief [medical officer for Liberia]—well, at that time, he was a deputy incident manager for Liberia, Dr. [Francis N.] Kateh—on a panel, talking about Ebola and preparedness for Ebola. People were asking, what would happen if we have a new case? Are we ready for a new case? Da-da-da-da-da. In the middle off that, my phone buzzed. Because I was on the panel, I had it on silent. My phone buzzed in my pocket and I was like, silence that. Then it buzzed again. [laughs] Silence that. And then

my BlackBerry rang. [laughs] Okay, silence that. And then my—you know that red light on your BlackBerry? It started flashing. That means I knew I was getting emails. In a space of one to two minutes, it was flashing all the time. I was realizing something is going on, I need to check what's going on.

So, in the middle of the panel—I had just finished my speech. In the middle of the panel, I looked down, opened by BlackBerry. "Potential case in Caldwell." My heart sank. I had to keep [my composure]—people were looking at us, the camera was on us. So, I leaned over to Dr. Kateh, I said, "Dr. Kateh, I think we need to go." [laughs] He was like, "What's going on?" Then I showed him my BlackBerry. He said, "Okay, all right." He made an excuse for me to leave the panel. I jumped into the rental car that we had and drove straight to Caldwell. On the way there, we started coordinating activities with all the team. We sent a team to the hospital—this patient was seen at Redemption Hospital. We sent a team to Redemption Hospital, we sent a team to the house. We sent a team to the county, the zone, because each of these counties in Liberia were divided into zones, and sent a team to the zone for coordination. We had a team back in the office getting ready to get going. We had the lab team on alert because we needed to go in and collect samples and make sure everything was going on.

We got to the house and, yes, that was the sexually transmitted case, the first time we could clearly document a survivor infecting somebody with Ebola. That was the start of that case. That blew away our forty-two-day countdown. [laughs] That time, the emphasis was on speed because we realized that the faster you can move to identify and

isolate the patient, the lower the probability for that patient to infect somebody else. First thing we were trying to do was, first of all, try to provide care for this lady. She was transferred to the Ebola treatment unit. Second, we had to identify all the contacts. Initially, it was very difficult to get information about this boyfriend. That took a few days for us to realize that, uh-oh, there is something going on here, and there might be a potential link with a survivor. By that time, initially, when we went in, we were trying to exclude all the common causes of Ebola. That was the first thing we were doing.

Unfortunately, the lady died. But I think it was a tremendous response to that case, and I think it started right from the nurses that were at Redemption Hospital who saw this patient—because they had a triage unit. Redemption Hospital is one of the major public hospitals in Liberia. When this patient came in with these symptoms, the triage nurses said, we suspect you have Ebola. We're not going to let you into the hospital.

Next to Redemption Hospital, they had an MSF [Médecins Sans Frontières] transit unit. They sent the person there for holding until they could actually get her an Ebola test to confirm whether or not this person had Ebola. When this patient was taken to the MSF transit unit, the doctor said, "No, no, no, no, no. This person doesn't have Ebola. I'm sending you back to Redemption Hospital." This patient was sent back to Redemption Hospital. And the nurses insisted, no, this patient looks like an Ebola case! And the one thing that she was pinning that on—you know, Ebola is very difficult to diagnose in its early stages. But the one thing she picked up on was conjunctivitis, the redness of her eyes. It's like, look at her eyes. This patient has Ebola. She insisted, and so the patient

was transferred to the MSF transit unit. It's a good thing that happened because if that patient had gotten into Redemption Hospital and had been part of the general clinical population, the potential for her to have infected others would have increased tremendously.

This patient was put in the holding center in the MSF transit unit, and from there was transferred to the ETU [Ebola treatment unit] once we confirmed that she had Ebola. Her daughter, who had been—I mean, Ebola is a very interesting disease. It's been teaching us lessons from the start of this outbreak, and it's still teaching us lessons up to today. This daughter, I think she was a fourteen-year-old girl, had been sleeping with her mother right up to the day that she was taken to the hospital. I was really worried for her, about whether or not she might become infected and everything. We took them into voluntary protective observation, where we provided them with upgraded accommodations. We had teams that were going in there to provide psychosocial support, and also to monitor them to see if they were developing symptoms. Fast forward, I think that is one of the few cases in which we had an Ebola outbreak and we were able to limit that outbreak to just one case. That lady was the only person who was infected with Ebola. All her family members were not infected with Ebola. They were safe. After twenty-one days of monitoring, they were discharged from observation. Unfortunately, she died, but she was the only case.

That restarted the forty-two-day window again. That, again, was a very nerve-wracking time. Had to make sure we were ready if something else happened. By that time, we were

also continuing our case investigation. We were learning more about the survivor. We were trying to win his trust, because the information was leaked. I don't know how that happened, but the information was leaked to the press that we suspect that this case that happened in Caldwell was linked to sex with a survivor. Some newspapers, including some US-based newspapers, were able to get hold of that story. They started tracking down this guy, went to his house. They had pictures of the house where the lady was, in the newspaper. Big invasion of privacy. They hounded this guy and he went into hiding because everybody was blaming him for this outbreak and for the fact that the forty-two-day countdown was out of the window and we were back in a situation where Liberia was not Ebola-free.

It was a very difficult time. I was really worried for his safety. We had one or two guys who were really experienced working with contacts, high-risk contacts, who we put on this guy. I didn't even know where the guy was. We moved him. Moved him to a different location [every day]. We were working very closely, our guys and WHO and the Ministry [of Health and Social Welfare], were moving him so that people wouldn't know where he was. Slowly, we got his trust. After we got his trust, we asked him if he was willing to give us a semen sample. Initially, he was reluctant to do that, but then he did. We were able to identify remnants of the virus in the semen sample.

That also started something we had been thinking about, that okay, as you get to the end of the outbreak, what do we have to do next to make sure we're prepared? One of the things we'd been thinking about was body fluids. We already knew the virus could

persist in certain compartments within the body, in what we called immune-privileged sites, where the antibodies and the immune response cannot really penetrate in sufficient numbers to kill off the virus. There are a number of them, including the cerebrospinal space, the testes in a man, the inter-ocular space, inside your eye, and places like that. We already knew that. But we didn't know that it could persist for this long. We thought, going into [the outbreak—up to that] point, we thought the virus could persist in testes for [ninety days]. But this guy had been discharged from the Ebola treatment unit more than one hundred eighty days previous to this case. Of course, that just blew out our initial assumptions. This was way, way, way out from the time that he was infected with Ebola. That started a whole big policy decision about, what do we do with survivors? How do we provide them the information they need to make sure they can protect their loved ones? Initially, we sent out a number of messages about abstinence from sex and telling people not to have sex. Or, if they do have sex, they need to use a condom, etcetera. Then we started designing what became the Men's Health Screening Program, which was a program where we were inviting male survivors in to donate semen samples, which we were testing for the remnants of the virus.

Understand, we're testing for the remnants of the virus. The tests that we have can pick up the remnants of the virus. It doesn't necessarily mean that that is infectious. For us to know whether or not it's infectious, we will have to do cultures to see if the virus will grow. So we started the Men's Health Screening Program with the Ministry of Health and WHO, where we were inviting people into a central location to donate samples, get counseling from our trained counselors. What we did there was we used counselors who

were already experienced with counseling people with HIV [human immunodeficiency virus]. There's a lot of parallels with HIV, so we used HIV counselors. We trained them up on Ebola, and they were the counselors who were talking to the male survivors, getting their consent, and getting the samples, and we're testing them. The aim of that [program], which is still going on—the original study is a program. The aim of that program that is still going on was primarily to at least test every single male survivor at least once. If possible, multiple times, but at least once, just to know their status, to see whether or not they're shedding the virus—remnants of the virus or not.

To date, we've already screened almost five hundred people in that program, and thirty-three of them were people who—we detected remnants of the virus in their semen at some point in the program. The majority of them have graduated. When I say graduated, I mean that we followed them up to the point where they had two negative—well, two tests in which we could not detect the virus. Then they were graduated and given a certificate, which proved that they had been through a program and we do not have any evidence to believe that they still shed remnants of the virus. We still have a few people who are still shedding the virus within this program. We'll continue to follow them up, provide counseling information to them, provide condoms to them, and offer couples' counseling. If they choose, they could bring their sexual partners in and we'll counsel with them about how to protect themselves, not transmitting the virus, if it is still infectious. We do not know.

Initially, we started that program in Montserrado and Margibi [Counties], which was the area where we had the highest concentration of survivors. We have since extended it to Bong County and to Lofa County, which are the other two counties that have the second and third highest proportion of survivors. Now, we are opening it up to surrounding counties, as well. The hope, again, is to make sure that we test every single survivor. I know that's a high-reaching goal, but we need to set ourselves high. We need to try to reach all of them, and—

Q: How many male survivors are there?

Williams: The Ministry of Health had a registry of survivors that they started sometime in October 2014. As I said, the outbreak, the curve in Liberia—slightly earlier than the curve, the epi curve, in Sierra Leone. They peaked between August, September, and October. That was the peak of the outbreak in Liberia. The peak of the outbreak in Sierra Leone was end of September, October, November, December. By the time they started the registry, there were a significant number of people who probably had Ebola and had hopefully survived and—before they started the database. But the database that we had of people who had survived—and that meant that they had tested positive for Ebola, been to an Ebola treatment unit, tested negative twice for Ebola, and then discharged—was one thousand five hundred people. Of that, about one thousand were from the Montserrado, Margibi area, and of that, we estimated that forty-five to forty-nine percent of them were men, which would give us a number of about four hundred ninety within the

Montserrado, Margibi area. From that, we estimated that maybe three hundred of them or three hundred fifty of them were potential males between age fifteen and above.

Since we started the project—end of the program, we've had—I said almost five hundred people. The majority of them are from that same Montserrado, Margibi area. But what is interesting to note is that almost half of those people that came into the program self-identified as survivors and were not on the Ministry of Health survivor database. They came in and decided that they wanted to be checked. We provided the service to them, and it's been a very good program. I think it's one of the programs that we have in Liberia—well, in the whole West Africa area—where we are proactively stopping the next outbreak from happening by screening semen, seeing whether or not there are elements of the virus, providing that information back to the survivors, and in so doing, protecting them from infecting somebody else. And protecting their loved ones. Protecting them from infecting somebody else and protecting their loved ones, so—

Q: Yes.

Williams: —I'm very excited about it, and the [program] still continues, it's—and the program still continues. That's one program that the Ministry of Health is very proud of. WHO has since decided that this is a requirement for other countries, that as they're declared Ebola-free, that they should have a program where male survivors could be screened, or the possibility for screening semen for male survivors should be offered to all survivors. I think Guinea and Sierra Leone are doing the same, as well.

Q: Right. It starts out just thinking that maybe the virus persists in someone for a couple months, a few months.

Williams: Yes.

Q: What is the range that we think now? The longer-term range? If there are people who are still shedding it now?

Williams: Yes. Again, Ebola continues to school us. Before I go into any more detail, I just want to make sure you understand, this has to be a very rare event. Because if you think of the number of survivors that we now have in West Africa, and if you think that we only have a handful of cases we think are linked to sexual transmission of the disease, then it has to be a very rare event. Having said that, it's still a potential event. This whole outbreak started with one person. If we do not contain any sporadic outbreak, it could potentially become a larger outbreak, as well. That case was over one hundred eighty days. Fast forward to 2016. We had a case—and I'm going to talk about that, as well, in a minute—we had a case in Guinea that we also think may be a sexually transmitted case, and that one is probably over two hundred-plus days.

So, we really do not know how long the virus persists. We believe that for the majority of people, they clear the virus very quickly, within a six to nine-month period. But then,

there are some people where the virus persists for longer periods in these immune-privileged sites, like the testes, cerebrospinal fluid and the eye.

I said I was going to go back to the Guinea outbreak because today, as you and I are speaking, it's June 9th. This is a very important day. Because again, this is the second time we're able to declare that there is no outbreak of Ebola in the whole of West Africa. That's because this is forty-two days since the two children from the last outbreak in Liberia were discharged with two negative tests from the Ebola treatment unit. That ends what we consider to be the last Guinea/Liberia cluster. So let me tell you a story. Imagine a devastating disease, recognized in a remote area in Guinea. Within a few weeks, family members of that initial case got sick and died. Next thing we know, one of those family contacts traveled down to Monrovia and got sick with a very ill-defined disease and subsequently died. And before she died, infected her two kids. What does that remind you of? That is so reminiscent of how the Ebola outbreak started in 2013, with an outbreak of the disease in a remote part of Guinea that quickly spread to Liberia and quickly spread to Sierra Leone. At the end of that, over twenty thousand people were infected, over ten thousand people died. That was then. This is now. We have the same scenario. Ebola diagnosed in a remote part in Guinea. Family members of that index case sick, died. A family member of that index case travelled to Monrovia, got infected, infected her children. The tale of two outbreaks. Then, we were not prepared, in 2013. Over twenty thousand people were infected, Ten thousand died. Over ten thousand died. And this time around, we were ready. Less than twenty people were infected, less than twenty people died. The outbreak was contained in Monrovia to one family. That's the

reason why the Global Health Security Agenda is important. If these countries had what they had now in 2013, can you imagine the amount of people who could have been saved? That's the reason why the Global Health Security Agenda needs to continue. If countries have prepared—and given the equipment, tools, and knowledge on how to protect—how to prevent, detect, and respond to public health threats, they can save lives. Not only that, an outbreak can be contained to just a few people and cannot become the global threat that Ebola was in 2013, 2014, and 2015. The tale of two outbreaks.

Today is an important day because of this reason, but it just blows my mind what potentially could have happened in 2013 if we were prepared then. We lost a lot of good people in this outbreak. They could have been saved if we were prepared. I hope everybody's who's listening to this could provide some more support—and to the Global Health Security Agenda, and the importance of recognizing—and the truth in one of the African proverbs that I hold true to my heart, which is if there's a fire in your neighbor's yard, you'd better go get some water and help put that fire out. Because if you don't, it's going to jump to your house. Ebola showed it to us. Before we knew it, Mr. [Thomas E.] Duncan was in the United States with Ebola. It was a very telling moment for us when we discharged those two boys and the two family members who survived in Monrovia, and we started this forty-two-day countdown. Everybody looked at each other, and wow! This sounds so similar to the start of this whole thing. The fact that the results are so different is really amazing. I think that's a story that is just being told now, is starting to be told now. I think it's going to get more attention as time goes by. But I just wanted to make

sure I mentioned that, because today is June 9th, and this is the end of the forty-two-day observation period in Liberia, which marks the end of that outbreak.

Q: Very eloquently put.

Williams: Yes, it's just mind-blowing. The potential is just mind-blowing. So, yes, so I'll take any questions—

Q: Yeah, please.

Williams: —that you may have.

Q: Thank you for that brilliant description of everything in Sierra Leone and Liberia. That was fascinating. I'm going to go back in time. I have a few questions. I'll probably just take them chronologically, in your experience. Going back to Sierra Leone, the Big Idea of the Week. I know that you were a big part of that, that you also appeared on the radio a few times. Can you talk more about your contribution to the Big Idea of the Week?

Williams: It was a collective effort. There were some very bright minds at CDC that started it. Jenni [Jennifer H.] McQuiston was the original architect for it. She got a lot of support from Becky [Rebecca E.] Bunnell and others in the communication team. Although I was a medical epidemiologist, I was co-opted into the communications

strategy for that particular thing. I think it's one of the most important things we did in the outbreak response. How did that happen? By chance. I think I remember I told you some stories about getting on the plane and flying to Brussels. We got to Brussels Airport, and I saw all these folks with their CDC backpacks. I recognized them. I'm like, that must be a CDC person. Slowly, we started collecting, and everybody started coming together, and we were talking. Then Becky's like, "I like your voice. You have a good radio voice." [laughs] I'm like, "Oh, yes?" And we continued talking, and then she realized that I could speak the local language because I'm originally from Sierra Leone. "Oh! You can speak the local language?" That was the start of all of that. There were two of us within the Sierra Leone Ebola response team who could speak the local language: Dr. Austin [H.] Demby and myself. Once we started this strategy to develop messages around Ebola, Dr. Demby and I were co-opted into, number one, translating those messages into the local language, Krio, that everybody could understand. Then, number two, providing an opportunity for the public to interact with us on the radio. We also held a training program that was coordinated with the Sierra Leone Association of Journalists, where we brought all the journalists—radio and print journalists in Sierra Leone—to their headquarters in Campbell Street in Freetown. We had a one-day training seminar where we trained them about everything we knew about Ebola. We gave them CDs [compact discs] of prerecorded public service announcements. We got a lot of help with producing those public service announcements from Jimmy B and Nasser Ayoub, both of them—two prominent musicians. Jimmy B is also a movie actor in Sierra Leone. We have some pictures of that on the website, and you could probably look at that. It was a fun time, and we got some technical support from Cotton Tree Productions, which is a radio station that

was up in Fourah Bay College. We went up there, we locked ourselves in the studio, and we recorded, I think, about one hundred twenty-eight public service announcements around the major themes of the Big Idea of the Week. Again, "Safe Burial," "Early Identification Save Lives." The third one was, "Stay Safe While You Wait," and number four, "Survivors Are Our Heroes."

We developed all this PSA [public service announcement] material. We catalogued them and put them into separate folders for each week. We gave these discs to each of the journalists, and print material to journalists, and said, on week this, this is what we're talking about. The next week, this is what we're talking about, and so on and so forth. It was synchronized across the country. This is the first time I've seen that happen anywhere in the world, where every single radio station was playing the same message, was delivering the same message to the population around a central issue. That was important to outbreak control. It was just amazing. We spent, I think, about ten to fifteen hours a week, combined, on the radio, initially, when we initially launched this program. That scaled back to about six hours a week for each of us on the radio, working with some very exciting and entrepreneurial radio journalists, as well. One of them actually won an award from the [United States] State Department for that, Kick Ebola program, was just great. Initially, when we started, there was a lot of resistance on the radio. People were calling in and telling us, "You brought Ebola here!" People were telling us, "This is witchcraft, this is not science," and all sorts of myths that people had and misconceptions that they had about the virus. What that was doing was—because they had

misconceptions about the virus, they were not willing to listen to how they can prevent themselves from being infected and how they could protect their loved ones.

The first, initial salvo was trying to deal with those myths, talking through that, and trying to provide scientific answers to them. The government was already doing that, but people were not listening because they didn't trust the governments. But CDC, being an outside entity with international reputation, people started listening to us. They were calling, and they would ask questions. What we noticed first of all was that the questions started transitioning from accusatory questions to more inquiring questions, to more intelligent questions about, okay, so what do we do? How do we protect ourselves? And stuff like that. Just watching that—and I hope somebody would look at the data, because we have some of those text messages, and I'm hoping that a skilled, qualitative scientist here at CDC at some point would take a look at those text messages. Because you could see the progression. You could actually see a whole community changing their attitude towards a disease. It would be fascinating, and I'm hoping to encourage some of our colleagues to look at that. We've all been busy, it's been difficult to do it, but the information is there and people can go back and look at it.

As I said, by the time we started the Western Area Surge, some of the messages that we had been given—people were calling in and sending text messages in, repeating those messages. Please, let us not touch. If somebody dies, please call the number. Let's get rid of Ebola. Let's kick Ebola out! If somebody's sick, don't touch them. Please, don't touch them! People were telling us what we had been telling them about six, seven weeks

previous to that. That was another electrifying moment for me. I remember Joe Abbas, who was one of the radio journalists that we worked with, who won the award—I remember that show. I do remember that show. After we had all the text messages that were coming in, he said, "Wow! Dr. Williams, this must be music to your ears! People are telling you what we've been telling them for the last six weeks." That was amazing. That was amazing, the power of the radio. The power of the radio. Clear demonstration of that. In a country like Sierra Leone where the literacy rate is low, the radio provides—it is a main source of information for seventy-nine percent of the population or more. Having a consistent message being delivered across the country, no political interference. Everybody understood, if this is on every single radio station, it must be true. And, of course, the seal of CDC was also very helpful in that, as well, because people trust what we're saying and they believe that we're there to help. We provided the information that they needed to protect themselves and their loved ones, and kick Ebola out of Sierra Leone.

Q: One thing that I hear a lot about, just here in Atlanta, is you took a pledge, right?

Williams: Yes, I did.

Q: Can you tell me about that?

Williams: Yes, and that was the start of the Big Idea of the Week campaign. What we realized was a dead body was a lot more infectious than somebody with Ebola because,

as you can imagine, the dead body was teeming with virus. I remember when we were trying to put together a message that would resonate. Jenni and some of the others were like, I wonder if we can get this to be a pledge? I was like, I think we should think about that. And so I started writing it down and trying to make it understandable to the public. I remember that evening, I went up to my mom and I was talking to her, and she was saying, "What are you guys going to do about this Ebola outbreak?" I said, "Well, we have to provide the information for people to understand that Ebola is a terrible disease. What it does, it infects people who you love. What it does is it infects people who have compassion for you." We have a word for that in Sierra Leone, it's called *ajo*. "People who have compassion for you are the people who get infected with Ebola. Because they come, they touch you, they try to help, and then they get infected." And she was like, "Oh! That's a terrible disease!" I said, "Yes." So, I was just joking with her. It started off as a joke. I said, "I'm working on this, and I've been trained, and I don't think I'm going to get infected. But just in case, don't come near me." And she's like, "You like talking nonsense!" [laughter] And I'm like, "No, but it's true. It's true."

I left from my mother's house and I went to the radio station with Joe Abbas. We sat there and we were talking about this, and he said, "Tell me a little bit more about this. Why is it important for us not to touch dead bodies?" I explained that by the time the person dies, the body is teeming with virus. Because of our traditional practices, or caring for the dead—washing the dead, grooming the dead, presenting the dead to the rest of the family and people touching, kissing, and all that kind of stuff—it provided an opportunity for the virus to jump from that dead person into the people he loved. I said, "I was talking

to my mom, and I told her." I said it in Krio, and I'll try to do it here. I don't know if I'll be able to get the exact words that I said, because it just came out that way. But I said something like this. "So ar tell me mama, say—lek how ar dey wok pan dis ting so if me die, if me die mek ee no cam dey. If ar die ar no wan mek none me fambul dem touch me bodi. Because de ting wey go mona me pass all pass de die wey ar don die, nar if ar lay don nar me grave ar know say me infect me compin people dem wit Ebola." And in English, that would be something like, "If I die, I want my family to know that they should not touch my body. They should call"—I don't remember what the number was. Again, the numbers are different. "They should call the Ebola hotline and report my death, and let the dead body management team people come and take my body away and bury it safely. Because the last thing I want is for me to be responsible for infecting my loved ones."

That took off in a major way. It was covered all across the world. The ministers and some of the other permanent members of the Sierra Leone community also made similar pledges. People started realizing—because this is something that's sacred. We all grow up—I mean, the last respect and honor you can give to your parents or your loved ones is a good funeral. For prominent people to come up and actually say, "If I die, do not touch my body. Call the response team, for them to come and get my body and give me a safe and dignified burial"—I think it was a very powerful message, and one that resonated across the country.

Q: Thank you for sharing that. Another question I have: did you—were you working closely with Andy [Garrow]? Is that—

Williams: Yes.

Q: I have his name right?

Williams: Yes.

Q: Can you describe him and what working with him was like?

Williams: [laughs] Andy's my friend. We still have to go and have a beer. We still haven't had the time to do that yet. He's a colonel in the British Army. The British Army was really big in the response in Sierra Leone. They provided a lot of command and control structure for the response, and provided a lot of logistic support and technical assistance, as well. He's a colonel, an army colonel, and I think that description, everybody is very familiar with. But he's a very engaging guy, and he listens. You can have a conversation with him. We didn't always agree. I remember one time, he didn't quite agree with some of the things that I was suggesting for the Western Area Surge. Oliver told me about it, so the next morning, I walked up to him. I said, "Andy, can I have a word with you, please?" Say, "Yes, sure, go ahead, Des." [laughs] I said, "No, not here. Upstairs." So we went upstairs and we sat in there, and we used some very colorful language, but we were very respectful to each other. I told him, I said, "We're in this

together. You are providing command and control, we're providing technical assistance. We have to get this right, and this is our one opportunity to get it right. I'm going to do everything that I can do to make sure we get this right. And I'm sure you're doing the same, too."

He was a very powerful guy. He was very close to the brigadier, who was the head of the military, the British military in Sierra Leone. I remember he had a meeting with him at eleven o'clock, and he was a bit worried about some of the things we were requesting and whether or not he was going to be able to deliver. He said, "Okay, I'm going to go see the brigadier, I'll let you know when I come back." He went up there, and we were outside, trying to figure all these things out. And he came in, he came over, "Des!" [laughs] Just hit me. Put a hand on my shoulder and said, "We're good to go!" [laughs] And I'm like, okay, let's do this. He's a good guy, and I think him and another person who was working closely with him, Victoria Parkinson, we have to give them a lot of credit for the amount of work they put into this, as well. Not to forget the Sierra Leonean contingent. Without the Sierra Leoneans who were completely dedicated to this effort, who worked tirelessly on this, putting themselves on the front line and putting themselves at risk—and this outbreak, we felt their participation and the leadership of General Keimbe and James Bangura—again, I don't think we would have been able to get out of this the way we did, yes.

Q: Are there any other community members who come to mind who you haven't described yet who, when you think about the ownership of this response to—

Williams: Well, I already said the chief—

Q: The chief.

Williams: —in Goderich.

Q: Right.

Williams: I think he did a good job. He was a visible example of how a community could decide that this is time for Ebola to go, and take action. That was a very vivid example. There was also a town in Port Loko that was very close to Western Area that had a high incidence of Ebola. We didn't understand what was going on there. I visited that town about twenty-one days after the first case was detected in that town. And we got the full story there. Again, that's another example of how the community comes together and decides it's time for this thing to go. The story there was the mother of the chief of that village was staying in Waterloo, which at one point and during the outbreak—Waterloo is in Western Area. And at one point during that outbreak, was a hotspot. She got infected with Ebola, but they didn't know what was wrong with her. As is per course in Sierra Leone, they took her back to her village for treatment. That was this village where her son was a chief. She got to the village, and within a few days, she died. According to the story that they told us, a nurse from the health unit told them that she didn't die of Ebola. I'm not too sure that happened, but that's the story they told us, that a woman from the

health unit, a nurse from the health unit told them that the woman didn't die of Ebola. So, they gave her a traditional burial that is worthy of the mother of a chief. You can imagine how that was.

Within a week, the chief, the chief's wives, the chief's brother, his wife, and a number of other prominent members within the court of that village were all sick with Ebola—the majority of whom died. The wife of the brother of the chief survived. She was one of the few people that survived the first round. By the time we got there, about twenty, twenty-one days of the chief's mother dying, I think over twenty people in that village—small village of about two hundred people—over twenty people had been infected with Ebola. A number of them had already died. That day, alone, when we got there, they took eleven suspect cases from that village to the holding center because the community decided, uh-oh, we have Ebola within our midst, and we're going to kick it out. The village, the youth in that village organized themselves. Every morning, they would walk house-to-house, house-to-house, just checking and seeing whether or not anybody was sick. And believe you me, if you were sick, they were calling. They were calling. And so there was this surge in people coming from this one village, because the community was ready to get Ebola out of that village. And, yes, they did. And this is what happened, of course, across the whole country. Initially, people would have a few people dying, and there would be a lot of talk. The myths will come in. "This is witchcraft, this is"—all the things, other than Ebola. Then, as it starts spreading within families, people realize, uh-oh, we have a problem here. The moment they realize that, they ostracize every and anybody that's sick, and isolate them. It sounds harsh, but what would then eventually happen is the virus

would die out, because it doesn't have an opportunity to jump from one infected person to another. What we did, I think, was catalyze that process by providing the information, providing the knowledge, and providing the tools and the skills by which they could protect themselves. Communities could get to that point a lot earlier than would naturally occur than if the virus was just allowed to run wild in the community. And with that community engagement, that is what really contained Ebola. In all three countries, I think.

Q: Thank you. My next question is really just—before I actually ask you a question about Liberia: when you look back and think about your Sierra Leone experience, are there any other memories that kind of surface? Vivid memories of conversations you had or people you met, things that happened?

Williams: One of the things that was really disturbing to me was when I realized that some of the myths that were spread within the community were with people who were very intelligent, or who I thought were very intelligent, and members of the academic class in Sierra Leone. People really believed that some of these myths were true, and I couldn't understand why. I couldn't understand why. It was very disturbing for me to have some conversations with some prominent and very intelligent people in Sierra Leone, and have to convince them that Ebola is an infection. It wasn't something that was created or brought to Africa, but it just naturally occurred by a freak accident in Guinea. That was very, very disturbing to me. I used to wonder why that happened. I had all sorts of theories in my head. Is it [unclear], is it that it's an impoverished, underdeveloped

country? What it is that created that environment for those ideas to persist within the community.

Then we had Mr. Duncan in the United States. We started hearing some of those same—different versions, but very same and similar stories circulating within the United States. Then I realized that that is just one of the natural reactions of a human population to a catastrophic event. There are going to be people who are going to think—you know, the conspiracy theorists and people like that who are going to think this is something that was being done to them. And the danger in that is that it prevents people from taking action quicker. It prevents people from embracing the information they need to protect themselves and their loved ones, and it creates an opportunity for the virus to spread. That was one prominent thing that hit me.

The other thing, again, and I keep saying this all the time, but the importance of community engagement. We didn't have enough people to stop this outbreak. Every single international person that went into West Africa did a tremendous job. They put themselves on the line, they left their families and sacrificed a lot to help stop the outbreak, which we did in—well, it's about two and a half years. But without community engagement in each of these countries, we would not have been able to do it. It's simple. We would not have been able to do it if we didn't have the community engagement. What we did was catalyze that process. And that's one of my take-homes from this whole thing.

Q: Great, thank you. Moving on to Liberia, now, you are the country director for Liberia. How did you get to that point? How did you become country director? And what has it meant for you?

Williams: Again, as I said, when I left Sierra Leone, I came back for a break to the United States. I was asked to go to Liberia as a response deputy with Kevin [M.] De Cock.

Q: With Kevin De Cock, right.

Williams: Yes. Spent three and a half weeks with him, and then I became the response lead.

Q: Is that the same as country director?

Williams: No. It's different. It's the response lead. In other words, at that time, we didn't have an established country office. You were in charge of the response. At that time, I think we had a team of about seventy-five people, CDC folks, in-country. Again, trying to get to zero and hold at zero. So doing that, but we had to do a lot of stuff. Somewhere within that, my—I think I was there from March until May. Sometime within that window, I got a call from Atlanta asking whether or not I was interested in staying on as the CDC country director. For me, first of all, it was a big honor. Of course, you had to really process that information and realize that it was a big opportunity. It meant I had to

make some decisions with my family and all that kind of stuff, because it was going to impact them, as they couldn't travel to Liberia with me at that time. But it was a big honor, and for me to have been selected to lead a group of talented people like the ones that we have at CDC. I tell you, there is no other agency with the people we have. In the whole world. There is no other agency. We are the envy of many other people who want to do what we want to do. There are a number of countries around the world, including Liberia, that are now trying to set up their own CDC. It's just amazing, the people we have, the talent they have, their drive, their willingness to step forward and do what needs to be done. It's just amazing. For me to be placed in a position where I could influence and lead what they did, I think, was mind-blowing.

I decided to take the job. Also, it was, on a personal level, also very gratifying. Because in a way, I was going to be working in a neighborhood where I grew up. It's not the same neighborhood. I mean, there are differences between Sierra Leone and Liberia. But at the same time, the culture is similar enough for me to understand when somebody says no and they mean yes, and when to push and when to step back for a minute and allow people to assimilate the information and digest it a little bit better, and then push when I think they're ready. So, it's been a very gratifying experience. The government of Liberia is excellent. They've been willing to listen, all the way to the top, right from the president, all the way down. They're willing to listen to advice, they are willing to engage and take action when needed. It's just been a wonderful experience working with them for the last year and four months. We've been able to achieve a lot of great things within Liberia. When we were looking at some of the accomplishments in January, they had a

Ministry of Health retreat, and they invited the WHO representative and I to go and join them for that retreat. I asked them, "You know what we should do? Let's just put down everything we were able to accomplish over the last twelve months, on that board." Well, that board was not enough. [laughs] It really wasn't. That's the kind of thing that drives me. The potential for CDC to do good in these countries is just amazing. You remember you are starting from somewhere where there are very basic services. There's not a lot of systems in place. Public health infrastructure is quite weak. So, the incremental good that every single epidemiologist that steps into Liberia is doing is huge compared to the incremental good that they could do here in the United States. The willingness, the enthusiasm, and the support that Atlanta headquarters has been able to provide to us in Liberia—nearly everything we need is just a phone call away. They're willing to jump in, they're willing to provide technical advice, they're willing to do TDYs into Liberia. They're willing to, in some situations, send extra money for some of the projects that we're doing. It's just amazing, it's just amazing. Working in an organization like that, where I feel like not only do I have the support of our staff in-country, but I have this huge, fifteen-thousand-person headquarters behind me, ready to provide support to what we're trying to do in West Africa, is just an amazing experience.

Q: Right. You spoke about the importance of the Global Health Security Agenda moving forward and creating a robust public health infrastructure in the three worst affected countries in West Africa. Do you, right now, do you have what you need to move forward?

Williams: First of all, I think everybody needs to realize we all live in a global village. It's one village. The advances that we've had in transportation and telecommunication makes this a very, very small world. A disease is just a plane ride away, literally just a plane ride away. So, collectively, we are as strong as the weakest link in our system. Where the Global Health Security Agenda can help is to help these countries that have potential problems with their public health system to actually strengthen the systems that they have within country, so that if something like Ebola happens anywhere in the world, any public health threat happens anywhere in the world, the country could be in a position to mount an initial response that will try to contain it before even we start flying in there. I think it's really important for people to understand. I'm really convinced the Global Health Security Agenda is one way in which you could do that, because there are three main principles in that. Where possible, you need to prevent something from happening. If you can't prevent it, you need to detect it as early as possible so that you can go in and respond, to contain it. Again, I was telling you the story just now about the tale of the two outbreaks, right, and what happened in 2013 and what happened now in 2016: twenty thousand, less than twenty. Ten thousand, about fourteen dead. No, nine dead or something like that. Just so different. And I didn't even talk about the economic cost of [unclear] all these outbreaks. It's huge. We spent billions of dollars in the last outbreak. In this one, we contained this with just the in-country personnel that we have now. It's amazing. But having said that, the response architecture that we've set up in Sierra Leone, in Guinea, and in Liberia is something that needs to be sustained. It's very important that people understand that. It is not something that we built with steel that is going to stand the test of time without support. Even steel will rust away in time. I

describe the response architecture that we have in these three countries as being built with glass. It needs to be treated as a fragile entity that needs sustenance, that needs to be developed further, given some more support so that it gets even stronger. We need to continue working on workforce development. One of the achievements that we've had in the Liberia office is to start the Field Epidemiology Training Program. And what we've done there is to train, start training all the district surveillance offices on payroll in the Ministry. I think by the end of this week, we will be graduating the third cohort of FETP graduates within Liberia. By the end of the summer, we would have trained every single district surveillance officer or county surveillance officer that is working in Liberia. I think that is just amazing.

That alone, that workforce development alone, I think, has elevated the public health infrastructure in Liberia to such a point where the information that is coming through, the data that is coming through on the IDSR [Integrated Disease Surveillance and Response] tables, have changed dramatically. If you compare the data that we're getting in January and the data that we're having now, night and day. It's really amazing. Just being part of that, seeing how you can actually take something and actually start developing systems that I hope would stand the test of time, that would [unclear] all of us and actually bring these countries up to the point where they can meet the International Health Regulations and all the standards, is just an amazing opportunity.

Q: Thank you for that. Looking back over your entire experience—I asked you to do this before with Sierra Leone, maybe you could focus on Liberia. Any other memories that float up that you'd like to make sure that we have recorded for the oral history project?

Williams: There's one thing that I don't think we've talked about enough. I think one of the strengths of CDC is not just the skill sets that we have. It's not just the energy and the willingness of our staff to volunteer, jump up, step forward and do good things. It's also the diversity that we have. And when I say CDC now, I'm talking about CDC globally, okay? Not just the domestic staff, but a locally employed staff. A number of people who were sent to Guinea to help with the outbreak in Guinea were locally employed staffed and FETP graduates from other Francophone countries from West Africa. Austin and I were in Sierra Leone, and we could speak Krio, and that's a language that ninety percent of the people in Sierra Leone understand. They don't understand English that well. We were able to break down the information about Ebola in manageable and understandable bits for the population to be able to understand what we're trying to say and own it. Understanding the cultural context in which we work, I think, is extremely important. Understanding the local dynamics that we have is extremely important. If you look at CDC, it's almost like a United Nations here at CDC. We have people from all over the world working at CDC. That in itself is one of the strengths and one of the pillars of CDC. I think people recognize that, but I think we haven't really spent enough time celebrating that, the diversity that we have here in our workforce at CDC.

Q: Thank you so much, Dr. Williams. This has been an honor today to hear your stories. Thank you so much.

Williams: And thank you, thank you very much for this opportunity. I want to thank CDC for what they've done. This could have become a pandemic. President [Ellen Johnson] Sirleaf, whenever she talks about Ebola—as soon as she talks about it, the next thing she talks about is CDC. She is fascinated. She said at the height of the outbreak—I'm trying to—forgive me, President Sirleaf, I'm trying to imitate your voice. "At the height of the outbreak, when everybody was running out of Liberia, you had these folks with their backpacks running into Liberia from the CDC to come and help us sort this problem out." One of the things she sees as her legacy is the formation of a Liberia CDC. We've been working very closely with the government of Liberia and helping them along that process. We have drafted a strategy plan for what they're going to call the Liberia National Public Health Institute. They're going to try to create an institute, a public health institute that would continue workforce development, continue surveillance, continue laboratory strengthening, and all the other things we have here that we take for granted at CDC. It's just amazing. I think CDC's going to continue to be a treasure for the United States and for the world, and I'm blessed to be part of this organization.

Q: Okay.

Williams: Thanks.

Q: Thank you for being here.

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