CDC Ebola Response Oral History Project

The Reminiscences of

Victor M. Cáceres

David J. Sencer CDC Museum

Centers for Disease Control and Prevention

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Victor M. Cáceres

Interviewed by Sam Robson
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Interview 1 of 1

CDC Ebola Response Oral History Project

Q: Hello, this is Sam Robson here with Dr. Victor Cáceres. Today is Friday, September 30th, 2016. We're here at the recording studio at CDC's [Centers for Disease Control and Prevention] Roybal Campus in Atlanta, Georgia. Thank you so much, Dr. Cáceres, for being here with me.

Cáceres: You're welcome.

Q: We're here for the Ebola Response Oral History Project. We're talking about Victor's experiences as part of that. So, Dr. Cáceres, what I always ask people—

Cáceres: You can refer to me as Victor.

Q: Ah, great. Okay.

Cáceres: That would be good.

Q: Thank you. [laughs]

Cáceres: Whenever I hear "Dr. Cáceres," I think of my father, first and foremost. [laughter]

Q: Yeah, I would never be able to go by "Dr. Robson." Now, primarily because I don't have an advanced degree. [laughter] But—well, can you actually—what I ask people off the top is, could you pronounce your full name for me?

Cáceres: Sure.

Q: And just tell me your current position with CDC.

Cáceres: Sure. My name is Victor Cáceres. And right now, I supervise a program called the Temporary Epidemiology Field Assignee Program. It's in the Field Services Branch, in the Division of State and Local Readiness, which is in the Office of Public Health Preparedness and Response.

Q: Great, thank you. As brief as you could, could you just give us like a capsule summary of what your work was with the Ebola response?

Cáceres: Basically, there are three areas of work with the Ebola response. One had to do with leading the implementation of the STEP initiative. STEP stands for Surveillance Training for Ebola Preparedness. As a staff member of FETP [Field Epidemiology Training Program], I was asked to lead this initiative to basically scale up surveillance

capacity along the ring countries, those next to the Ebola countries, the primary three Ebola countries. And those were Guinea-Bissau, Mali, Senegal, and Côte D'Ivoire. Those are the ring countries, and we were tasked to do that.

The second involvement was as deputy incident manager, which happened—that occurred in October of 2015, so it was right as the outbreak was really looking like it was close to its end.

And then, the third piece really came as part of my new job, which I transitioned into in August 2015. And the program I'm actually supervising—directing—was started with Ebola funds. The idea was to place assignees, master's-level epidemiologists, in the states and local jurisdictions to help them prepare or respond to the Ebola epidemic. At the time that program was envisioned, it wasn't quite clear in which direction the Ebola epidemic was going, and how involved the United States was going to be in that. So it took a while for that program to launch, to have the cohort that it has, and fortunately, they were placed and they really saw the very tail end of the Ebola response—the monitoring and movement and so forth. They have now transitioned into helping with overall preparedness for Ebola-like events in the future. They are very busy now with Zika. They have been very involved in the Zika response.

Q: Okay. Well, thank you for that. I just remembered that we were supposed to run over and take a photo.

Cáceres: Okay.

Q: Would you mind if we do that really quick?

Cáceres: We can do that.

Q: Great, thank you.

[break]

Q: Okay, so, Victor, could you just tell me when and where you were born?

Cáceres: Sure. I was born in Lexington, Kentucky on September 25th, 1963.

Q: Did you grow up in Kentucky, or—

Cáceres: My parents moved from Kentucky when I was about a year and a half to Norfolk, Virginia. My father came to this country from Honduras. I'm the son of immigrants, and I was born just about four months after they moved to the [United] States. So I always joke around that I was conceived in Honduras and born in the United States.

Q: [laughs] What was it like in Virginia?

Cáceres: Virginia, I spent my early years, from about two years old to about eleven or twelve, and then we moved to North Carolina. This was after my father had completed his training. and he had gone into practice initially in a small town in Virginia. Then we moved to another small town, but in North Carolina, and grew up; the rest of my adolescence was in North Carolina. I went to school at the University of North Carolina at Chapel Hill. I majored in international studies and got my pre-med [pre-medical] courses taken. At that time, I really wasn't sure which way I was going to go, so I was trying to cover my bases. One big experience I had that I loved about my college experience was the year I took and spent in Seville, Spain, as a student—a student studying abroad. That was a time of kind of understanding more about the world, and broader experiences than I would have gotten had I stayed here in the [United] States.

Q: And what motivated the pre-med?

Cáceres: Why the pre-med? I knew all along, I think, that I wanted to do something—some type of service career. And I wanted to travel, and I wanted to see the world. I had, I think, a lot of influence from the fact of my father being a physician. His father was a physician, a TB [tuberculosis] specialist. And so I thought that I needed to cover my bases with the pre-med. I kind of didn't want to, and I did, in some ways, because I knew that—clinical medicine, I knew how tough that would be as a career. Really, what I wanted to do was public health. And so I thought that perhaps, if I was going to pursue public health through a medical degree, that that's where I could go the furthest in public

health. I was basically covering my bases for that. And later, I decided that yes, indeed, medicine would be the route to public health.

Q: Gotcha. What happens after college?

Cáceres: After college, I applied to medical schools, and I fortunately got into my first choice, which was UNC Chapel Hill. The reason why that was such a good choice for me is that it had an MD/MPH [doctor of medicine/master of public health] program, so you could combine the degrees into a five-year type of experience. So, I did my first two years and my clinical year, my third year in medical school. And then I took a year—probably not correct to say a year off, because it was part of the program, but basically I went across the street to the School of Public Health and I got my master's in maternal and child health. And then came back and completed my fifth year, and then applied to residency programs across the country.

Q: Why maternal and child health?

Cáceres: The reason for maternal and child health was because it was the only master's that I could do in a year. I have to say, that was really the main reason, because I probably would have chosen epidemiology, but epidemiology was a two-year program, and I didn't want to be that long outside of the medical school program.

Q: That makes sense. Where did you do your residency, again?

Cáceres: I did residency at University Hospitals of Cleveland. In my process for selecting residencies, I wanted to select a residency where I could combine my interest in public health, international health, with my training. Even then, at every stage, there was a—almost like a reconsideration. Is this really what I want to do, in terms of going this much further on the clinical side? Because I really wanted to do public health. Even though I enjoyed the patient interaction and contact, I was really interested in the broad picture of public health, and especially international health. I felt somewhat like, oh gosh, I've got to do all of this before I can do what I really want to do. So I decided to go to a residency program that allowed me to basically take some time within the program to get that international health training. I chose Cleveland because they had an international track in family medicine. That allowed me to get some specialized trainings, rotations, after my first year. I did two rotations, where basically, they had an international health course that we were able to take on campus. And then I asked to take a year off from my residency. It really wasn't part of the track, but it was part of the track I wanted to design, and fortunately, they said I could take this year off. I went to PAHO, which is the Pan-American Health Organization, and was able to basically work as a resident in a way there. I was a consultant for nine months, working with neonatal tetanus and also polio. And the reason why I was able to really go that route is because as part of my MPH that I had gotten, as I described, during medical school, I did a two-month field work project and was able to get connected with PAHO. They had sent me to Honduras to work with polio. And so when I was considering this year off, I went back to them and said, look, I

want to construct this experience as part of my residency training, and they were all for it. So I was very fortunate to be able to fit that in.

Then, even at that point, they offered me a job to stay. It was really tough because I was feeling like I was doing what I wanted to be doing. But luckily I had some good mentors, and actually CDC folks that were part of that experience that said, finish your clinical training, get your family medicine finished, and then re-apply. You might want to consider EIS [Epidemic Intelligence Service] at that time. So I went back and basically finished my two years of residency, did my chief year, and then applied to EIS.

Q: Can you describe some of the mentors?

Cáceres: I had great mentors that year. One was Ciro de Quadros. He really was an amazing person. He passed away three years ago. I would probably consider him, and probably most people would consider him the father of polio eradication. He accomplished a great feat of eradicating polio in the Americas and showed the strategies for polio eradication that were then taken and used worldwide. I learned a lot from his management style and the way he basically set very clear objectives and supported his staff and just had a personality that was a driving force behind polio eradication in that region. He was very much loved, and he was somewhat of a controversial figure as well, but I think people that do great things and accomplish dreams are often controversial. But there was no question that his heart was always in the right place. He really cared about

the goal of children not being paralyzed by polio. And he was extremely supportive of his staff.

Another mentor was Jon [K.] Andrus, who is an EIS alumni, who was seconded from CDC and was working there at the time when I did that year off. He's the one that gave me that advice to go back, and later was a reference for me. Fortunately, we've had times to work together in polio eradication, because later I joined the Polio Eradication group at CDC, and it's just been a nice—it's nice how a career can kind of cycle, where you meet people and then you work with them later, and it's just like a big circle.

Q: Okay, so you finish your training and apply for EIS?

Cáceres: Right. When I took that year off, I was a little off-cycle, so I ended up doing a chief year for that partial year that I was off-cycle. And then I applied for EIS. That was definitely Plan A. My Plan B was to re-apply for EIS if I didn't get in. And fortunately, I did get the good news that I had gotten in EIS. Then I went through the matching process, but already I was thinking between either being assigned to a state position or rejoining the polio initiative but here with CDC. That was a tough decision because that's ultimately what really drew the fire in me when I worked with PAHO, and the whole goal of eradicating a disease. But I thought, well, this is my first real deep dive into public health, and I felt like I needed a broad experience, so I decided to match with the state of South Carolina. I thought polio will still be around and I can join the group at that point. And also, residency was pretty hectic, and it was clear that continuing on and going right

into polio was going to be a pretty hectic lifestyle. I had just started married life, and I thought probably it wouldn't make sense to be out of the States.

So I went to South Carolina and just had a tremendous experience there. I think they associated my presence with an uptick in the number of outbreaks that occurred there. [laughter] I had lots of great experiences with international outbreaks of *Cyclospora* from imported raspberries from Guatemala, and I had one of the largest *Salmonella* outbreaks in the country that year. I just had a really solid foundation in outbreak investigation and understanding how outbreaks are dealt with at that level. I am so grateful that I had that opportunity as the real foundation for my public health experience.

Q: Who were some individuals you worked with at that time?

Cáceres: I worked with Jerry Gibson, who was the state epidemiologist. I worked with Linda Bell, who was the secondary supervisor, who at present is the state epidemiologist. I worked with Eric Brenner. Again, referring to the circles in careers, Eric continued to work in South Carolina for years after that, and then when the Ebola outbreak occurred and we needed to recruit French speakers for helping in the countries, Eric was one of the volunteers that we recruited. He was one of my supervisors before. And in a way, I was—not really supervising him, but he was part of my team for implementing those Ebola trainings in Côte D'Ivoire. That was a revisiting of someone twenty-some years ago, that had helped me as an EIS officer. And Jerry, after he retired from his work in South Carolina, joined CDC again, because he worked for CDC many years ago. He

actually rejoined and worked with the FETP program as a resident advisor in Tanzania. Again, a circling back of people that I've worked with. I'm so grateful to have had such wonderful supervisors as well, there.

Q: What happens after that? After EIS?

Cáceres: After EIS, I applied for work in the polio eradication program. And fortunately, they had a position for me. My time with polio was seven years, from 1997 to 2004. The first half of that, I was what I would call doing frontline epidemiological work, and a lot of it in surveillance. I traveled a lot to India and Bangladesh, Asia, and then Africa as well, working in some of the hard-to-reach areas, looking at surveillance. Then the latter half—and really, a little bit all through even the first half, research. Research to try and prepare for the endgame strategies for polio eradication. I was in charge of a collaboration with Cuba, in doing some key studies that we needed to do for decision-making regarding the end stage of polio research related to the IPV [inactivated polio vaccine] vaccine, which is the other one that is used. But initially, the oral polio is the key vaccine for eradicating polio. But then IPV, because it doesn't itself cause polio, even though OPV [oral poliovirus vaccine] does that rarely. It is seen as a vaccine for a transition period to not having any vaccine at all. We had to do some key studies there to find out some questions. The latter half, I was the team lead for the research activity for that, even though initially I was a staff epi [epidemiologist], working both in surveillance, and both in leading—collaborating with our Cuban investigators to get these studies accomplished.

Q: Right. And then what happens?

Cáceres: And then, okay. [laughter] This is a bit of a challenge to summarize, really, a lot of history.

Q: I appreciate you rising to it.

Cáceres: I'm hoping that I'm not going into too much detail.

Q: No, no. I love this.

Cáceres: We're trying to get to the main story of Ebola. But I guess the—just the—if I can comment on the polio.

Q: Please do.

Cáceres: Because I think it's really interesting that we—of course, in the first half of that seven-year period, one of our key questions was, we know that the oral polio vaccine can cause vaccine paralysis in one out of a few million. That's known. And what we were really trying to figure out was, can the vaccine revert to a wild virus type of characteristic, where it actually transmits person-to-person in a virulent way? That wasn't really known. And it was important to know that because it would affect the way, after

polio eradication was accomplished, the way that vaccine was withdrawn. And so we were trying to do studies in Cuba. Cuba had certain characteristics of only having oral polio vaccine given once a year, during these campaigns. And so you had a way of knowing—in an environment which you knew was going to be free of oral polio virus because it was just done once a year, it wasn't done throughout the year—that you could do some interesting studies.

We also wanted to do studies in Haiti, looking at sewage, to see if we could see evidence that the virus from the vaccine was somehow circulating or reverting, and so forth. That's kind of what we were trying to do, during those years. And then all of a sudden, we had this outbreak on Hispaniola. It was like a natural experiment because we had the technology to do the sequencing of those viruses, it was clear that that was not a wild virus, that that was a vaccine virus which had mutated, and now was causing—not only VAP [vaccine-associated polio], a case of polio in one person, it was actually spreading. And when they did the epidemiology, and we were all involved in this, the epidemiology along with the genetic sequencing, it was realized that this actually originated in Haiti. Which was interesting because that's where we thought, if this was going to happen anywhere in the world, we thought—we were trying to predict that it might happen in Haiti, and do those studies. We weren't able to do those studies initially because of security issues in Haiti at that time. But the natural experiment unfolded, and so—so while we were trying to figure out the probability of that, now we knew for sure that it did occur, and now the research was about, how do we deal with that issue? And since there have been many of these type of outbreaks that have generally been well-

controlled—and we suspect that this has happened even before the experience in Haiti. As we look back, there's been evidence that that's happened before. But it's just interesting that a lot of the research and a lot of what you learn in an eradication program, you learn as you are doing it. It's not like you know all the parameters and you just implement the strategies. You have to develop the strategies as you go with the new information that comes in.

Q: Yeah, that's amazing. We at CDC Museum actually have another oral history project that we are doing on kind of the history of polio work at CDC. And I'm anxious to tag this interview after we're done, to be related to that program. I think most of their interviews are about decades earlier, but—

Cáceres: Right. I remember going to help with the investigation of that outbreak in Hispaniola, and then coming back to Washington, where there was a meeting—kind of an emergency meeting called. It was chaired by D.A. [Donald Ainslie] Henderson, who passed away just recently, and of course, Ciro was there as the—still the leader of the campaigns, and so forth. And the question was, what do we do? At that point, it was going to be treated like—obviously like a polio outbreak, but it was the first—you know, polio had been out of the region for—it was certified in 1993. And here we now have a huge outbreak, and it's caused by the vaccine. You can imagine what a communications type of challenge that was to the population, saying on the one hand, the vaccine has caused this outbreak, but we're going to give you the vaccine to stop it. But the issue was not that the vaccine so much caused the outbreak, it was actually the context in which the

vaccine had been given, with very, very low immunization coverages. The vaccine can do what I just explained, in areas where you have very, very low coverage, so that the vaccine virus, which is a live virus, can go from person to person and find susceptibles. If it does that in enough chains, then it can revert to the wild phenotype. That was a communications challenge, but I think it was well-met. And the virus was eliminated pretty well, at that point. It's an interesting side story.

Q: Yeah, absolutely. And I'm going to talk to Mary [E. Hilpertshauser] after this, and maybe we can go a little more in-depth in a future interview, if you'd be up for it.

Cáceres: Sure. I'm glad to do that.

Q: Awesome. Great. But then—

Cáceres: So you said what next, so—

Q: I did. '04? Is that when you—

Cáceres: Yeah, around '04. I decided that I wanted to transition a little bit from polio, just because it's quite hectic, being involved with that intensity for that length of time. So I thought it would be good to get—again, to go broad with my experience. And I felt like I needed more programmatic experience because I had—during the last part of it, I was really more research-oriented, leading that activity—team lead for that activity. I decided

to take—when I refer to this with other folks, I call it a sabbatical. It wasn't really a formal sabbatical. But it was getting my preventive medicine boards, which CDC has a program—a preventive medicine program. I applied for that and was able to get into that program, and I did my practicum—it was a year program for me because I already had my master's degree. I just had to do the practicum year, which I did at the East Metro Health District county health department, which was in Lawrenceville. I basically got to experience local public health for a year and take a break from being at headquarters. It was a wonderful year because I felt, you know, I'd been working internationally, I had the state experience, and now I can get the real frontline local US public health experience, and I had a great mentor, Lloyd Hofer, and really got to understand public health at that level—the politics, the epi [epidemiology], the stakeholders, the competing priorities, and so forth. That was a wonderful experience.

Q: Wow. What then?

Cáceres: After that, again, I look back and I feel like I've had such great fortune, and things have just shown up in terms of opportunities at times where I was available for them. Towards the end of that year, I got wind that there was going to be an FTE [full-time equivalent position] for the FETP program for someone that they needed to cover the Americas. Really, not the Americas at that point. It was really Central America. I just couldn't believe it because this was, like, perfect. It was getting the programmatic capacity-building type of experience that I didn't have. It was in a region where my family was from. I would cover the countries where so much of my family is spread,

through Central America. I'd had exposure to that region from my work with PAHO before with polio, with neonatal tetanus, and so it was a perfect fit for me. And so I interviewed for that position.

To connect it a little bit, the public health professionals that were involved with investigating that vaccine outbreak in Hispaniola belonged to the FETP in Dominican Republic. So, when I was going to be team leader for Central America, that location was under my purview. It was an interesting, again, circle back to my career. I spent several years in that. Our goal there was really to develop a three-tiered FETP with basic level, intermediate, and then the two-year EIS-like full FETP level. We assembled a team to develop the curriculum and to train people throughout the region in that activity. And slowly, over the years, my geography expanded to cover South America. Then I was involved with the efforts after the Haiti earthquake to basically help establish the foundation for the FETP in Haiti. We also had initiatives in the Caribbean English-speaking islands. I got interested in the new technologies area for surveillance because we had a long collaboration with Brazil, and we had these events coming up—first the World Cup that was two years ago, and now the Olympics. We wanted to develop the area of surveillance during mass gatherings, and using technologies to get quick information from these type of events. I mention this because it's a tie-in a little bit to the Ebola experience. During that ten years with FETP, I also had to look after a program that—or care-take a program because someone had left, which was involved with chronic diseases. Basically, building the role of FETP in capacity-building in the area of chronic diseases, which was not at all my primary area of interest, but we did cover that for a

while, and when that second job was subsiding was when this other second job of the Ebola program kind of fell on my plate.

Q: Just because you mentioned the FETP in Haiti, have you worked with Barb Marston in the past?

Cáceres: Yes, of course. I worked with Barb with the FETP in Haiti. She covered the overall Haiti work. We reported to her on some of our indicators in our progress for Haiti. And then of course, I worked with her when I was in the deputy IM [incident manager] role. Barbara's fantastic, and I think she was so well-placed to be the person that she was in both Haiti and also in the Ebola response.

Q: Getting to the Ebola work, are you still working in FETP? Or—

Cáceres: No, I don't work with FETP anymore, other than we're trying to get some papers written, related to the experience, with staff training. So no, I don't work with FETP presently.

Q: How did you transition into what you were doing next?

Cáceres: I think again, life circumstances and professional needs kind of coincide, and it was time for me to transition out of FETP, probably for family reasons. I'd spent a lot of time on the road and travelling, and with a young—with a son that really was going into

his eleventh—junior year and senior year in high school. I really wanted to spend more time at home. But that also coincided really with a need to transition out of international work and become a little more domestically oriented. And interestingly enough, I could still do that with a tie to Ebola, because the program, which was needing a director or a supervisor, was actually started with Ebola funds, which I described to you earlier, the TEFA [Temporary Epidemiology Field Assignee] program. That provided a nice segue because I could say I was still transitioning. Keeping my feet wet with Ebola, but moving into the domestic side with preparedness for that. And one thing that I think as I went through FETP—and I really loved the work, but I was still a couple of levels removed from the kind of—what I would call the frontline activity. This really allowed me to get a little bit closer to that, and more into the mentorship role that I have now with my assignees in the field. Before, I was the mentor for mentors, in a way, or supervising—even supervising supervisors that supervised mentors. [laughter] I felt like I'd become removed from that. As much as I loved what I was doing, in a way—there was a lot of creativity to that—I felt I could benefit from a change of scenery, and really, to get back to mentoring myself, mentoring others, and helping others build a career. And also with an idea that I might myself want to get back to the state level, and that this would be a nice transition to moving to a state, either as part of a—being a CDC assignee to a state, or after a retirement. So those were two, both personal and professional, needs that kind of coincided.

Q: Right. And so, what happens next?

Cáceres: So what happens next—you mean after—

Q: As you're making this transition. How do you—

Cáceres: You mean from now to the future, or as—[overlapping dialogue, inaudible]

Q: Oh, no. I'm sorry. I meant a year ago. Yeah.

Cáceres: Oh, okay.

Q: And actually, I should have established that. The timeline here is, you kind of transition out of FETP—

Cáceres: Right.

Q:—in 2014?

Cáceres: No, 2015.

Q: 2015. Gotcha.

Cáceres: August. So, since then—that was basically a year ago. Basically, I helped establish this program and hired all the people for it. There are ten field assignees, and

it's a temporary program. It's a two-year program. And here we are. I mean, it's been great. It's been a great year. I have a good group of people that I mentor and help with their abstracts and clearances, and there's a significant administrative component to it, but then there is that mentorship role as well. And I'm with an incredible group of like-minded people that really enjoy that. And so I feel very blessed to be where I am right now in that group.

Q: How do you get your feet wet, initially, with Ebola?

Cáceres: I think the initial feet-wet [laughs] happens—I got back, I had a trip to Panama with FETP, and this was in October of 2014. And I knew that we were going to get involved—we were already getting involved by that time, FETP, in different ways. We had resident advisors that were being pulled from their assignments throughout Africa that were coming and volunteering. And I knew that I would have a role as well, but I didn't know what exactly, at that time. I'd just returned from a trip—a TDY [temporary duty assignment] in Panama with FETP, with Central America. And my supervisor, Linda [Martha L.] Quick, who also was an EIS classmate and was hired with me with polio, so we go back—another circle. She said, "Victor, I've got a job for you." She said that they'd just—they'd gotten word of getting this tranche of money for FETP to implement a project to rapidly scale-up capacity. They'd gotten the money—actually, while I was gone. I really wasn't aware of, really, what a monumental feat the public health advisors had done with this news of the money, because basically what they did was, they—as soon as it was established that the money was available, they put together

these cooperative agreements that basically allowed the two major groups that were going to be our partners in this endeavor to basically be able to receive the money. It was like a ten-day period. It was amazing.

When I returned, that was almost accomplished, and basically what Linda was asking me was whether I would lead a team to implement this project. The project at that point was envisioned in kind of broad strokes. It was going to be some type of training. It had to do with surveillance, with Ebola surveillance. It had to do with the ring countries and other countries. Because at first, it was going to be a ten-country project. And it had to happen now. You know, it was like, they want this now. Like, in four weeks or five. And so, I was really hesitant—well, it wasn't like I was going to say no, but I was wondering, you know, this seems undoable. I mean, we just—we've got a really—we've got to deal in reality. That's just not possible to do it in four weeks, in ten countries. We have to design the training, and we have to develop the common objectives, and we have to visit the countries, and we have to do all of this stuff. And so, the next step really was to build the team and to try to get some more reasonable—a more reasonable time frame.

Q: And so, how does that—I'm sure you're probably just about to go into this, but I'm interested in how that transitions from the ten countries to a more focused approach.

Cáceres: Well, I think what happened—and I hope I'm recalling this—because the time sequence gets a little foggy because so much was happening at once. But at some point, it became clear that it was better to focus on the countries that had the greatest risk, or else

we would dilute our resources. We were already competing with the Ebola countries in terms of recruiting French speakers, and we were going to need to recruit other people. I don't know when the decision was made, but it was clear that it was better to go, to focus, and do it well in the places of highest risk, than to try to do something which was really unheard of, to try to do this in ten countries. And most of the ten did not share land borders. So at some point, we trimmed it to the four key countries. But this was probably not done until after the—probably December, January. I forget the exact time period that that was done. If we divide this into blocks of time, the first block of time, I would say, was November and December, was kind of the planning period. And then in January we started our pilot. The initial pilot was in Guinea-Bissau. That period was the period of implementation until the last training, which was in Mali in August.

During the two months, November and December, we were getting all kinds of gentle pressure to have this start in December, like right after Thanksgiving. It’s not that we just said no, or that—but we said, “We will try,” but we were kind of saying at the same time, “but realize that this may not very well be likely. If we don’t get that buy-in from the countries, we’re going to fall flat on our face.” And it was the Thanksgiving period. It was the holiday. All these things were making this quite a challenge.

I think the things I want to emphasize though, in this initial period, are: this was a huge team effort, and I had the great fortune of—as part of that funding that we got, we could hire contractors. I had someone that was a key person, and the executor of a lot of logistics, and things that had to be done. I mean, he was just incredible. And his name is

Sekou Sidibe—oh, I can give you that spelling later. But the great thing was that he's an incredibly organized, young guy in his late twenties. He was just a can-do person, and just always had a—and still, of course, has a great attitude. And I had a great team with FETP, and I could name them all here, but I'm not going to. I'm going to leave people out, so I can give you names later.[1] But just an incredible team, and something to also recognize is that this team, they were helping, but they were also doing their regular jobs as well. Everybody just pulled forces together, and we had many meetings each week.

What really, I think, got us off the ground was the fact that the public health advisors that pulled those cooperative agreements and that brought in those partners, one being TEPHINET [Training Programs in Epidemiology and Public Health Interventions Network] and the other being AFENET [African Field Epidemiology Network]. There were these two major partners that were going to help us implement this program. And I shouldn't fail to mention here that we had Fred [Frederick J.] Angulo, [A. Russell] Russ Gerber, and the whole [High Risk] Countries Team, which was its own team within the EOC [Emergency Operations Center] that sent people to the less-affected countries to help with surveillance. It was a close collaboration with them because we needed staff to help implement and they had staff that they recruited from CDC and also from the states. Eric Brenner, this guy that I mentioned, was recruited from the [High Risk] Countries Team. And so it was a very close collaboration with another CDC EOC team, although we weren't formally in the EOC. They were next door, they were down the hall, and we'd have these joint meetings.

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[1] Note from V. Caceres, July 2017: Augusto Lopez, Denise Traicoff, Melanie King, McKenzie Andre, Richard Dicker, Stephanie Lambert, Linda Quick, Diana Miles, Ken Johnson

It was really about leveraging previous relationships that we had with TEPHINET. TEPHINET is a huge partner in the FETP world. They are the network—global network of FETPs. Their task was to bring in the mentors for our training from other countries, because there was really poor infrastructure in-country in those countries, and we needed to bring outside people in. They would basically help with the recruiting and selection and the travel for those people, for those trainings. And then AFENET, which—somewhat analogous to TEPHINET, in the African region, they would be in charge with bringing the audience, the people that were selected from those districts, to the training site, and take them back as well—all the logistics around the training. But we had to make sure that we—that this was an integrated type of—it was like an orchestra, to try to synchronize all these activities. That was an important piece.

But the first—so there was that logistics piece, but we had to develop the training. That was a key part of that initial two-month period. Denise [A.] Traicoff, who had been such a great collaborator and instructional designer with developing our program in Central America, she was brought in, along with Richard [C.] Dicker. They worked with us, and also the folks that had worked with IDSR as well[2] because IDSR is the Integrated Disease Surveillance and Response framework, which is a framework that CDC developed with the WHO [World Health Organization] to implement surveillance in general in Africa. It started ten, fifteen years ago. What we wanted to do was bring in the framework, the surveillance strategies, for Africa. The countries were already somewhat familiar with,

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[2] Note from V. Caceres, July 2017: Such as Helen Perry

with the FETP model, which is a mentored, field-based approach. We wanted to tie those things together and then create a training that mixed in the classroom with the field, with the mentorship.

We had to decide, how long does this training have to be? How many cohorts? We went through that process and decided that this would be a five-week training. It would be one week in the classroom, and then three weeks in the field. And then they would come back to the classroom for about three days. So a five-week training. We would target twenty-five people with that training, but we would have two experiences in the same country, one following the other. All of it would be a ten-week experience. A repetition of that model I just described. And then we would have mentors for both of those. We would cover all of the districts on the border, with surveillance officers being the target audience. But then we would cover the capitals as well, ports of entry—so even though they weren't on the land border with the other Ebola countries, they would represent high-risk places, so we would get people from there.

Sometime in December, one of the folks in the EOC remarked how there was—International Task Force was really desiring to have an alert system along the border. The need to really know what was going on, at least have some way of—and early recognition of suspect cases of Ebola. At that moment, we were thinking, well, maybe we can tie this training to some type of kind of alert system that we can integrate into this. Because of some of the experience that we had had with the new technologies in the Americas, and preparing for the World Cup, and so forth, and a collaboration that we've had with

MagPi, which is a group that has this cloud-based software that allows cell phones or smartphones to upload in real time, data. We decided that perhaps we would try to use—I'm not sure. I'll call these simple phones. They are not smartphones, but they're basically cell phones which don't have all the fancy kind of internet-connected apps and so forth.

Q: Right. I saw one—you brought one in, actually, to the [CDC] Museum. It's not a flip phone, either. It's one of those simple phones with everything on the face.

Cáceres: Right. You can write simple text messages and so forth. The idea behind this was that we would take thirty minutes out of the training of the first week, literally, and show people how to send a coded text that would then be connected to—in this case, a smartphone that was at the ministry of health. But this smartphone would already be programmed to instantly upload that message to the internet, through the Wi-Fi that was connected at the ministry. The idea was for them to send every day, after five o'clock, they would simply send a one or a zero. The zero meant there were no suspect cases, according to the case definition in the last twenty-four hours, or they would send a one, we have a suspect case that we're investigating. It could be a two, if there were more than one, but generally we weren't expecting really to have more than one at any time, if that much. This was not meant to replace the immediate reporting systems that were already in place in-country, and that was a very clear message as we visited countries that, no, this was not to replace something that you already have in all your systems for lab specimens, for getting more information from the case. This was kind of like a

management tool for—to be kind of a backup. So that if you get a notice of a—this signal, that you know to be expecting something, or maybe you really should have probably already heard about it. But it's a way of second-checking yourself. So that's kind of what—the way we expressed it. For me, it was a bit of a—somewhat experimental. It was a bit of a pilot. It wasn't a CDC—and I should be clear on this. It wasn't CDC implementing a side surveillance system. Really, there was agreement. There was buy-in in the countries, and the countries actually helped in setting this up. We were there to provide consultation, and actually, one of the countries said, well, we don't think that's something that we need. We already have a weekly system. And that was Côte D'Ivoire. We were—I say "we were"—I was going to say, we were fine with that, but we weren't quite fine, because we really wanted the complete ring. Which we were able to do. We were able to show in the map that we had trained every district. But I wanted those stars on every district, showing that we were also reporting daily. That was a key part of it.

But going back to the story I was going to tell you that you prompted me earlier on, before the interview, about a memorable moment. I think that the memorable moment that we—one of the memorable moments was when we were—we had done, say, we had taken that hour at the training to do that—basically, teaching what they already knew, how to send a text message. But then we would take each student aside and just had them practice. Again, something that they already knew to do, but we wanted to make sure that they knew the code. It was basically—the code was the three-letter abbreviation of their country, the number sign, and then the one. We took them into our office one by one, and

we had the smartphone that would be the one that would stay at the ministry, in the office. And so they would send their message. And then within thirty seconds, we would hear a "ping!" And that was the smartphone receiving their message and uploading it to the internet. It was a very reinforcing step, so that the student or the participant knew, oh, I'm sending this, and I can be on an island—because some of these were far-off islands in Guinea-Bissau. I can send this code, and it's going to make a ping in this guy's office, and this is going to be instantly available on the internet. And folks will receive this signal.

When we were programming the phones even before, earlier that day, we were testing these pings ourselves, and so we would actually be—you know, these were twenty-five phones, and we would be programming them to send this because we wanted it to be a one-step process. So we had to pre-program the number. We would be sending these and there would be almost like a cacophony of pings because the smartphone was receiving them. It was our way of testing that the—both the smartphone and the different cell phones worked before we did the actual, the one-on-one training.

All of that was basically done within a day period. We did the—we set up the program for the—it was actually probably even less than a day. But just to include the trouble-shooting and things that occur, we'll say it was less than an eight-hour period. The training—the one-on-one training happened in five minutes because it was just them sending that ping. And then the classroom instruction was thirty minutes. Of course, we had to do all of the logistics of buying the phones, getting help through the CDC

Foundation, which provided some help with funding and so forth for the phones, buying the phones, making sure the SIM [subscriber identity module] cards were in. All that logistical part. But that really wasn't that difficult. I mean, it was all done within a couple of days. And the actual setup was done in less than a day. Then those folks, when they went—after that first week of training, they went back to their districts and had their three-week experience, and we were monitoring them every day as they were doing that three-week experience. They came back, they did their fifth-week follow up. And then they—even after the training, they continued to report daily. We would get those pings.

That information was available to the ministry. We could tap in through passwords on the internet to see. And if we saw that there was someone not reporting, we would try to follow up and so forth with the ministry. All of this was through the ministry. And we were quite—quite gratified that we got a fairly good response rate to that effort.

Q: You said that sometimes when there were problems—that, you know, if it didn't look like somebody was reporting, that you could go to the ministry to—could you talk about just one of those instances where you had to—

Cáceres: Yeah, I think that I can speak a little more generally to it, because we had—because of the team that Fred Angulo led; because we had people that were in-country even when we weren't. You know, there were rotations of people going, doing other things, because this wasn't the only activity in the [high risk] countries. There were all kinds of other activities. We could, through our staff, who were visiting some of those

same people, we could communicate to the ministry, saying—or to the person themselves, because sometimes they were visiting that person in the field. You know, what's up? Why is your phone not working? Sometimes it was an issue of a person not reporting, or the phone—the electricity or the phone not being charged. Sometimes there were issues with the Wi-Fi connection. So they were reporting, but there was an issue with the Wi-Fi connection. As soon as that was fixed, then everything would be populated, and we would see that they were actually reporting. So it got a good response. We were able to have a successful pilot in Guinea-Bissau. Then we took it and tried to use the peer pressure of, "This country's doing it. You don't want to be left out." That was very important, to have a successful pilot. But there were a lot of logistics in actually getting the funding to do this. It's not so much that it was very expensive, it was just the administrative aspects of getting the approvals and the funding, and to get this. Because the main show was always the—was surveillance training. This was kind of a side thing that we wanted to add on.

We were proud of it. I mean, I think it was—it showed, really, what you can do with simple technologies, and if you leverage resources. This could have never really been implemented like it was if we didn't have the STEP training going on. We wouldn't have had that captive audience. We wouldn't have had the Ministry buy-in. I think the Ministry might have been suspicious, "Oh, what are you doing? Having another surveillance, or—" And really, this wasn't about CDC's surveillance, it was about giving the country another tool. We had the trust of the country because of the fact that we were offering a training which the countries were all engaged. They were really engaged.

I don't want to get too far off on that. That was a side part, but a very interesting side part.

The training itself, once it was designed, it had to be translated. It had to be Xeroxed. You know, just all the things that have to happen to get that actually implemented on the ground. But what was required, though, for each country—because we were dealing with countries that were many times time zones away. There were language differences. You had to have interpreters on the phone. All of that was very complicated. But what was really required—and we did this. We scheduled a visit at least two or three weeks prior with this very small team to make sure that we were all on the same page—our objectives, the participants, the audience. It was kind of a scouting trip, but it was a scouting trip done very proximal to the time of implementation. So a combination of either myself—I made four trips, one to each country before—with Sekou on several of them. And then we had a representative for TEPHINET, a representative from AFENET, that would basically make a one-day, two-day visit. My trips to Africa—I made four trips. And those were, like, forty-eight-hour turnaround trips. One was three days. The reason being, not that I love to do it that way, but I really didn't want to stay there any longer than I needed to. I needed to get back to Atlanta because this was a large logistics and planning operation that I had to manage from Atlanta. My time in-country was really specific to engaging our partners in-country, making sure that we were all on the same page, with objectives, with the buy-in, with this SMS [Short Message Service] system, how things were going to be evaluated, the things that we needed to know. Because we

were tailoring to each country a little bit the training, trying to learn from our experiences. We couldn't do that so much because we just didn't have the time. But we did try to incorporate any major lessons that we were learning along the way into the next training.

Q: Could you give me an example of that?

Cáceres: I think probably we modified a little bit the field products, because we were expecting—as part of the three weeks, we wanted to have products from those trainings. And those were fine-tuned, I think, to meet the expectations of what they could accomplish in a three-week period. Because one of them was a surveillance audit of the sites that they would have to visit, and having a surveillance report, documenting trends. Probably, I think we were more ambitious, initially, as to what they could accomplish, so we probably had some modifications at that point.

As we got into the winter and the spring, some of these trainings overlapped. You know, you had to start one training in one country, and—well, so it was a bit of a symphony of trying to hire people that could even potentially stay the whole ten weeks within each country, or at least bridge over to the next country. That was an interesting logistics type of effort. And then, when we were getting towards the last country, which was—with Mali, we had the explosion, the terrorist incident in Mali. It was in the northern region, but it froze CDC travel for a few weeks there, and so that was delayed. We would have been finished a bit earlier with that last one. We were delayed, but we still were able to

do the training. It just got delayed for a month. And I visited along with Sekou, and we set that up. We did have to—I thought that because of the insecurity there, I just felt it was a better decision to just do one training there. That was the only country that had only five weeks instead of the ten weeks. I wanted to minimize the risk period that the folks that were in the field—and it wasn't that they were in the region that was at highest risk. But they did have to be in the capital, and the capital, just by its nature, is always a potential risk. We did do that training later on, and it was terrible to hear that later on, a few months later, there was a really significant event in one of the hotels in the capital. And actually, there was a CDC person in one of those hotels, not related to this or FETP, but she hid and was able to escape that.

Q: Did you see any consequences to reducing the training in Mali?

Cáceres: No, not really. I mean, it's hard to say that there were any consequences from that, because by that time, Ebola was clearly on its way out. It was really sporadic, even in the Ebola countries. So I really wasn't concerned about the fact that there was only one training there. And I knew that it was going to be followed up at some point by other FETP efforts. This was part of a longer-term engagement in all of West Africa, with FETP, with GHSA [Global Health Security Agenda]. And so I think the weighing of the risks and benefits was probably the right one [decision].

Q: I have another question that kind of goes back to the beginning of it. Sorry. [laughter]

Cáceres: No, of course.

Q: But I'm interested—so, my—tell me if I'm wrong. But so, it sounds like TEPHINET was finding a lot of the teachers, the mentors.

Cáceres: Right.

Q: AFENET is kind of finding the audience to be trained.

Cáceres: Right, there—in all of this, we were all working together, as one, like, task force. And so, we're helping identify with the countries, the right audience. But then, TEPHINET does the logistics of the travel part. And also, that part—which I just described as well, but the key part, for them, is to make sure that the moneys that were given to them are disbursed to the countries and to the students, to the per-diems, and so forth, and bringing them to the capital.

Q: Right. How did they find the students?

Cáceres: I probably shouldn't call them—I refer to them as students, so let's call them surveillance officers. Because this isn't really an academic program. The participants, the surveillance officers, were almost pre-defined because we were saying—their profile had to be that they were the ones in charge for first-line surveillance in the districts along the border. So that's who they were.

Q: That's who they were.

Cáceres: And so they were selected. Our job was to make sure that when they gave us the list that we would re-check and make sure, is this the guy, or is this the guy, or is it the person that backs up the person? That was our primary audience. But then the ministries would ask, can this other person also participate? This regional health advisor, or this person at the central level? And we would say, yes, that's fine, but they can't be the main group. You know, they can be—and they could help with the course. They could actually help teach the course. We had great collaborations with WHO in the office, the WHO offices in-country, the regional WHO office in Brazzaville. We had collaborations with the CDC directors in each country, with the embassies in each country.

I think one of the great lessons, or things related to implementation that I learned was, especially with FETP, which I think—we don't have the indicators that are as clear-cut—we're building capacity. We can talk about people trained, and all that's wonderful, but really, what we're trying to reach with FETP is capacity and lives saved and morbidity reduced and so forth. When you have programs that are very disease-focused you can show that. Right? You have measles reduction, or HIV [human immunodeficiency virus] reduction. And you have very hard indicators. With FETP, it's not as easy. But I think if you describe what can happen in an event like this, you can see the tangible effects of what FETP brings, and that is the relationships that are pre-established with partners, not only partners like TEPHINET, or AFENET, but the ministries of health. We have

relationships with ministries of health all over the world. So there's this—there's trust. I'm not saying that none of the other programs have trust, but FETP really has built this over a long time, and it's there a long period of time, and really long-term in many of these countries.

And then, the relationships with TEPHINET are relationships where we have worked with money and funds, and how to move money and resources. These are things which were already in place. Then we have personal relationships with them. So when we have to gather all of this to implement quickly, all of that is there. That buy-in, which in another situation, might take a longer period to do so. The know-how, and the buy-in, and the approach, lends itself to—and I'm not saying that it lends itself to, for sure, a guaranteed success, but it really—it makes it possible to possibly get there. There are a lot of other things on top of that, but—so [important], the relationships. The pre-engagements that CDC has in-country. All of those come to bear with doing simple—what might—I shouldn't say simple—complex logistics in an environment of trust in those countries, to really deal with an epidemic such as Ebola.

Q: Right. Can you talk about some individuals and partners who you worked with most closely?

Cáceres: So, I'm going to probably ask—

Q: I know you said you don't like to name names, but—

Cáceres: No, I like to name names, I just don't have them immediately at my—and then I'll leave someone out. So, I'd [overlapping dialogue]—

Q: Yeah, that's always the—

Cáceres: We can go back, and I can write them for you, because then I'll be able to extemporaneously—

Q: We can always put little brackets in the transcript, and include them.

Cáceres: Yes, I'd be glad—I actually do want to actually give names, because this was truly, truly a team effort, and as we were writing the manuscripts, I really—I'm amazed at how many people are going to need to be recognized and included.

One of the things—and I probably should have mentioned this in the early description of the Ebola—the STEP planning, was that one thing that was key was for the country to have a formal invitation to us. We wanted to make sure that we were formally invited, even—in some ways, there were FETP—or CDC was already in those countries, but we wanted a very specific invitation related to this project. And we wanted them to identify a point of contact, a decision-maker, a person that was high enough to be a decision-maker. We wanted them to recognize the partnerships in that invitation, so that there would be no question that when TEPHINET came in, or that AFENET came in, they were coming in

at the bequest of the government. That was kind of what started the ball rolling. We wouldn't start much with countries in terms of interactions until we had that letter. We wouldn't put dates on the schedule. We wouldn't do anything like that. Once we had that, that was kind of like the launching signal. Okay, we've got the letter of invitation, so let's [snaps]—let's move. When's going to be our trip? When are the dates going to be? Who's going to be—you know, TEPHINET needs to start planning the mentors. We've scheduled these calls with the country, with the point of contact. That initial call was really to get on the same page with objectives and to schedule the scouting trip for us.

And the EOC was incredible, because some of these trips had to be done within two days, three days, sometimes, from the time of saying, we have to go. Especially for the SMS system, that trip, from the time I realized I needed to go to the time I was on the plane, was like two or three days. That's unheard of with international travels. I was incredibly grateful for the work of the CDC Foundation in helping with those phones; for the EOC, with their travel; for all the team members, which I'm going to list for you, and you can bracket in; but it was really a great experience.

Q: I know that your experience with Ebola continues as deputy IM, etcetera. Maybe we should transition into that.

Cáceres: Sure, so that was a great experience, too, because I felt like I had seen the Ebola response from the ground level, in the ring countries, so not the immediate countries that—of course, that would have been an entirely different experience. I really think that

people that went there were doing heroic things, and kudos to those folks who were there in the midst of all of that. I didn't have the experience of the Ebola countries themselves, and I also didn't have the experience of the EOC central operations.

So I was asked to volunteer for that. And I thought, at that point, when I volunteered, I thought I would be doing it—taking time away from FETP. But at the time, I was also in transition, or was about to find out that I was going to move out of FETP and into this new position. And so I asked my supervisor in the new position, whether I could honor that commitment. And they were all for it because the EOC just happens to be in the center where my new position is, so it was again, a nice segue.

And really, the deputy IM position, at that point, I felt like I was helpful, but really, I was back-up. I would do things that were needed, and I enjoyed working with Barb [Barbara J.] Marston and Oliver [W. Morgan] and seeing the interactions that they had with Tom [Thomas R.] Frieden, with the folks on the [National] Security Council. We'd have those security-cleared meetings in the top-secret room, and give those briefings. I think I gained much more than I actually contributed there. But I was grateful for that experience.

That was at the time when the countdowns were occurring, the initial countdowns. On the day that you'd have that twenty-one-day period or forty-two-day period, we would get another case, or another—and that was kind of frustrating. I think we were all in an atmosphere where we didn't want to talk about countdowns because of the jinx. So—

Q: You said you were kind of doing some supportive things in the background. Can you give me an example of some of those?

Cáceres: Yeah, just clearances for manuscripts. I know one time, I got a call from Carmen [S.] Villar, that we wanted to know—somebody very high up wanted to know whether this—I believe the story went that—there was a case in—in England—there was a—

Q: The Scottish nurse?

Cáceres: There were people that had been potentially exposed. And we wanted to know if there was a US citizen involved or not. Something like that. I don't know if I have that very accurate. That call came in on a Friday, and I was trying to get—I wanted to be helpful with that. I was able to track down somebody on-call for the—Scotland, or some hospital that was able to get me that information. But for them, it was in the middle of the night, so—but it was the on-call. At that point, I was like, wow, this is kind of cool. With the internet, I can actually find out who’s the doctor on-call, or whatever, and actually make a call, and get this information back, and try to explain it. Okay, this is how I got it. I don't know for sure 100%. But it looks good. There were no US citizens. So I was able to get some information back.

It was a really nice experience because in the EOC, you really—people are very—it's just, people were extremely kind. And it's a can-do atmosphere. People have roles and responsibilities, and generally, they are clear, but inevitably, people have to pitch in and do other things, and you just do what needs to get done. It was nice to be in that kind of setting, and be in on the calls, and—and see the response, really, from that end of things.

Q: Absolutely. And so—oh, you know what? I had a question I want to make sure I asked you. When people are texting in, going back to that part of your experience, did anyone ever text ones or higher?

Cáceres: Yes. We did. Nothing was ever more than a one. And that occurred several times in the countries. But none of them turned out to be Ebola, connected back to Ebola. The key thing there, for this kind of alert system—in a way, the zeros were more important, or just as important as the ones. Because if you think of this really as a management tool, not your primary surveillance tool. Now, there may be other ways to use it as a primary surveillance tool with the technology. And then now, of course, smartphones as well. But the whole idea of not using smartphones was that it really—they weren't—the smartness of the smartphones, the bandwidth of them, for the isolated parts of—we couldn't use the smartphone function of those. It just didn't make sense. So we used the simple phone. And—oh, sorry, I lost my train of thought on that. What I was—

Q: You were talking about—oh, it always cascades over to me, and then I forget my train of thought. [laughter] Oh, I was talking about—you were talking about the importance of the zeros.

Cáceres: Oh, right. Yes. I have it now. The importance of the zeros is that with surveillance, you want to know if—if you don't hear a report, you want to know, is the person not reporting because there's nothing? Or are they reporting—or are they just not reporting because they're asleep, or doing something else? Most systems, or zero-reporting systems traditionally in the eradication programs—and this draws a little bit from my experience with polio—is that you have places or sites that report weekly zeros. We were taking that step up to daily reporting, because we felt for Ebola, you want to know immediately if there was a case. The zeros were signs that people were looking and were awake. We knew we would not likely get many ones, and that the ones that we got were likely not to be Ebola. We wanted the tool to be, if somebody didn't report, which we had that—that it was the ministry's job to do that follow-up and say, why aren't you reporting? Why aren't you reporting? And they did. I mean, they—we would make those interventions. And the overall reporting rate might have been 50%, or more. Maybe it was 60%. What I'm saying with that is that, that means, on average, people reported every other day. And to me, that was fine. That was success, because if we're going from weekly zero-reporting to every other day zero-reporting, that to me is success. Quite a number of them were 80-90%. And then some kind of dropped out. So when it all averages out. But to get that high of reporting over, not only the initial training period, but the six-months post period, which brings us to a time when, even in the Ebola

countries, it was very scattered. Very scattered. Hardly any cases there. We were dealing with countries that weren't seeing Ebola at all. They were still reporting. We were pleased with that outcome, and thought, well, this could be a lesson for the future for putting alert systems very quickly into an epidemic situation.

Q: No doubt. Were there ever any especially scary moments, where you thought, oh, maybe the surveillance is lax, and maybe this really looks like it could be a real case?

Cáceres: No. We weren't really—at least in my level, I wasn't as close to the ground, because we would not follow up these—from Atlanta, these alerts. There were already people on the ground, the CDC, that had to do with the less-affected countries or the—and normally, they might have already heard about these through their other—because this wasn't the primary system. But yeah, I guess, when I did see them—because we did see them—we would ask about them. But we weren't the ones that were responsible for them. We were responsible for providing the consultation on the technology. But it was really their job to follow up on that.

Q: Sure, sure. It's in the hands of the ministry, or whoever would be.

Cáceres: Right. I think my scariest moment in the whole thing was when I was literally hours away from not being able to catch the initial flight, just because of the logistics of trying to fly to Guinea-Bissau, and miss that initial training. Because I felt like, if we could show in that initial pilot that it could succeed, that that—we could leverage that for

all of the others. And the timing of being able to get the phones and—you know, and get there in time. I was meeting someone from the MagPi group, from this group that has this system on the web that was based in Kenya. I was meeting him on that day, and we had to coincide, to figure out how we were going to deal with it. And we just didn't have any days to—we didn't have hours to spare, and so that was probably my scariest moment, because I—at least on that part of it. Not for the whole course, because the whole course was going to be implemented. But I really—I started to have an emotional tie, I think, to these phones, because I really wanted to show that this could be done. That was kind of touch-and-go. But we were able to get the permissions and the things needed so I could travel.

Q: Well, and from what you've said, it sounded like Guinea-Bissau did serve as a model that you could hold up.

Cáceres: I just thought of this. You know, they were the guinea pig. [laughter]

Q: Yeah—oh, no. [laughter]

Cáceres: I've never thought about this.

Q: That's a little too perfect.

Cáceres: You just mentioned this, and I thought—[laughter] Oh! You might want to slash that, but—

Q: No. No, that's it. [laughter] Let's keep it in.

Cáceres: I just thought of that. Can you imagine? They were the pilot. For sure. And it was very successful. And we had the good fortune that the guy that was the point of contact and the head of that whole epidemiology, surveillance section—I mean, he was the big figure in Guinea-Bissau, and he was all for it. He was so gung-ho. We had great collaboration with him. He was like this charismatic figure that—I mean, he—if he told his soldiers to do—I mean, they would do it. There could have been no better place to do the pilot. And I really was grateful for that opportunity, because Guinea-Bissau, in terms of the income or GDP [gross domestic product], it's like two hundredth in the world.

Q: Wow.

Cáceres: It's a very low-resourced country. And parts of that country, or sections of the country, people that were coming to this training traveled days to come, and they were on islands with very poor communication. And they were able to transmit their signal off those islands using the cell towers. It felt like we'd kind of demonstrated the proof-of-concept there. And again, I don't think this has anything—I don't want to overplay this in that it's something that may have been done in some fashion before, in some other context. But to do it in the midst of Ebola, I think, was a great opportunity. We did end

up writing a paper and publishing it so that it would be available for others to see. I think, as internet access grows in Africa, in, you know, maybe five years, everyone will have some type of internet connection that maybe the simple phones would be upgraded to smartphones, and they would be ubiquitous. Maybe the technology of the SMS—we have a window here, where it might be useful, maybe not as much later.

But going back to the overall experience of the STEP training, I think it was basically leveraging lots of collaboration, CDC relationships. Those are things which you can't measure, and you can't necessarily advocate as strongly in your programs, because we don't have that disease reduction that you see with immunizable—or vaccine-preventable diseases, with HIV showing the decline. But somehow, we have to quantify what we're able to accomplish quickly with these capacity-building models that CDC has, and their engagement with other global partners in implementing them.

Q: No doubt. Again, back to the timeline. Sorry, I'm kind of a jerk about it. What—do you remember the time that you were, like, deputy IM, like the months that you were—

Cáceres: Oh, it was just October of last year, 2015.

Q: October of 2015?

Cáceres: I was already in my new job, and I took that—about five weeks off, and—

Q: Gotcha. And anything that you want to share about your Ebola experience post that period?

Cáceres: There are so many great experiences, it's hard for me to say it was the culmination, or the best experience, or the thing I'm most proud of in terms of—within a great team, putting—helping bring forth. But I would just put it up there, along with these other experiences that I've had and—in South Carolina, with my polio work. It just ranks up there with just an incredible, wonderful experience. I just love the relationships that I made and gained from. It was just a very rewarding career, fulfilling experience.

Q: Well, thank you so much for being here and sharing this. This is a really cool piece of it that I'm glad we have recorded now.

Cáceres: Okay. Great. I'm glad to be here, and glad to have this opportunity.

Q: Awesome. Thank you.

Cáceres: All right.

END