CDC Ebola Response Oral History Project

The Reminiscences of

Tara K. Sealy

David J. Sencer CDC Museum

Centers for Disease Control and Prevention

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Tara K. Sealy

Interviewed by Samuel Robson
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Interview 1 of 1

CDC Ebola Response Oral History Project

Q: This is Sam Robson here today with Tara Sealy. It is February 19th, 2016, and we're here at the CDC [Centers for Disease Control and Prevention] Roybal Campus in the audio recording booth. I'm interviewing Tara as part of our CDC Ebola [Response] Oral History Project and we'll be discussing today a bit about her life and career, and then really focusing in on the 2014 epidemic response. So Tara, if you wouldn't mind, could you tell me your full name and your current position with CDC?

Sealy: Tara Kathleen Sealy, and I am a microbiologist in the Viral Special Pathogens Branch.

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

Sealy: I was born in Hereford, Texas, in 1979. I grew up in Colorado though.

Q: Tell me about growing up in Colorado.

Sealy: Loved it. Well, I guess I grew up in Colorado, but for about four years between like third grade and seventh grade I moved to [Washington] DC and then moved back to

Colorado. So most of my life was spent in Colorado, just south of Denver, in between Colorado Springs and Denver.

Q: What did your parents do?

Sealy: My mom was a massage therapist and my stepdad actually worked for a telecommunications company in Denver.

Q: What kind of stuff started to catch your interest when you were young?

Sealy: When I was in high school I was always geared toward science. I always enjoyed science and had more of a science background. My grandfather was actually a geologist in Texas, so maybe I got it from him, I'm not sure, but I think probably my senior year of high school was when I read the book [*The Hot Zone*]. Everyone usually says that is such an influence, I think, especially in our group working with Ebola. That was definitely a book that piqued my interest. Then I went to Colorado State University in Fort Collins for my undergrad and I wasn't sure what I wanted to do. I wanted to be a doctor, a medical doctor. So I majored in chemistry for a while. I realized I'm not so good at chemistry. After that I wasn't quite sure if the medical doctor thing was going to go down the right path, but then my roommate was taking a microbiology class and I started flipping through her book and I was like, oh, this is really interesting. Because I was really fascinated by *E. [Escherichia] coli* actually first, you know, the hamburger outbreaks and all that, and Ebola—two totally different things. So I thought microbiology might be

something I would be interested in. I took a general micro class and just fell in love with that and kind of the rest is history there.

Q: What specifically fascinated you about *E. coli* and about Ebola?

Sealy: I think probably just the disease manifestation that both cause. They both can cause pretty severe illness. The fact that—*E. coli* is a bacteria and Ebola is a virus. I think with Ebola, as I started taking more micro classes and learning more about viruses, Ebola was just so fascinating to me because it was one of those viruses that nobody knows where it came from. It causes such awful disease and there's no cure for it. I think I always wanted to work with something like that because as a scientist, you want to learn more about something and I think with Ebola there wasn't so much that we knew about it and so I think that was probably what—especially for Ebola.

When I was in my undergrad going through my micro classes—there's actually a division of CDC in Fort Collins. And so I started working there as a student basically just doing lab tech [technician] kind of stuff while I was still in my undergrad, and that was in the plague and tularemia, the bacterial zoonosis branch in Fort Collins. So I worked on plague and tularemia. The woman that I worked for, when she first interviewed me, she asked me, "What do you want to do when you grow up" basically. And I said "I want to work with Ebola. I want to work in Viral Special Pathogens Branch." I mean, I knew then—I was twenty, nineteen at the time. I knew then that's where I wanted to be, and lo

and behold I graduated in 2002, stayed on in Fort Collins for a year, [and] in 2003, I got a job in Viral Special Pathogens working on Ebola.

Q: ’02 you graduated from undergrad?

Sealy: Yeah, undergrad at Colorado State and then moved here in 2003 and basically have been working with Ebola and Marburg virus ever since. So the virus was not new to me when the outbreak happened.

Q: Tell me a little bit about what happened when you moved down here.

Sealy: When I moved here, I started working in kind of the molecular biology, molecular diagnostic lab. I was tasked to help come up with new diagnostic tests for Ebola and Marburg, more high-throughput, more rapid testing. This was, again, in 2003/2004, so long before this outbreak, and it turns out it was a good thing we were working on that because we were definitely able to apply it in 2014. Ten years later it was still applicable. So I designed a bunch of real-time PCR [polymerase chain reaction] assays, high-throughput RNA [ribonucleic acid] extraction methods just to make—because in 2000 there was an outbreak of Ebola in Uganda, in Gulu, and my boss was actually at that outbreak and he was doing—they were out there doing—this was kind of the switch from serology to kind of more molecular. They were still doing serology but then they were also trying to do PCR because that was kind of the new thing, and it was difficult at that time because there wasn’t a high-throughput system so they were actually doing

extractions individually by hand, running the gels. When you have an outbreak—and Gulu wasn't even that large, there was probably like five hundred samples they tested or maybe one thousand, but that was a lot of work for one thousand samples. So my boss came back from that outbreak and was thinking to himself, we need a more high-throughput method. If there is ever an outbreak that is bigger than that, we're going to need something. So that's what I did when I came here.

Q: Who was your boss?

Sealy: Jonathan [S.] Towner. I worked on that for a few years. There was definitely outbreaks during those times, small ones, little ones in Congo and Sudan, so any time there was viral hemorrhagic fever symptoms from certain African countries, they would send it to us and we would test it just to rule out either Ebola, Marburg; rule out Lassa, CCHF [Crimean-Congo hemorrhagic fever], Rift Valley fever; all those. That was my job and that's what I did. Then in 2005 was my first experience with an outbreak, my first trip to Africa. I had always wanted to go to Africa. I'm fascinated with Africa. Marburg happened. So we got the first set of samples in and I think we had maybe twenty or so samples that we got in. This was the new assay that we had designed. Extracted the RNA, set up the PCR, and this was actually real-time PCR this time instead of gel-based PCR. This was real-time PCR which is where you can actually see the results in real time on a computer instead of having to wait for the PCR to be done, running it on a gel, looking at a band. Real-time PCR you get these curves, these amplification curves, and it corresponds with a value and that value will tell you how much virus that person has. Out

of like thirteen samples, I think nine of them were positive and they had very high viremia. So we said okay, we have a Marburg outbreak on our hands. This was in Angola, and we had to be invited to go by the country, to go and help, and that is what ended up happening. It was actually the first response, I think, that the DEOC was involved in. That's when it was called the Director's Emergency Operations Center a long time ago, in a whole other building in a basement, so that was the first time that was activated. We met down there, they gave us maps and kind of gave us some security briefings and things like that—kind of told us the situation, and we left. Basically we packed up, it was about forty boxes and trunks worth of laboratory equipment and supplies and there were I think seven of us that went. They couldn't figure out the best way for us to get there so what we ended up doing was we had all of our equipment shipped or basically driven overnight to Houston in a moving van. We actually took the CDC private jet out of DeKalb [DeKalb-Peachtree] Airport to Houston, they flew us to Houston that way. Then we got on an oil—I think it was Exxon maybe, an oil company plane. There wasn't hardly any of us on this plane, just this random—it was very random. We were the first team to go. This didn't happen in the second team so we ended up flying to Angola that way. We got to Angola and we set up a diagnostic lab there in the capital, it's called Luanda. It was the CDC global health HIV [human immunodeficiency virus] lab actually—had kind of a lab building there, so we set up our lab there. We did serology and real-time PCR. This was the first outbreak that we deployed our new high-throughput RNA extraction method and the first outbreak to employ the real-time PCR. I'm not actually sure how many samples we actually tested. There were two teams and that's all that was needed.

Q: Two sequential teams?

Sealy: Yeah, exactly, so we did like one month stints. Probably over one thousand or maybe two thousand or maybe not even that much, I'm not quite sure. The Canadians also had a diagnostic lab out in Uíge, which is where the outbreak actually started. So they were also testing samples there and then we were also testing in Luanda.

Q: Was everyone on your teams laboratorians?

Sealy: Yeah, so we were all laboratorians. We had Dr. [Thomas G.] Ksiazek, he was our branch chief at the time. He was the team lead and then there was me and Dr. Towner for the molecular, and then there were three people for the serology on the first team. That was my first African experience, first outbreak experience. I think Jon was really impressed with the way the PCR worked in the high-throughput. We were able to test ninety-six samples—extract ninety-six samples and test ninety-six samples at a time. We usually never did that many because we wouldn't get that many in at a time. Sometimes we would batch but we usually didn't want to batch because they wanted test results pretty rapidly. With serology it can take twenty-four hours to get test results. With the real-time PCR it's about six hours or so, so that was important.

Q: Was it you were doing so many at a time because this was a larger outbreak than usual?

Sealy: This one was actually the largest at that time. It was the largest between the Marburg and Ebola, that one Angola was the largest.[1] We were not testing nearly the numbers that we tested in this 2014 outbreak.

Q: Can you talk a little bit more about just being in Angola?

Sealy: Yeah, that was an interesting first experience for Africa because they had just gotten out of a civil war so it was still kind of a dangerous area to be in. I was like twenty-three, twenty-four at the time, so I was young. Being at a restaurant and seeing people with AK-47s just standing there is a little nerve racking. We weren't allowed to go anywhere because there were uncharted landmines everywhere. So we basically just drove—it was just back and forth from hotel to the lab. That was it. We didn't get to see much, couldn't go anywhere. But it was a great experience. It was my first experience setting up a lab in an area where there is hardly any electricity. We didn't have very good electricity and that's one thing you need to keep a lab running because you need power for your instruments and you need power for the fridges and freezers to keep your reagents, and that's always a limiting factor whenever we go to these countries. I think Exxon [ExxonMobil] actually donated a generator to us. That took a good week to get that installed and there's always logistics and issues any time you're setting up a lab in a third world country, but we were able to do it and it was a great experience. Fantastic, I loved it.

[1] Note from T. Sealy, April 2018: The Marburg outbreak in Angola in 2005 was the largest outbreak to date before the 2014 West Africa epidemic.

Q: Was it your first in a third world country?

Sealy: Yeah, it was. I mean I'd been to Mexico but this was definitely a different experience.

Q: This outbreak in Angola started—was concentrated in the pediatric population, right?

Sealy: Yeah, there was a lot of younger—same actually with Gulu, there was a lot of pediatric—that was Ebola, Ebola Sudan, that was pediatric, a lot of kids.

Q: Did you have much interaction?

Sealy: No. As a laboratorian we didn't have any interaction with patients because also we were in the capital and the outbreak didn't actually move to the capital. It was concentrated in Uíge. They would bring the samples to us. Never saw anything like that, not like 2014.

Q: Did you have any scary moments where you thought perhaps it would come to Luanda?

Sealy: No, not that I remember. I didn't think that would be possible actually. It's so remote, you know, not enough people infected, and I don't think they traveled as much like they did in this outbreak.

Then in 2006, I actually left CDC for a year. I moved to London and got my master's in molecular biology of infectious disease at the London School of Hygiene and Tropical Medicine. I spent a year there and I went back to Africa that summer to do my thesis research in the Gambia. I spent a couple of months there working on bacteria. I went back to bacteria and worked on *Streptococcus pneumoniae* and loved it—beautiful country, beautiful people. West Africa is gorgeous, I love West Africa. Then after I graduated, Jonathan Towner said my job was still available so I actually just came back and kept up and basically came right back where I left off. When I got back in 2007, that's when the DRC [Democratic Republic of Congo] outbreak happened in Luebo. That was Ebola Zaire in Luebo, 2007. I had just gotten back so I didn't go on that outbreak, but they also took the same extraction method and same PCR and used that there. Then following that we had the Marburg in Uganda in the miners, so we went over there. Actually, this happened a little bit before I came back, where the miners got infected with Marburg. We actually sent a team out and started collecting bats because there was a huge bat population in this mine and this was the first time we found in real-time Marburg in bats. We were able to associate the Marburg in the bats infecting the miners. We spent the next few years going over there multiple times trapping bats, testing them, doing mark-recapture studies. We moved on from Kitaka Mine to Queen Elizabeth National Park when the Dutch woman got infected with Marburg after visiting a Python Cave. Then we

went there and started collecting bats. This is around the time where I switched from molecular diagnostics to—my boss, Jonathan Towner, switched over and became team lead of the ecology group. Now I'm part of the ecology group looking at virus-host interactions with reservoirs and mainly looking for the reservoir for Ebola and Marburg. We found it in Marburg by being able to go as soon as we found somebody infected with Marburg. We were able to go over there and immediately do ecological studies instead of waiting until after the fact, months later, then going. That was, I think, a key breakthrough there and the population was so large we were able to capture the numbers that we needed to get that small percent positive. Then we were also at Queen Elizabeth, that's where we, in 2011, we spent about three months over there capturing the *Rousettus aegyptiacus* bats from the Python Cave, quarantining them, testing them for Marburg, and we found a clean cohort to bring back to CDC. We have our own bat colony now and we've been able to do experimental infections using Ebola and Marburg to learn a lot more about the virus interaction in the bat, what's the difference between that and humans. We're just at the very beginning of those experimental infections. That was a really fun trip, I really enjoyed that. I got to feed the bats every day. We housed them in these little tents and kept them separate. I would cut up fruit for them and feed them every day. Yeah, I grew very fond of the little bats, but that was a good trip.

Q: So you were part of identifying the reservoir for Marburg.

Sealy: Yes, it was great. It's funny because I look back on when I first started working at CDC in Fort Collins and I was like, I want to find the reservoir for Ebola. That's what I

want to do. And I found it in Marburg. I was part of the group to find it in Marburg and it was a really cool feeling, it was really interesting. Now we are looking for Ebola. I just got back from a bat trip to Sierra Leone. We were there three weeks in January and we caught some bats and tested.

Q: Can you explain how that is confirmed?

Sealy: It takes a lot of steps to confirm. The one thing that we had that other labs had not been able to show, like in the labs in South Africa that had their own *Rousettus* colony, is we were able to isolate virus from the actual tissues from the bats that we caught there, and then when we got back here, we were able to infect the bats and then again, subsequently isolate virus out of that. Before, other labs had found serological positive bats, where that just shows that they've been exposed to the virus at some point so they have antibodies, but that doesn't necessarily mean they are actively infected at any given time. Some labs had shown there are PCR positives in certain bats, but they were never actually able to get that live virus out. Getting that live virus out means that they are actively infected and they are not showing symptoms, they are just actively infected and that means they are shedding virus. With Ebola we have not been able to deduce that yet. So it's definitely a different bat. It still could be a fruit bat, like the *Rousettus aegyptiacus* is a fruit bat. I just think it's a different fruit bat. The *Rousettus* bats are cave dwelling bats. You can find them in huge numbers in these caves so you are able to get the numbers that you need to test statistically for you to get a positive result. With the bats that we think might carry Ebola, these are more solitary bats. They are tree dwelling bats,

so catching them is a lot harder. Two different catch methods. There's the harp trap method with the cave and then there's the bird netting method with tree bats. So totally different trapping methods. The cave is so easy to trap because at night they just fly and hit the harp trap and they just fall into this little tarp and you just grab them and put them in bags. The tree, you put up these bird nets, these mist nets is what they are called, huge, tall but you can't get them as tall as these trees. You can't get them up into the canopies so it's just kind of like a waiting game. You just kind of have to wait and see when the sun goes down, put up the nets and hope that you catch some bats that are either flying out to find fruit or water or whatever. You don't get the numbers that you need, so unfortunately it's going to be difficult to find Ebola.

Q: Okay, so 2011 was Queen Elizabeth?

Sealy: Queen Elizabeth, yeah.

Q: And then what happens?

Sealy: Okay, so after it's 2011 we got the colony back here, we started breeding here our colony, and then 2012 happened. Now in 2012, I was actually pregnant all of 2012 and there was about four outbreaks during that year that I could not be a part of because I was pregnant. We had Bundibugyo, Ebola Bundibugyo happened in the Congo, DRC. Then we had a couple small Marburg outbreaks in Uganda. Then there was one other one that I actually can't remember. That year was such a blur. In VSPB [Viral Special Pathogens

Branch], we all thought 2012 was awful. We were like, oh God, this is so many outbreaks. We were stretched thin and we did not see 2014 coming. I actually didn't do much in 2012. I was here just doing general lab stuff.

Q: Can you talk about having a kid?

Sealy: I have a little boy, he is three now. After having him, I didn't travel for two years till—2014 was my first traveling after that. It was hard for me because I love traveling so it was hard for me to stay behind and watch everyone else go. So when we got the news about the 2014 outbreak in Guinea, I was first to volunteer, I was ready to go. It was definitely hard to leave my little one. He was fifteen months old at the time and I think it was definitely hard on my partner. He was like, you're leaving me with a fifteen-month-old? No, you're crazy, right? No, you cannot go. I said well, can I go for three weeks instead of four weeks? And he knows how important this is to me and how much I love it so he was okay with it. I was actually one of the first from our group. There was two of us to do lab stuff, and then Dr. Rollin, Pierre Rollin went for epi [epidemiology] and a couple of our other epis [epidemiologists] went and then there was me and Dr. Ute Stroeher for the lab part.

Q: In Guinea 2014?

Sealy: In Guinea 2014, which felt like a completely different outbreak.

Q: How do you mean?

Sealy: Since it was the very beginning and it was so early on, and when we came back we thought it was over and then everything just hit the fan after that. Guinea just feels like a completely different outbreak to me. When Ute and I went, we were basically tasked to do some serology. Now that real-time PCR is so mainstream, nobody really does serology anymore. To me, serology is incredibly important. You still need to do it in outbreaks. In 2014, it probably would not have been possible because it is so cumbersome. You have to have a really good lab. You have to have really good water. You have to have a lot of things for serology to work and I think that the outbreak, this one, was just too big to do. The smaller outbreaks, we were always able to still do serology and real-time PCR.

Q: Can you explain just briefly the relative benefits you get from serology versus real-time PCR?

Sealy: Yes. So with serology you're testing for an antibody response. There's also serology with antigen capture, so antigen capture is kind of the same thing as PCR. You're detecting the actual virus whereas with the other serology, IgG [immunoglobulin G] and IgM [immunoglobulin M], is you're detecting antibodies. You are detecting whether the person had been exposed to Ebola and maybe is better now. So there's two antibodies that we test for. There's IgG and IgM, and let's see which one comes up first. M comes up first. So it's usually your PCR will come up or your antigen comes up first

within the first week of infection, and your IgM response kicks in usually around two weeks, and that is when you start clearing the virus. Your PCR, your virus levels are going to go down, but your antibody response is going to go up. Then your IgG comes out even later, maybe three to four weeks later, and then that is what will protect you lifelong—we're not sure but ten years probably or longer, we're not sure. And that's what comes up later. So it's important for PCR antigen, that's important to find out if you're infected with this virus right now. There are cases with Ebola that they might not be that sick and so having a serology test is actually kind of important because then you can see, so they're not that sick but are they infected, have they been infected? You can see that with an antibody response. You can also tell when people are getting—"convalescing" is what it is called. When they are getting better, they are convalescing, that's when the antibody response kicks in and then they can be sent home. So that's why I think it's important to have both.

There was this one case in Guinea that—so there was a different group in Guinea doing PCR. We were in Conakry, we weren't actually in Guéckédou out in the Forest Area. We set up a lab in the capital and there was already Institut Pasteur from Senegal, from Dakar, was actually there doing the real-time PCR. So we were invited to do serology on—anything that they got negative, we tested. There was one case that the MSF [Médecins Sans Frontières], the head of the facility treatment center in Donka Hospital in the capital swore she had Ebola, like kept saying, "This woman has classic symptoms." They kept getting the test negative. The PCR test kept coming back negative. They kept the woman in the facility until she got better. We actually tested that by serology and she

actually was IgM, IgG, both actually, but very IgG positive, so she did have Ebola. Why the PCR failed in that case, there's a multitude of reasons, don't know why exactly. So in cases like that it's important to have. We actually didn't do much serology. I think we tested maybe about 110, 120 samples. We were there only a few weeks and it was just basically determined that we weren't more needed.

Q: And this would have been like April 2014?

Sealy: Yeah, so we left about mid-April and got back like the week before Mother's Day. At that point we thought that Liberia had a few cases but that was over—Sierra Leone hadn't even happened yet. It was happening, we just didn't know about it, it was percolating. I remember being on the conference call thinking, this is our last conference call, looks like the Guinea cases are winding down, looks like this could be it. No, not so much.

Q: Can you tell me a bit about your first impressions of West Africa?

Sealy: Guinea was different because it was my first time in a country that didn't speak English. Well, I guess in Angola they spoke Portuguese but they were pretty good English speakers for the most part. Guinea, I don't really speak French. I can understand it a little bit and I can kind of read it but I definitely can't speak it. So that was a different experience for me because it was so hard for me to communicate with people. We'd sit in these meetings and it would all be in French so I had no idea what they were talking

about. Then there were three women in the immunology lab that were trying to learn from us and we didn't have a translator. I mean it was just so difficult to teach them serology when serology is a foreign language in itself, and then to try to teach it to these French-speaking—it was just—it didn't work well. But I love West Africa, I think it's beautiful. I've been to Uganda plenty of times and Kenya, and I think East Africa, they are just completely different. The people are still just wonderful people. The Guineans, it was different because they were a little more hostile. At that point they were still not sure why we were there, what this Ebola thing was, still didn't believe it, so that was different. But my first trip to Sierra Leone was a lot different in that they speak English pretty well and it was just a different environment altogether. That was my first real—I think real outbreak experience was Kenema.

Q: Sticking with Guinea for just a second though, do you remember any specific instances where you got the impression from Guineans that you weren't 100% welcome?

Sealy: No, not in the capital, I think. They still looked at us funny. You could tell they didn't necessarily want us there.

Q: How could you tell?

Sealy: More body language I guess and just kind of attitude and just based on conversations that I had with people that spoke French, they could hear in conversations. It was definitely an even worse situation out in Guéckédou and those areas, it was way

more hostile. They did not want anybody there at all. That was a little—it was hard for me because you just want to say, we're trying to help, we're not here to do harm, we really genuinely are here to help you. And getting that point across in a culture that's completely different from us and have never seen Ebola, you know, in the Congo it's a little different because they've seen it multiple times so they know, Uganda same thing. This was a whole new ball game.

Q: So you come home at the end of the first tour and what are you working on when you come back?

Sealy: When I came back it was pretty quiet. I don't even remember what I was working on. I was probably doing more bat stuff, bat studies. I don't even remember. Those months were kind of a blur. I think we were still in that waiting—"Is this happening? Is this outbreak going to get larger?" kind of thing. And then June hit and Sierra Leone hit and that's when it just blew up.

Q: Right, so tell me about that.

Sealy: We actually didn't go out to Sierra Leone until August, so it was kind of back and forth. You have to be invited by the Ministry of Health usually in these situations. They have to ask for help and I think WHO [World Health Organization], being involved, it was politically probably not—it was not a good situation. It was back and forth, were we going to set up a lab in Liberia, in Monrovia? Are we going to set up a lab in Sierra

Leone? I didn't know until a few days before I left where I was actually going. Again, I was the first to volunteer to go and this was a team of three this time. It was me and Ute, again, and then a new person that has worked in our branch for a while but this was his first outbreak experience. We left like mid-August and it was determined that we were going to go to Kenema and set up a lab there. In Sierra Leone the outbreak started in Kailahun, which is kind of on the border of Guinea, and it percolated through Kailahun and into Kenema, and that's kind of where it amplified and exploded. In Kenema there were already two groups working there. There was Metabiota, which is a private company, and then there was University of—Tulane [University] was there. Tulane has always had a Lassa fever ward there. Lassa fever is huge there, it's a big problem, and Tulane had set up some diagnostic testing and capabilities to test for Lassa fever, sent experts out there. So they knew what viral hemorrhagic fevers were, they had that kind of experience. The situation in Kenema when we got there was a little politically strained. I am still unclear as to what really happened but I think Tulane was testing samples and Metabiota was testing samples. At the beginning there might have been some contamination issues, or they were fighting with each other. When we got in they didn't know we were showing up to set up a whole new lab. They kind of thought we were there to help because there was just one girl basically running the show. So that was a little difficult to come into.

Now, we set up in Kenema Government Hospital. They had a treatment center there not run by MSF, it was run by just locals and WHO doctors. So we were able to kind of assess the situation. We found two buildings that we were able to set up a lab in. There

was one building that had the Lassa fever lab and there was a corner room that they weren't using, so we had them block that off and we made that into our hot lab. Then in the building next to that, Metabiota had these portables, like trailer units, and there were two rooms that weren't being used. They were just being used for storage. So they cleared those spaces out. One room we set up was our, like, clean room and our extraction room, and then the other small room was where the PCR machines were and our little office. Tiny rooms, just bare minimum what we could get. There was no electricity so we had them kind of wire some electricity in, no running water except for a little tap outside that the ambulances actually washed their vehicles in. So it took a few days to set up. It took us maybe three days to get the lab up going and then we started testing. That first day we had like nine samples. One of our first runs was the British nurse, the male British nurse, William Pooley. I can't remember his name. William Pooley I think. He was there as a nurse volunteer. We actually met him like two days before we tested him and that was kind of one of our first welcome to Ebola. That was a shock to my system. I had just met the guy two days ago and he was fine and now he has Ebola. Also the lab was right next to the ward so this was the first time I'd ever seen patients. We could see the convalescent patients, we couldn't see the acute infected but we could see the convalescent patients, the patients that were recovering, you know, talk to them every day, walked right by them and talked to them every day. So that was something completely new to me. The lab actually was at the end of the ward so they would bring the bodies out and bring them right by the lab. So every day we saw the burial team with the truck with bodies loaded in the back of the truck. That, again, was another thing that was just shocking to me to see and definitely something that will stick

with me forever, seeing those images, definitely. Then the other thing that happened that trip was we actually worked with Dr. Ian Crozier who was the one who came back here and was medevacked to Emory. So we tested him. He called us and said that he wasn't feeling well and that we needed to come pick up his sample. He was in his hotel, so we went and got his blood sample, brought it back to the lab, tested it by itself without anything else. Didn't want to risk contamination or anything like that. Really thought he probably had malaria, but when it came back positive, that was another gut punch. It just seemed like every day there was something that was just so depressing and awful on that trip. But then there were the days where before Ian got sick, he would have these big kind of parties to release people. He would go in with the other doctors and he would call out the names of people that we tested negative and they were able to go home, and then he would give us a shout out and say, these are who tested you, give them a round of applause and so they would clap for us. Those were the days that made things so much better because you could see the patients and you knew that you had a hand in telling them, you don't have Ebola anymore, you can go home. Probably not to your family, maybe to your family, hopefully to your family. There were also sad moments. I remember there was a woman, she was holding a baby and she was telling me that she was the only person this baby had in the world. The baby's mom died. This woman wasn't even family to this baby but kind of adopted it in the convalescent ward. This woman was actually pregnant and she said she wasn't going to be able to take the baby with her when she left. I don't know what happened to that baby. I wish I knew. Saw that so many times, so many children. There were two little boys, I remember testing them over and over and over again, and their names were Courage and Success and you had to

just root for them with names like that. They were brothers and apparently they were kind of mischievous in the ward. They would play tricks on people and they were two cute little boys, and they actually ended up surviving. They were released after I left, but it was good. Those are the stories that will always stick with me too. Kenema was a whole different place.

Q: Can you tell me about some of the people you worked with in Kenema?

Sealy: We had local staff that worked in the Lassa ward there. I met a really nice guy who worked in the lab there who had lost three lab members to Ebola. I still talk to him to this day.

Q: Sierra Leonean?

Sealy: Mm-hm, Sierra Leonean. And then the guy that did the electricity, his name was Ensah. He was so nice and always so happy. He actually came to us one day and said, "You're testing my brother, can you please tell me whenever the results come?" His brother ended up being positive and I just couldn't tell him, I just couldn't do it. So our team lead told him to let him know and still with a smile on his face he said, "Thank you for testing him" and it was just heartbreaking. He was a really nice guy.

Working with WHO, we had the logistics there. They were very helpful getting us things we needed to get the lab set up and run. The WHO doctors were also great. Usually they

were like volunteers. Like one of the doctors was from Tulane. Dr. Ian was from Uganda, just kind of temporarily hired by WHO. Then basically what happened is Ian was left as the only doctor. They didn't, for some reason—they didn't have new doctors coming in and so he stayed on and that's when he got infected, basically. And then when he got sick and he left, there was no doctors. We were there with the Ebola treatment center with probably eighty patients in there and no one to treat the patients. There was one nurse there, [Issa] French, and he went in every day and made sure that they were fed and they were clean as much as he could and he was the only one that went in. By the time I left, a couple more doctors came in from WHO and that was when it was hell on Earth there really. It went south quick.

The second team that followed our team, that was the last team in Kenema to do lab work and they transitioned to Bo. Doctors Without Borders set up—as we were leaving they were finishing up setting up an Ebola treatment center in Bo, which is about an hour away from Kenema. They wanted a lab there and so the team lead after me said okay—because they knew they were going to shut down Kenema Government Hospital because it was a nightmare as far as infection rates and everything. The IFRC, the International Federation of the Red Cross, had set up a treatment center outside of Kenema so they were able to close Kenema Government Hospital, use it as maybe a holding facility while they sent patients to the IFRC treatment center about fifteen minutes outside of Kenema, or to Bo to MSF. The lab transition from Kenema to Bo basically end of September, the beginning of October. No interruption in testing, so they did one run in the morning in Kenema and then the afternoon run in Bo.

Q: Same day?

Sealy: Same day, mm-hmm, and that was still when—so we didn't have—so, the extraction machine that we had out there at the time in Kenema, we only brought two fifteen-sample extractors. One of them stopped working and so we were just doing one fifteen extractor and so you could do back-to-back extractions on that. But then by the time October came around, it was clear that we were going to need to bring out the big guns and bring out the big ninety-six-sample extractor. So I shipped that out to Sierra Leone and actually the first team to use that was my subsequent trip back, my second trip back in November. That was when we first started using the ninety-six, really high throughput extraction method was in November and that was basically the—so I got out there the beginning of November.

This time I was actually the team lead for the lab, so it was myself and three other women, so this was, again, also the first all-female team to go out [note: Team Five].They kind of made a big deal about that. It was at the height of the epidemic in Sierra Leone. We were averaging ninety-eight samples a day, is what my team actually averaged that month of November, so having that ninety-six-well extractor was wonderful. At that point we were actually testing samples from nine out of fourteen districts. The Bo lab was testing most of the country with the exception of Freetown, Port Loko, Kambia and Kailahun. Those were the only districts that we were not testing. The Canadians were in Kailahun and there were a few labs, Chinese, the South Africans in

Freetown and then Public Health England came on board around that time. It was a very busy time. I mean we were seeing about 60% positivity rate every day. It was long hours, crazy work, but the MSF facility in Bo was phenomenal. They were wonderful to work with, the doctors were wonderful to work with. I can't say anything bad about MSF, they were just fantastic partners. Basically we set up a lab, we just had a house. It was a great situation and then we had the team that transitioned basically over to Bo. The hot lab basically ended up being just a little shack outside of a house. In between the helipad and the house was our little shack, hot room shack, and it was just basically tarp, it was tin roof and some tarp and that was our hot lab. We all wore the PPE [personal protective equipment] and everything in there to do the samples and we had an area blocked off where nobody could walk through and walk by. Once the samples were finished in the hot lab, basically the blood or the swab, whatever sample we got, usually blood or swab samples from corpses, that goes into an extraction buffer which inactivates the virus. That testing was all done here by myself actually to make sure that it actually does kill Ebola, does kill the virus.

Q: When did you do that?

Sealy: I did that probably, let's see, when I came back from London. So, when we switched over from one ninety-six-extraction method to another. In Angola we had this filter base extraction method. It was a robot that you still had to add the buffers to the plates and it kind of vacuumed through a filter and that's how you get the RNA. Then when I got back from London, I started testing a new method, which there's always

something new coming out. This was a bead-based system, it was a magnetic bead-based system. It got rid of the whole filtration and no contamination, no cross contamination can happen and it's like a magnetic system. How they come up with these things is amazing to me. The RNA binds to these magnetic beads, you go through a series of washes on these robotic platform. You still have to add the buffers to the plates, so it doesn't completely eliminate the person, but then you put it in the machine and in twenty minutes, ninety-six samples are done and you can do the PCR. From start to finish it's about six or seven hours from hot lab to end result.

I kind of got sidetracked. What were we talking about?

Q: Let's see, we were talking about November. We were talking about—

Sealy: Oh yeah, I was talking about the house. So we had the little hot lab and then in the house we had our clean room, which was like a bedroom. The other bedroom was the extraction room, and then the living room was the PCR machines and our office area. Samples came in, so not only would we get samples from MSF—the samples that we got from them were usually the convalescent patients that they needed testing so they could be released because they were in an Ebola treatment center, they weren't in a holding facility. Most of the samples that we got were from outside districts from all the holding centers. Once we tested them positive, as team lead I would basically communicate that information back to the districts or to the epis, that were CDC epidemiologists or WHO epidemiologists in those districts. I would say, okay, these are the patents that you need to

move to whatever ETU [Ebola treatment unit] is closest to you. So from nine of the districts, we were basically getting from all over Sierra Leone. The drivers of the samples were amazing. I just can't even say enough about them. Basically samples were being driven to us on motorbike or in ambulances. I would usually, or whoever wasn't busy at the time would go to—basically they would come up to the entrance of MSF and we would see them or the guards would say, hey, samples. We would take our microchem [disinfectant] and our gloves and we would go out to the street and we would get the samples. A couple of districts came in ambulances with patients, because they were transporting patients either to the Bo MSF facility or to Kailahun MSF facility. So we would go out there and we would get the samples and I would see the people in the back of the ambulances. Usually there was like five or six people. Sometimes there would be somebody already passed away. Usually I would bring water for everyone, for the driver and for the patients. The drivers would be in full PPE, driving all the way from like Tonkolili to Kailahun which is like an eight hour drive in full PPE, no air conditioning. I mean, they would just be sweating, it's just amazing. Then the guys on the motorbikes that were coming from Koinadugu or Bonthe or Pujehun—the roads are awful and they are coming every day with samples on the back of a motorbike. That's how they did it and it was just amazing to me, just fascinating.

Q: Were there any of them you met and got to know?

Sealy: Oh yeah, yeah, you talk to them. You talk to them every day. There was one driver that wanted to marry one of the women on my team, he kept calling her his wife. "Where

is my wife today? I want to see my wife." So that was funny, he was a hoot. There was also some issues like we had some accidents, motorbike accidents. This happened kind of before me.

The team before me in October—Bobbie Rae Erickson, who was somebody I've worked with ever since I moved here, she's been at our branch, we were good friends, she was the team lead before me. She realized that there was a need—basically, the UN [United Nations] helicopters were flying around Sierra Leone. They were flying people, doctors, to remote areas. So Bobbie and the logistician in Freetown at the time, Mike [Michael F.] Staley, also a fantastic guy, they kind of came up with a plan, well maybe the UN helicopters will transport samples. It was a great plan in theory and they pushed so hard for that to happen and it did, and it came to fruition on my team. They were hesitant at first. They didn't want—but once we showed them how things were packaged, it's safe, we triple package everything, everything went into these coolers, it's safe, they agreed. And so in November, I think it was like the second week I was there was when the helicopter—three days a week, as team lead I would go to the helicopter pad, and it was actually a different helicopter pad than the one on MSF compound. It was actually near the hotel so it was about a fifteen minute drive, and I would wait for the UN helicopter to come and Mike Staley would be there and they would go to a couple districts. Koinadugu was one big one because that was the far district that actually stayed Ebola-free for a very long time until about October was when they registered their first case, and they were so remote that it was hard for them to get samples to us. So having the helicopter was huge in getting results, same day, to those areas. Three days a week I would pick up samples,

bring them back to the lab and we would test them, and they usually picked up from Koinadugu, like Makeni, Bombali area and maybe Kono, usually the more remote areas. So that was fantastic. We did that for basically all of December, maybe into January, did the UN helicopter flights. Bobbie and Mike were so instrumental in that. It was really good.

Q: Can you talk a bit about the CDC colleagues you were working with?

Sealy: Oh yeah. That's one thing also that was really great about—a good thing about this outbreak is that it brought CDC together. I worked with so many people that I never would have worked with before: epidemiologists, logisticians, health communications. I met so many people and people that I still talk to till this day that I'm friends with. I think that's one thing that was really great about CDC is we pulled together as a group, as an institution and really pooled every resource imaginable. Before Ebola outbreaks, it was just our group, just VSPB, just a few of us going out there, doing what we can and coming home. Couldn't do that for this, you know? We needed the outside help, so that was great. I remember for Thanksgiving we worked. We didn't even have dinner that night and Dr. [Thomas R.] Frieden actually called us on Thanksgiving Day to wish us a happy Thanksgiving. Two of my girls were actually in the hot lab, so I held the phone out so they could hear Dr. Frieden. The ambassador actually had a big Thanksgiving dinner at his house, so a lot of the epis that were in the districts and in Bo went back to Freetown and they actually asked us if they could bring food back for us. They were so gracious. It

was really great to work with so many different people from so many different backgrounds.

Q: Is there anyone specifically who you remember getting to know?

Sealy: So many. I just have so many that—yeah, no, like too many to name.

Q: You had also mentioned, I mean you are working side by side almost with MSF right there. Anyone from MSF who you remember?

Sealy: Yeah, so the one lady that I worked with, her name was Monia. For like the first couple of months at MSF you kind of get hounded a little bit, like where's the results, where's the results? So Monia, when she got on, she was kind of the lead there and she said, when the results are ready, Tara, just let me know and I'll come and get them so you're not constantly hounded for results, which it can be distracting. We are getting them as fast as we can, we can't go any faster. She was wonderful and she lives in New York. I was actually just thinking about emailing her today. But she was in Guinea as well, so she at the beginning—I didn't meet her then but she actually met Pierre so she knew him and—yeah, so it was—and then a lot of the people that MSF employed locally. We had this one guy, his name was Solomon, Solo. He was wonderful. He was basically the locally employed MSF electrician. He dealt with their generators and all that, and he would always come and check on us, make sure we had everything. Basically when we set up the lab in Bo, October, until the beginning of June of 2015, we were running off of

MSF power, which was good but it still cut out, still had its issues. Our machines, our extraction machines and our PCR machines, we tended to run on our little Honda generators. We had these little gas powered Honda generators that we bought here in the [United] States that we brought with us. So what we used in Kenema when there was no power, because there was a couple of times in Kenema that the main hospital generator, they ran out of gas and didn't have money to pay for it so we had no power. So we ran our machines off those generators. The house power, the lights came and went but it was more reliable to have our machines run on our little generators. But whenever they had any kind of issue, he would come and he would help us. He was fantastic and I still—when I went back in October to close the lab, it was really sad to say goodbye to him because I didn't know if I'd ever see him again, and he was just fantastic. Then all the locally employed guards, the MSF guards, they were all great, so nice. You just meet a lot of great people.

Q: This is going to be a strange question and probably doesn't have an answer, but do you develop kind of like a relationship with the machines that you work with so closely?

Sealy: Oh absolutely. We named them all. Yeah, they're all named. We gave them all local names, just the names that we knew, the local names.

Q: Like what?

Sealy: Like our extractor, her name was Aminata, and then all of the PCR machines were named something. One of the PCR machines—this is kind of a sad story. Her name was Lucy and she was named after this little girl. She was probably about eight I think. This happened on the team, I think the September/October team where Lucy had to leave—her mom had to stay behind. Lucy was infected and the lab people watched her walk down the road by herself while her mom just screamed for her, into the ETU, and I do believe she died. So they named the PCR machine Lucy after her. Then we had this storage unit, so after a while there's a lot of stuff that you have to store, there's a lot of lab stuff and I was actually—when I was back here and not in Bo, I was responsible for training all the people that went out to the labs that were from other labs that had never worked in our labs, so I had to train them on all of our assays. Then I also was the one to stock the lab, so I made sure—I kept an inventory and made sure that that lab functioned and that lab was able to continuously run samples for a year and a couple months. So we needed a storage unit so in about January or February they got—the World Food Program donated like a container, a shipping container, and we actually named that Aruna, and Aruna was actually the last patient to be discharged from the MSF Bo facility. So yeah, we had little stories behind certain things for sure.

Q: I appreciate that. I want to back up, sorry for breaking the chronology just a little bit. So I know Kenema was a really intense experience. So what's it like coming back to Atlanta after that, in between—

Sealy: I think I probably had a little bit of, you know, posttraumatic stress, I think, after when I came back. I didn't want to talk to anybody about it. I didn't really want to share my experience. When we got back from that trip, we didn't have to do the fever watch or anything like that. So basically I came back and I went to the beach with my family, with my little boy and my partner. My mind was still there though. I couldn't escape Kenema. I still was checking my email and making sure that—just seeing how the second team was doing. I just couldn't break myself from them. And coming back knowing that Dr. Ian was still in critical condition in Emory. I knew that. Until he pulled through, that was a very difficult time. But then there was no break, so once I got back, US stuff hit the fan. That's when the doctors came back here, you know. It was just—and I was actually the person to test the Dallas patient, so there was no break.[2] I was still working weekends and still we were getting so many samples in, and our diagnostic group was kind of short staffed because they were actually out in Sierra Leone, so with my background in molecular diagnostics of Ebola, they pulled me into their group to help out. I was helping out with the US diagnostic cases, the nurses and all that. So there was really—I had no break between Kenema and going back out to Bo in November. I came back in December, was able to go home for Christmas and everything, and I actually did not go back out to Bo until the end of June, July, so I had a good like seven months. I was still there though because that's all I did was Bo. I trained everyone, like I said, stocked the lab, so I never actually left mentally. I never left Sierra Leone. Kenema was definitely

[2] Note from T. Sealy, April 2018: I remember thinking that this would be one of those historical moments in CDC history, in US history. The first imported case of Ebola in the US. And I was the first person to know the results. It was pretty intense. I remember being worried for his family and then extremely shocked when no one he lived with got sick, but two of the nurses who treated him did. That to me was quite interesting. I think a lot of lessons were learned during that time. I am also thankful that it was over pretty quickly and that no one else became infected.

hard to talk about. It took a good couple of months before I was able to really go through my pictures and show my family, and tell them what happened there. Yeah, it was definitely a difficult time.

Q: I've heard from several people that the people you spent your time with you feel a special bond because that was such an intense period.

Sealy: Yeah, absolutely. There was not very many of us in the country at that point in August. It was a very small group of people so we still talk to each other. It was definitely—you do get—when you spend a month, especially us lab people, you spend a month with them, you eat dinner, you're in the lab with them, you eat breakfast, everything. They become your family, you know, and you really all get to know each other very well. That was—we all leaned on each other for sure during that time, especially with Dr. Ian. That was huge, especially for us in Kenema that worked with him every day, it was tough, it was really tough. We all had dinner with him after he recovered. Actually, Ute and I had lunch with him right when his eye thing happened. We went to lunch with him, it was like December I think, and then he came back. He was still here in—I can't remember what month it was, but we all, like the epis and the health communication people that were in Kenema at the time, we all met for dinner with him. So that was good. It was good to meet up and talk.

Q: How was he?

Sealy: He was good. By that dinner, he was doing a lot better. He was starting to remember more about Kenema because there was a lot of things he forgot about just Kenema in general, people and places and things that happened. He was doing a lot better so that was good.

Q: One thing that's striking me as I listen is it sounds like so much of your time—you say you never left Kenema at some point, it was in your head. It seems like when you're in Kenema, or in a lot of places, that you never leave a certain restricted zone. You're in this very tight quarters. Can you talk about that?

Sealy: Yeah. I mean you're just in a lab and your hotel. Lab/hotel for a month. It's actually almost—when you come back here it's kind of weird because you're out there and you have a specific job. You know what you're going to do every single day. It's the same thing, you know exactly what you're going to do. When you come back here, it's kind of disorienting because it's different, like everything is different. You change your routine usually a little bit every day. At work you do a little something different every day. There, it's like you have a focus, you know what you're going to do, you do it and it gets done. So it is interesting but it's also—I also find it kind of comforting, too, at the same time. I think when you're out there, you do want to have a routine, and knowing the people that you are with and getting along with those people, that's also key. I think for the most part we sent twenty teams out there. The twenty-first team was the last, the team that closed the lab. Twenty teams, for the most part, every team member—all the teams got along. Because you do, you get to know people really well in that month. But yeah

it's difficult to kind of work in a confining environment just all the time, but it's also kind of comforting at the same time.

Q: You mentioned, let's see, was it when you—was it in Bo that you went as a team lead?

Sealy: Yeah, twice.

Q: And what responsibilities did you have as a team lead that you didn't have before?

Sealy: As team lead, basically the job was to keep the lab running. You delegate the tasks for people to do. Like if you had one person that was great in the hot lab, that's what that person did, and then one person who was good at extractions or PCR—some teams, they all mixed it up. But as team lead, we entered in all the data. So, all the case report forms that came in, we would sit there and enter in all that information into the database, an Excel spreadsheet basically, and every night once the results—I would enter in the results and then I would email that out to all the partners. So the Ministry of Health, all the epis, WHO, they would get the results every night. Because we usually did two runs a day, we had a morning run that we had results around two, and then we had results around eight. So we had two runs a day. The early results, I would usually call the doctors or whoever my contact was in each district, I would call them and say, okay, you've got so-and-so, they can be released. These people need to go to a treatment center or whatever. Those were the main duties really. Any slack to pick up. Sometimes I would do some lab stuff.

Like one girl, she had an allergic reaction and couldn't work for a day, so I helped in the lab at that point. You always have somebody that has like GI [gastrointestinal] symptoms or something that can't work. There's only three people really doing the lab work. That's who is running the lab, three people. And I would go get samples, but mainly you're the face of the lab, so interfacing with Freetown, interfacing with other lab leads from other labs and just being the subject matter expert in Ebola diagnostics.

Q: When you are talking with those leads in those other zones, are you getting information about how everything is progressing in other areas of Sierra Leone?

Sealy: Yeah, a little bit. I mean you get the emails every day that tell you what's happening where. We did have where we had some labs, the other labs would come visit our lab because we kind of ended up being—they really looked to our lab because we were the ones that had the most experience in outbreaks and so we kind of knew what we were doing, and there were other labs that kind of struggled a little bit. We had like the Chinese that came in, Chinese, South Africans and Public Health England all came and toured our lab while I was there. Every lab was doing something different. I think our methodology—actually the South Africans—I actually stayed on a little longer in December to train the South Africans in our extraction method because they wanted something more high throughput because they were getting swamped and having to do everything by hand and it was just too much. You get a sense of what each lab is doing, but you also get a sense just by emails that the epis are putting out like what's happening in each district. So you're not as confined, you're not as isolated as—again in Kenema

we kind of were isolated. We didn't know what was happening because that was before the mass emails were coming out, before the statistics or anything was happening. We didn't know really what was happening anywhere, but once they finally got more organized you feel less isolated.

Q: So your team was kind of a model for other teams, they kind of toured you guys. Was it just the methodology that you were using, or what was it that made your team—

Sealy: I think the methodology and a lot of people were shocked that there was only four of us. Like they could not believe we were testing a hundred samples a day with four people—really three people. I didn't do any lab work really, I just entered in all the data. So that was something that they could not—because a lot of these people—a lot of these labs had teams of fifteen, twenty, they were taking days off or doing shifts. We did not have shifts. We worked every day for twenty-eight days straight, no time off. But I think really what it was, was VSPB has set up labs before in the middle of nowhere, Africa. We knew what we were doing. We had been working on these high throughput methods since 2004 when I came on, 2003, so we were prepared, and all these other groups hadn't done this before. This was new to them. They'd never done a response like this, so I think we had a leg up in that.

Q: One other question about still the work in 2014, which is probably the most intense. Are you able to contact your partner and your son?

Sealy: Kenema, we didn't have internet so I would call them on my BlackBerry, the EOC BlackBerry, let them know I was okay. When we moved to Bo, we actually had wireless, Wi-Fi in the lab that was provided by MSF. It was a little slow but it worked, so I was actually able to FaceTime in the lab and see Eli and Greg, so that was nice. You do get to keep up with people. I don't know how they did it back in 1995 in Kikwit, or whatever, you don't have any contact. I couldn't imagine not being able to see his face every now and then. So, that is good, that is the nice thing about technology these days. I had my iPhone and was able to—it was crazy to think that you can do that but yeah.

Q: You come back in December of 2014 and spend a number of months doing trainings?

Sealy: Yeah. Every three weeks we would send out a new team of four. Basically I would have like a week to do my normal job, which I don't even know what that was at the time. Then I would spend two weeks training the new people in the extraction, in the PCR, in the biosafety of Ebola, how to put on PPE, because we've got people from all over the CDC, you know, bacterial and flu and people from Fort Collins. They all came through me. I had a little bit of help. Some other people in our branch helped me and trained them, and then I would pack the team up to go. Every team I would send out trunks of supplies to resupply the lab because you're blowing through reagents and consumables left and right. Every once in a while I would do a big shipment of stuff, but it was just easier to have them carry it on as luggage, extra luggage. Most teams had like fourteen trunks of stuff that they'd take with them to the airport, and Allen [W.] Hyde, who works in logistics here, he was phenomenal. Every three weeks, every Saturday he

would come here, meet me here with the new team and he would load up the van, the CDC van, and he would take them to the airport. Without Allen, we would not have been able to do that, so kudos to him. I love Allen, he was phenomenal. For over a year, every three weeks he would help me out so that was nice. It was a good chunk of time where that was all I was doing, and then I decided I wanted to go back out again.

Q: How do you make that decision?

Sealy: It was easy. I wanted to go and we needed people. It was getting towards the end and we were kind of running out of people. We were starting to recycle people. It had been a good chunk of time that I hadn't been and Greg was okay with me going back out. Every trip got harder and harder to leave Eli though because he started realizing what was happening, that I was kind of going somewhere. The June trip, the June/July trip we did the EOC tour here as a family right before, and I got that coloring book that said, "Mommy's Trip to West Africa." I think that helped him a lot. He really, really enjoyed that. Now he calls it "Mommy's Africa." It's Mommy's Africa, so anytime I go away he's like, "Are you going to Mommy's Africa?" So that's kind of cute and it does get harder because he is getting older. Now that he's three, he does realize, he's like, I don't want you to go back. It's hard as a mom because I don't want to leave him but at the same time I love my job and I love doing this and I love helping people. It's what I'm good at so I definitely feel torn in two different places. But I think that Eli will be proud of me one day and it will be something he can tell his children that this is what Mommy

did. I think it may take a while before he thinks it's cool, but I hope one day he is proud of me and I can impart these stories to him.

Q: So you decide to go back.

Sealy: I decided to go back and—

Q: When was this?

Sealy: It was end of June, all of July I was there. A completely different experience because there was no cases. There were still a few cases in Freetown but there was nothing in the areas that we were testing. By that time there were more labs that opened up, so we were only testing five or six districts at that point, mostly all swabs from corpses as surveillance—all negatives. We had started the semen study, the viral persistence study about a month before, so we were doing that as well so we were seeing positives from that. But it definitely was a different experience, kind of more relaxed. We still averaged about eighty samples a day, so that never dropped off. It dropped off probably February to May, the samples dropped off, then they picked back up again as they starting swabbing everyone for surveillance. So we were still busy. One other thing that was good is we had—eHealth [Africa] actually donated two huge generators for the lab only to use. That made a huge difference, like it was completely just night and day. Now we had solid electricity for twenty-four hours a day. Never had to worry about power fluctuations, anything. Solomon still came and checked on us all the time and

came and made sure our generators were still running. That was great, having those generators. The only thing that we had to worry about was getting fuel for the generators. There was no mechanism to fuel them, so we were getting vouchers from Freetown, having to monitor that. As team lead that's what I was doing, was basically I did a lot of logistical stuff for that. I had a roof built over the generator because it was rainy season and the team before me, some lightning hit it and knocked it out so there was that problem. July was definitely a different experience but still a good team. We were still very busy.

Q: What happens then?

Sealy: Then after that I came back here, still continued to keep training people. We only had a few more teams out there. I was Team Sixteen at that time, and then there was seventeen, eighteen, nineteen, twenty. There was only four more teams after that. And then Team Twenty-One was me and a few other people. We went out and shut down the lab. So last day of testing in Bo was October 15th of 2015. That was hard to do. I volunteered for that again to do because I wanted to be the one to close it. I opened the lab and I wanted to be the one to close the lab. Kind of full circle, get some closure. But it was sad to say goodbye to everyone. By that time there wasn't a huge MSF—there wasn't very many people there. Actually didn't really interact with any MSF people at that time really, and just cleaning. It took about a week or so, not that long to close everything down. Basically we moved all the equipment, supplies and stuff to Njala University and that's where we're starting our ecology studies. So we were able to

continue—we just kept all of our same stuff. Some of it went to Freetown because at one point we thought we might open up a lab there for a little bit but we'd never end up doing that. A lot of the stuff we used in January when I was back out there again doing the ecology work.

Q: Can you bring us up to today, actually?

Sealy: October I went out there, shut the lab down, came home and that was kind of a decompression stage. It was kind of weird because I was so used to doing stuff for Bo that I didn't really know what—I forgot actually what my real job was. I just was like, what are we doing? Where did I leave off? I had no idea. So I spent a couple of months just trying to reorient myself back to normal life really, but then also gearing up for the ecology study. I went back out again, so January was my sixth trip to Sierra Leone, seventh trip to West Africa. We went back for three weeks in January to trap bats, and so that was a whole new phase. It was kind of interesting to go out there, and we drove by the Bo lab facility and it was so—it was just very empty. To do something completely different out there, it was a nice change. It was definitely strange the first couple of days. I was like, this doesn't feel right, I should be going to the lab right now and testing. But it was good to move on to the next phase of work. So, hopefully finding the Ebola reservoir is next on the list.

Q: Is there anything that we haven't gotten to that you think should go on the record?

Sealy: I don't think so. I think we talked about most of everything.

Q: Thank you so much for your time, Tara. This has been illuminating and awesome.

Sealy: Good. I'm glad I could be a part of this. It will be nice to have history of this for generations to hear. And for my son, too. This will be great for him to hear. [laughs]

END