CDC Ebola Response Oral History Project

The Reminiscences of

Rupa Narra

David J. Sencer CDC Museum

Centers for Disease Control and Prevention

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Rupa Narra

Interviewed by Samuel Robson
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Interview 1 of 1

CDC Ebola Response Oral History Project

Q: This is Sam Robson here with Rupa Narra. Today is Monday, February 22nd, 2016, and we're here in the CDC's [United States Centers for Disease Control and Prevention] Roybal Campus, Clifton Campus audio recording booth and here as part of the CDC's Ebola Response Oral History Project. Today we're going to talk a bit about Rupa and her career development, her life and then really dig in to her time responding to Ebola—the 2014 epidemic. To start off with Rupa, could you tell me your full name and where and when you were born?

Narra: Sure. Rupa Narra, full name, and I was born on March 4th, 1978 in Oregon, Ohio—small little town called Elmore.

Q: Did you grow up there?

Narra: I did.

Q: Tell me a little bit about that.

Narra: My parents actually—they came over from India about forty-five years ago, but I was born and raised in a very small farm town, about twelve hundred people in Northwest Ohio. We were actually the only Indian family—leave alone we were the only brown family in the area. [laughter] It was definitely challenging I think for my family at the beginning, but then my dad was the local family physician for the town and so through that I think that channel—I think a lot of the trust and relationships and bonds that we had with our community came through my dad. A humbling but good experience growing up there.

Q: Can you tell me a bit about your parents, what they did?

Narra: My dad, he's a family practice doctor. He was trained in India and then he did his residency in London and then finished some in the US. He was the proper Doc Hollywood because again, being from our small farm town, he was doing everything from C-sections [Caesarian sections] to appendectomies to just regular day-to-day family practice care and would have dealt with sometimes six generations of a family just for how long he had been there. He just recently retired, but he practiced for a long time. My mom I think had the harder job. She was the stay-at-home homemaker with three kids, so I have two older brothers. They had an arranged marriage and decided to leave India and give their children a little bit more opportunity I guess in the United States is what they said.

[break]

Q: What kinds of things caught your interest when you were growing up?

Narra: My dad would actually do a lot of traditional house calls and so there was a lot of elderly patients he had that really didn't leave their house very often, so he would go to their home and visit them every couple weeks and so he took me with him on a lot of those visits. When I was really young, I remember from even like age three on doing that and really just loving to go and be around these patients and the interaction, getting to watch that as a kid. I always was really drawn to that as far as at least medicine. Otherwise, just sports and other things—getting to hang out with my friends and all of that was always a fun part, but what molded a lot of my memories was those times with my dad for sure.

Q: Were there any things or appointments that he had that you attended that really stick out in your memory?

Narra: They're really basic. There was this one woman who had fallen and fractured her hip and so she definitely really couldn't get around her house a lot and I would go and spend a lot of time with—well, we'd go and visit her every couple weeks and so she got really used to me coming. It was very specific, I remember she'd always ask "What's your favorite cookie?" She would make these chocolate chip cookies every couple weeks, every time I would go, and she also had this dog that I would see. I don't know, it was really special just seeing the connection I think that she had with my dad. He had a very

different way of humanizing and having this experience with her and making her feel important and cared for, not just as a physician, but just like as a human being. Those vividly stick out because I think I met her probably eighteen times over the matter of about a year or so.

Q: Is this something that you and your dad talked about, about how to be a good doctor?

Narra: It wasn't even about being a doctor. He always would raise I think my brothers and I, it was always like you respect everyone the same. I don't care if it's the president of the United States, I don't care if it's the janitor at the school—you treat everyone the exact same and that's how you should do it and treat everyone as you want to be treated. Very basic rules, but he really embodied them, so it was even easier to follow that because he led by example.

Q: Tell me a bit about high school.

Narra: High school started out very awkwardly. I was in that tall, skinny, awkward phase. I luckily had a lot of great girlfriends, but again, being the only brown girl, brown person in the school—my brothers are much older, so they had already graduated—was kind of funny. Confidence-wise and things I didn't have that, so I really was into school, so I studied a lot and then I finally got into sports and that actually was really what built my confidence in myself. Funny story though. People didn't really know what our race was sometimes, so at certain games like at basketball games, we'd be playing and it would be

like our rival team and the audience would start singing *Aladdin* songs. [laughs] I'm like, you're close, but maybe *Jungle Book* [laughs] would be more accurate, it was funny though. There was definitely a lot of ups and downs with those things, but like I said, as I got older, even through high school once I got to become a senior, I did a lot of volunteering projects with communities and things of that sort. I felt like it really had built my character, but a lot of humility as well. It did shape a lot of my experiences. It shaped a lot of who I am now I think.

Q: It sounds difficult being like the only person of color in a tiny, white, Midwestern town.

Narra: It was, and that was I feel like also before culture and yoga and things with—when I consider now India I feel like it's become almost trendy, but back then it was not. It was actually kind of sad. My parents really didn't want us to be made fun of as kids, so they stopped speaking their native language. They started having us eat red meat, which we didn't before, but they didn't want us to be excluded from pool parties and people would think that was weird. Like oh, you want a burger, but just a bun and cheese? That was before vegetarian was anything. My mom would cook Indian food all the time, but then kids would be like "You smell like curry"—kind of the traditional things you see on TV [television] like oh, does that really happen? And it did. So my mom would stop cooking Indian food. It was kind of sad because they really changed who they were and I think some of their background and culture and they're now more Americanized than even

myself maybe. It was hard, but I think again, I also look at the sacrifices that they made and can really appreciate that now.

Q: At the time of graduation when you were deciding where to go to college, what was on your mind? What were you thinking?

Narra: I'm super close to my family and so I didn't want to go very far away and then I knew I wanted to go to a place that had a good biology program and also a place I could play softball. I went to a really small college called Ohio Northern University and started out there and so I got to play softball and there is a really good biology program and that's how I decided. I was like oh, can I do all of these things and be close to my family? It was only about an hour drive from my family.

Q: Just tell me a little bit more about college.

Narra: Actually, for the first two years I was at Ohio Northern. To be totally honest, my grades tanked because we had double headers every week and unfortunately, I had put sports—I tried to balance, but I was not good at it. Tanking meaning like a 3.0, but definitely not medical school quality for that with that GPA [grade point average]. So after two years I actually transferred to Ohio University and stopped playing sports and then I was just a nerd bookworm. I studied all the time and I actually worked also in an exercise physiology lab. It was really cool. We studied a lot of crew, so rowers. We studied their VO_2 max tests and a lot of different things with them and I got really into

that part. I actually changed my major to physical therapy at the time and then finally brought my grades up, up, up and then just before graduating, I decided to start applying for medical schools. There was still that interest always in the back of my mind. During the anatomy classes for pre-physical therapy is when I thought you know, I think my heart's really in this type of medicine even though physical therapy is great, so last minute I changed my major back to pre-med and applied to med [medical] schools.

Q: So tell me about what happens then.

Narra: It's funny. Everyone is like oh, your parents must have been so relieved or proud or happy, and my dad was so cute. He's like, "I don't care. I don't care again if you're a garbage woman, if you're a physical therapist, if you're a doctor; just do whatever you do with passion." He said, "The minute you don't feel like you can, then that means it's not the right fit." It was great because I kind of really took that to heart and I really tried to practice—every time I made a career step or even school step or anything with that in mind. I got into medical school in Ohio still, so in Dayton, Ohio, which was luckily only about two and a half hours from my parents. I went to four years of medical school there. I had an incredible experience. I made the best friends of my life and really enjoyed the actual learning process of medicine and then getting our first experiences with patients. That was a really great four years I'd say.

Q: Where did you start to focus within the medical field?

Narra: Even in med school I really was drawn to pediatrics. I always liked being—actually I liked both. I liked geriatric patients, like these really older patients, similar to the woman that I would visit with my dad, and then I was also really drawn to pediatric patients. I think the truth was it was vulnerable people that sometimes weren't able to take care of themselves, now that I think back, but those are more because they're very opposite. I liked geriatrics and pediatrics a lot and then I decided to choose to pursue pediatrics and so I applied for residencies in peds [pediatrics].

Q: So what happens now?

Narra: So then it was great. I was really fortunate, I got my first choice, which was Denver's Children's Hospital [Colorado]. So now first time really like living and moving outside of Ohio, but I had some really close friends in Denver. It was actually one of the top five pediatric hospitals at the time. So I moved there and after having this wonderful high of four years of medical school, working hard, I went into residency and it was also a great experience because it was proper, really hands-on doing pediatric care, meeting a lot of great people, but it was over a hundred hours a week a lot of times. It was super stressful. It was really dealing with children dying a lot and so it was great obviously at some points, and other points it was really hard, and I remember there was a lot of months I thought, am I going to make it through this? Am I going to get through this residency? I'd call my dad very often and he always would just be able to know exactly what to say and could bond with me—especially if it was that a patient had died or

something had happened. Did I make a mistake? Did I do this? He could always help me talk though things. It was a good experience though.

Q: So what happens after residency?

Narra: So then interestingly, I wasn't sure what I wanted to do after residency. During my residency I did a six-week rotation in Kenya. My friend and I went and we worked there at this really remote hospital—beautiful place. It was right near the foothills of Mount Kenya and so very specific, smaller kind of tribal population and then also local population. They had a couple medical residents and a few physicians, but a lot of them were not even in town. So we came in thinking we're going to be learning and this and that was not the case. We were there to teach pediatrics to the local doctors and then to treat and be kind of the head pediatric people there. I'll never forget, that experience was actually one of the biggest ones that shaped what I ended up becoming and what I wanted to do, but I'll never forget there was an eighteen-month-old girl. I luckily was there with one of my best friends from residency, so we could bounce things off of each other. We didn't know what happened. We didn't know what she had. We tried to do every test we could that they had available to us in the small lab and she passed away. One of the senior doctors from Nairobi, so a few hours away, was like "You should do an autopsy." We were like, "We're supposed to do an autopsy?" He said "Yes, there's a saw, there's a bone cut—" So we did our own autopsy on this girl and we obviously never figured out still what she had, but it was just the process of trying to do this and trying to teach in this setting. The morgue itself, there was no electricity barely and there was no air

conditioning and so to try to do that in a place—it was very eye-opening about the kind of disparities I guess that you'd see with medicine. Especially in this setting, even compared to Nairobi where even though it's Kenya, it still had a lot of other abilities. That was during residency. That was really eye-opening.

Then right after I actually was considering doing a cardiology fellowship, but I wasn't positive, so I worked in the pediatric emergency room for about a year and I applied for a pediatric cardiology fellowship in Denver and I got in. I started that and about eight months in I was completely miserable. I had never felt that way in my life. I didn't feel passionate about what I was doing. It just wasn't the right fit. So I talked to my supervisors there, they were wonderful. They gave me a one-month leave of absence. So by chance, during this one month it was the earthquake in Haiti that occurred. I thought, well, I'm technically on leave, so I actually went with a really small NGO [nongovernmental organization] from Colorado. There was about twenty of us and I was the only physician and we went and helped respond and we treated patients for about ten days with supplies that we took and clinics that we kind of set up on our own. That was my first I guess real international experience where I was doing a lot of leading with it and that is when I decided to drop out of cardiology and pursue international medicine.

Q: When you talk about the leading that you did, what does that entail?

Narra: It was a lot of decisions about first of all, where are we going to set up clinics? What kind of patients are we going to take in? If we get sick patients, how are we going

to transport them to which places, and then even which patients we will even be able to help and not. Are there some we just need to try to figure out triage and get them to a hospital as fast as possible? Safety concerns, there was actually a lot of insecurities you can imagine in Port-au-Prince and so trying to really balance the people that were in the biggest needs, but also where we would be safe enough in that area. Hiring translators and logistics. We didn't have a lot of the people to help with that, which I didn't realize how complicated it would be while you're also trying to treat patients yourself, but do logistics and then translators and safety. It was complex.

Q: And that was with who, did you go?

Narra: It was a really small NGO in Colorado called International Medical Corps and I think that was that. They were a great group, but then again, very small, small-based, but it was after that experience—I thought it was a great experience, but I really would like to be with an organization that has a lot of history with going into some of these places. A lot more organization with different aspects like logistics and administration and safety and security and everything. That's actually when I also saw Doctors Without Borders working in Haiti and they were like on point, so organized. They had everything together. They already had great relationships with the Haiti Ministry of [Public] Health [and Population], so they were able to just set up and do things so quickly and efficiently. That was when I thought, you know, this is the kind of group I'd actually really like to work with and I'd feel really safe working with. So I applied to work with them and then joined

them actually about four months later—so not far. I dropped out of cardiology and went back.

Q: So like 2010, sometime in there you went to MSF [Médecins Sans Frontières/Doctors Without Borders]?

Narra: Exactly. Yep.

Q: So what happens with MSF?

Narra: My first mission, it was in August of 2010 and it was South Sudan. I didn't know anything about Sudan at the time and actually at that point it wasn't "South" yet because they had not seceded. The only place I'd been to Africa was Kenya, so that was the only kind of experience, but this was a very different level I would say of poverty, of chaos and just vulnerability in the population. It took four days to get to the actual mission site where we were located, so it was a place called Aweil in northern Bahr el Ghazal. It was a huge hospital. There was about three hundred national staff that MSF had working there and the pediatric ward had about a hundred beds and a lot of times there would be two kids on a bed at times. There was a surgical program, a maternity program and then the Ministry of Health took care of adult patients in this compound. So I walked in my first day and I had over a hundred patients and it took me eight hours to round on all of them. Five kids died on the very first day and we tried to resuscitate so many and it was really eye-opening that a lot of the staff I was working with were very passionate and were very

kind, but they didn't have a lot of skills. The other thing was there was no other physicians except the expats. They had "medical assistants" they called them, who were really almost like a higher-trained nurse, but they actually didn't have physicians. The level of knowledge was a bit lower, [with some] experience with how to properly resuscitate and things.

Q: What kinds of conditions were you seeing?

Narra: Mainly malaria, it was malaria season, was definitely the most common, but then also diarrhea. Super dehydrated kids coming in with diarrheal diseases, but also neonatal tetanus was really, really common in that area. The tribe that was living there is a tribe called Dinka and they're very traditional with their beliefs and so basically, when these babies would be born at home—the other thing is Dinkas, they look at cows almost as God-like because they associate them with currency. So people will trade cows more versus money. When these babies would be born, first they would just take whatever sharp grass they could find to cut the umbilical cord and then a lot of times they would either take ashes of cow dung or direct cow dung and rub it in the baby's umbilicus to try to stop bleeding and also to transport that power into the infant. Through that, obviously these spores of tetanus would be there and they could get into the neonates. Obviously, these moms weren't vaccinated against tetanus. So it was horrifying—that was the first and only time I've ever seen neonatal tetanus. The staff now that to me, sometimes didn't know how to diagnose asthma or bronchiolitis or basic things, these kids came in and I

thought, oh these children are having seizures and they told me no, no, no doctor, that's tetanus, and they'd been seeing it for years and years and knew exactly what it was.

Q: What happens next?

Narra: I spent about seven months there. I met some again, some of the best people I've ever worked with and it was a really multicultural team. There was two Americans and then people from all over the world, which was maybe my favorite part. Our logisticians and our administrators and our WASH [Water, Sanitation, and Hygiene] experts were from Kenya and Nepal and Tanzania and Tokyo and Australia. Being part of this really multicultural team and just the diversity of everyone's experiences, both in life and also their skill sets, were incredible. Maybe the WASH engineer didn't quote-unquote "get his master's [degree] in water and sanitation and hygiene," but he's like, "I grew up in Kenya dealing with cholera outbreaks and so we just had to figure out how to do this and how to do that." It was just really amazing to get to work with such a diverse group of people. As much as the medicine part was really fulfilling, so was—working on an international team was too.

Q: And you continued with MSF from there.

Narra: I did. I stayed with them for the next four years and then I went back to South Sudan another time to a refugee camp. I went to India one time and then I went to Central African Republic two times during the war.

Q: Memories from then that really stick out?

Narra: From Central African Republic, very, very clearly actually there's a couple things. When I was in South Sudan I had met this wonderful French photojournalist, who her passion was to capture the most vulnerable populations with her camera and try to tell their stories. I met her and she would go walking across the border to this super, super quaint neighboring village that was getting bombed all the time, just to try to capture these stories. Now fast forward a couple years, I'm in Central African Republic. It happened to be a day that there was mass casualty and I was one of the few doctors that just happened to be in the field with MSF, so I was in Bangui because I was getting ready to fly out. The airport was shut down because of insecurity and seventy wounded soldiers came in. I was the only physician that was on the triage aspect. Then there was a couple surgeons and anesthesiologists that were also there. It was basically one nurse and I who had to take different colored cards—so these cards meant a different thing for triage. For example, red means the most emergent thing, we need to get them to the operating room now because they're going to die. Yellow meant okay, they need to go in the next twenty-four hours. Green meant they're very mild and then black meant unfortunately, there's probably not much we can do for this person. We had to go around to all these different soldiers and do our quickest assessments and put a card on them and also still try to talk to the family. Now mind you, these people had just shot each other in the streets, so we were taking both sides because there was no organization there at the time. Everyone had pulled out. All of the local hospital workers were gone. It was very scary as well having

the idea of people could shoot each other if they wanted, but we'd have to gently say please leave your guns at the door. It was very stressful, as you can imagine. I remembered going through this it was a very surreal experience thinking I can't believe that I'm really helping triage this and this is happening. I felt someone tap my back and I turned around and it was Camille [Lepage]. It was this photojournalist that I'd worked with in South Sudan so many years before. She was great. She was just like you, "Don't worry, I'm here. I know that I can't do anything, but just so you know there's a friendly face and I'm here to support you and I'm proud of you." It was great. It was almost like that's all I needed to kind of finish that experience that day. Sadly actually, I came back to Central African Republic about three months after and Camille had never left. She stayed there, but four days after I arrived she actually was killed. I think about her a lot because she was probably one of the most inspiring people for trying to work and capture and help the most vulnerable of people. So those are probably some of the most meaningful and memorable times.

Q: I'm reflecting on when you were talking about Haiti and how that was difficult from security concerns and then Central African Republic takes it to a whole new level.

Narra: Yeah. You know the difference though with MSF, which I felt very different. In Haiti there were times that I definitely felt nervous about security. With MSF, ironically, I felt like because of stray gunfire or shrapnel or something from grenades, that could be scary, but I really truly thought the people there, they tried to keep us safe because they knew we were some of the only doctors that were going to help them. I really did for that

reason, just wearing my MSF white t-shirt, feel pretty safe, which people still to this day don't believe and they think sounds crazy, especially now sadly with some of these groups being targeted in Syria and in Yemen. But at that time in those parts of Africa, I really felt very safe wearing that shirt. I think people really understood, like this is one of the only people that's going to help us, they're unbiased—they're treating both sides and they really don't have an agenda except to help us.

Q: Was there a time ever when a local person pulled you aside and made sure that you were safe in a way that you remember?

Narra: There was a time, interestingly, it was the first mission in South Sudan—there was two people. I don't know which rebel group or something they were trying to run away from the police from. So of course, they come and jump and run into the pediatric unit. They're trying to hide in there and then the police came running in and I remember my staff almost shielding me away just because they're like, we don't know what's happening. I said "No, there's children in here and no one can shoot or anything. Please inform the police." But my staff was very, very specific and they were great. They definitely took good care of me there. It was good though.

Q: I know that during med school you could talk to your dad about things. In MSF when you were traveling the world, was he also of some support?

Narra: He was, thank gosh. Luckily there, we had such incredible, like I said, a lot of people on the team were so great and with their background and experiences. I used to call my dad almost every other day and tell him and he loved it because he had a lot of those experiences growing up in India doing medicine—maybe not the security part, but just some of the crazy diagnoses and a lot of the things I saw, he saw, and some of the lack of some of the medicines or maybe the electricity or not able to do the surgery, he had experienced himself and the frustrations of that. That was nice to speak with him, but then like I said, I tried to get closer to maybe my own teammates to do that, so that was helpful.

Q: At this point would you say that you've had through your MSF experience any mentors?

Narra: Actually I have. There's been a lot of what we call our medical coordinators—our people that are in the field that are usually based from the capital and then we're in a field position. I've had a couple medical coordinators that just they've been doing MSF for years and years and it's not about a wisdom, but they just have this calmness to them in the middle of war, when expats are kidnapped or anything. It can be the most stressful thing and these people are just like cool as a cucumber, can't budge them. One guy in particular, it's actually a funny story. In South Sudan, in the refugee camp I was working in, it almost became—we called it the journalism circus because these people—different journalists were coming there weekly to try to show the story. It was great that it was getting some international attention, but it was almost disruptive at times to our running

the hospital and things. Every week there were visitors and I remember our project coordinator, she was one of the people that was I would say one of my mentors. Her name was Audrey. She said, "Okay Rupa, there's going to be some different journalists" and this and that. "There's also some MSF headquarters people that are going to be coming these next couple of weeks, so just pay attention." So now I remembered I'm doing rounds one day, this guy shows up with Capri pants, an eyebrow ring, a bandana and I'm like who is this guy in flip flops in the pediatric ward. I'm like who is this random man? At the time, we had a patient, his name was Gabriel and he had for sure to me—I knew he had kala-azar [visceral leishmaniasis], which is a very specific, it's a chronic long-term disease people will get from being bitten by the sandfly. Basically it can make their liver like eight times the size that it would be and it kind of eats them from the inside out. These kids can get really malnourished.

So this poor guy had been admitted for three months with us. His fevers were up to 104 every day and I just felt awful. So this guy's walking around, this journalist. I was like okay, guy. Anyway he's asking me about MSF and what I think about the coordination and they are always great, but there's other times I'd get very frustrated because I'd ask for a certain medication or a test that I knew we could get and they didn't send it. So I kind of went off about this patient and how I know the treatment we could get him if we just tested him and treated him he would be fine. Then I came to find out that that guy was our head of operations [laughs] for MSF and I had just cussed out about everything with our operations level and I'm like well, this is how I'm fired, but that's okay. At least I'm an advocate for this kid. So this guy's name was Greg, we became great friends, this

operational guy. He left two days later. Three days after that there was a rapid testing kit for kala-azar for Gabriel, which was positive and then one day following was this very specialized medication that we actually would give in the United States for this kid. Within one dose of the medication, for the first time in three months he had no fever and he went home ten days later and he's fully recovered. Greg would definitely have been someone that I—we became good friends and hearing about his experiences with MSF. He's an ER [emergency room] doc [doctor], which I would have not known like how he looked, but some really incredible people.

Q: I know that you become interested in public health somewhere in here. What happens to focus you?

Narra: So, you know I think the four years with MSF were so great, but then I also realized I kept going to these areas and seeing the same diseases. Seeing malaria affecting the same children every year. Malnutrition, these same kids would be re-admitted for malnutrition. The same neonatal tetanus babies coming because their moms were never vaccinated. It was really hard because I thought I love treating these patients and doing my best, but it's this never-ending vicious cycle. I would really love to be in more of the prevention side, and I think I really did believe that public health could make—it's maybe slower changes in a different way to help patients, but I thought globally it could really impact the population a bit more. So that's when I decided to apply to EIS [Epidemic Intelligence Service] to see. I tried to apply literally three years in a row and all three years they offered an interview, but I was always deployed because the interview

season also correlated with malaria peak season, so I could never interview. Finally, the last time I applied, which was this time that I got in, I actually flew home from CAR [Central African Republic]. My brother was like, "This better be worth $3,000 that you're flying home for. I hope you get in." I flew home, interviewed and then luckily, I was accepted. I got home from CAR at the end of June. I actually had malaria. I was admitted at Piedmont Hospital for seven days in July and then I started EIS in July, like as soon as I got out of the hospital it was already our summer course, so I just started mid-July with them.

Q: Mid-July, 2014?

Narra: Yep.

Q: So tell me about the first few weeks.

Narra: It was basically the summer course and I was recovering still and then people were talking about Ebola already at that point. We kind of heard a buzz about "we need French speakers" this and that. Even though my French wasn't great, having worked in Central African Republic for about nine months, at least it was functionally relevant and I guess I think also for interpretation and working under pressure with the language, I felt like I was able to do it.

[break]

Narra: Rich [Richard E.] Besser came, luckily, along with some other people, and we split up into small groups and of course my group was with Rich. It's so funny. Now I laugh, he's got this hair like he looks like he belongs on TV. He's this really tall, handsome guy, but he's great and obviously he was a public health official. He's a doctor, I think he's a pediatrician by training and he's really, really good in the front of media. He came and what we had to do is we read this article on opioid use or something and act like this is an Epi-Aid and you're getting questions. So we read it and we'd go up there and he was interviewing us. He grilled us. I mean all of us, like practice, this and that. It was really interesting. I thought oh my gosh, whatever. That was before we realized Ebola would have a lot of media attention at the time truthfully. I didn't even know I was deploying yet, but that was a really good experience and he was really helpful. So, looking back actually, CDC did try to help prepare.

[break]

Narra: Like I said, there was a couple of things—the media training was one of them in these first few weeks along with this epidemiology training. Then following shortly after there was a call for French speakers, and then within a matter of I felt like hours, it was probably within a couple days after taking this overseas threat security class—during that class actually, I got an e-mail though asking to go to Guinea for my first Ebola deployment. That was August 5th, 2014, so still very early. At that point, we had not had

a lot of CDC staff really in the field. We were still some of the first teams that were going out there.

Q: I think might have been August 5th when the EOC [Emergency Operations Center] was formally activated level one or something like that.

Narra: That sounds right, yes. That does sound right. So it was right around this time. There was another classmate of mine as well that was a French speaker, so we were deployed together luckily, which was nice to go. I think within about a forty-eight-hour turnaround. We went under GOARN [Global Outbreak Alert and Response Network], so it was through a WHO [World Health Organization] mechanism that we could go to work—that was how we were going to get in the field very quickly. We were on a plane and before I knew it I was in Conakry. I'd never worked in Guinea before.

Q: Had you been in West Africa before?

Narra: I had not, no—actually never, only in East Africa and Central at that point.

Q: What was it like arriving?

Narra: It was interesting. This was so early that there wasn't as much Ebola hype and posters or anything when you arrive, so when you get there to me it seemed like I'm in Africa and I'm in—Conakry and Guinea, the poverty level is a bit high, especially in that

area. I felt like I was in an African country coming to work, do a typical thing, but at first I did not get the sense of Ebola when I first arrived. I didn't feel like oh, there's panic and there's anything, but our first couple days we got oriented by the WHO staff that was there. Negar [Aliabadi] was my classmate that I was with—we went and we said okay, well we'd like to go see the Ebola treatment center to kind of get an idea and maybe look at their case reporting forms and things. There was an MSF center there, so we went to that and that's when it finally became real. There was a few patients obviously walking around and then we're looking at all of these files and all these ones that had death—people that had been deceased. Before when we were actually just looking at records on the computer that was one thing, but then to actually get to the Ebola treatment center and really see and then the staff and the suits—it all finally became real I think at that point.

Q: And the ETC [Ebola treatment center] was in Conakry?

Narra: That was in Conakry, yeah. The first week I was Guinea I was in Conakry getting oriented, meeting some of the stakeholders and other collaborators and then we were also trying to hash out a plan because there was a team of four of us at the time and our team lead—he was trying to really figure out how can we all be the best use to the country and so then we decided to split up. Two of us ended up going to Guéckédou, which was the epicenter of the outbreak, and then two of our classmates actually stayed in Conakry to continue with data management and some things.

Q: Who did you go to Guéckédou with?

Narra: So Jenny [Jennifer] Harris was the second-year, luckily, EIS officer, who was amazing and fluent in French and had previously been in Guinea actually, so she had worked on Ebola I think the month before. Luckily. She was great to go with.

Q: Why did you go there instead of staying in Conakry?

Narra: I wanted to kind of go to more of the bush setting. Of course, I felt really comfortable with that and I think luckily, our team lead, he was great. His name was Mike [Michael H.] Kinzer and Mike did Peace Corps in I think Niger and had a lot of experiences from working in the field and he said okay, you have experience from working in those settings and maybe in hard atmospheres and a harsh setting, so yeah, it sounds like a good fit for you, so why don't you go with Jenny. You guys can go and try to set up this database.

Q: What's the journey like?

Narra: So Jenny actually, she went I think a few days before me and she flew there. When I went, it was starting to rain and it was horrible, so I got to take an MSF pickup on an eighteen-hour car ride to get there. We split it up in two days, but definitely a long ride, but it was beautiful. I mean one of the most beautiful countries—super hilly, lush, and these thoughts of like there's chimpanzees and there's different primates in these big rolling hills. I always was thinking oh maybe I'll get to see one while driving. It's a

beautiful countryside to drive, even though it was very long and the roads are horrible. But still a cool experience.

Q: So what happens when you get there?

Narra: When I arrive, to be completely honest it was chaos. MSF also had an ETC that was there. That was one of the very first ones that they had built and they had a project for I believe malaria already in that area. Luckily, they had a small team in the field. They were bringing in more teams, but at this point, this is when the numbers were really, really significantly starting to rise. I think the occupancy tripled in the first week that I was there and as you can imagine, they did not have enough beds or staff or places to put these patients. Poor MSF is running around trying to help get everything organized and get places for the patients. Now, WHO, this is not like a lot of other places, but our coordination public health group and cluster are also based at that Ebola treatment center, kind of in the same property. All of our stakeholder meetings and everything we had were on this same compound. Campus, I should say. You could see outside of the window the Ebola treatment center behind us. Again, for everything from the patient care to also the coordination, it was chaotic. I think people were really trying to—they were struggling with trying to balance, how do we have logistics to do contact tracing on everyone? What are the kinds of messages we need for social mobilization? Because there was some violence that had recently occurred against some of the healthcare workers that were both trying to help with Ebola and also do social mobilization. Some of the villagers chased them out of their village, so there was a lot of chaos and concern about that and security.

Again, like I said, not just the logistics of we don't have enough vehicles, but to get to these really remote areas up crazy hills and there's rain and there's no traction. I think a matter of all of that and then saying also the numbers of cases are not accurate because we don't have all the data entered into the database really showing all the accurate numbers. So now all of these things, trying to get a sense and to figure out how can we get this coordinated. It was chaotic.

Q: So how do you fit in?

Narra: At first, I watchfully waited and tried to be helpful in small places that I could and just to add. Also, people are speaking French very quickly in meetings and so, just trying to take everything in, in the beginning. I knew at least data management was something that we had done a little bit in Conakry and Jenny was incredible with. Her and I did a lot of data management at the beginning to try to work with WHO to help organize some of the lists to fill in some of the lab results of patients that hadn't been put in and then to try to get this packaged up and sent to Conakry, so that their main data manager could try to really get more accurate numbers from the field.

Q: What program are you using?

Narra: At that time we were using—it was a combination, we were using Epi Info VHF [viral hemorrhagic fever], but the WHO staff that was there was really comfortable with Excel. So we were kind of using a little bit of both and then basically packaging it up into

an Epi Info VHF and sending that off to Conakry for it to be compiled with all the other reports and such.

Q: How did that work with meshing two systems?

Narra: The good and difficult thing was in Guéckédou, we were basically reporting all the cases for all the regional areas, so basically Nzérékoré, Macenta, all these local areas near us. We were the main reporting body and so we would export basically an Epi Info file to our data manager that was in Conakry. He would be able to receive the file and they did do some work to figure out how to get—we actually had an Epi Info specialist fly in and they figured out a way to be able to merge the systems. He would be able to receive all of our data, put it in his own system and update from that. That's how it started, so that was about another week maybe I helped with the data management and things.

I was interested in seeing what contact tracing really was like and what the process was and what some of the challenges were, so I went out and did contact tracing a couple days. More just to learn about it and to see and then that way I also knew if I was sent to other places, I really wanted to see the way the system worked. These guys were great. It was one MSF person with one WHO person and/or a Ministry of Health [and Public Hygiene] person and they were really experienced and so they did a ton of that. I went out with them and we went around and that was really fascinating also because you're meeting now family members of either patients that are admitted, patients that may have

died, and things of that sort in their home village and at their house. That was interesting and that was a compelling part of the experience too.

Q: I'm just a bit confused because you went with GOARN right under WHO. So when you say a WHO person, do you include yourself?

Narra: Technically as CDC we were under contract, they called it. I think to be honest it was more of a hiring mechanism to get us there. We received one dollar on this "contract" quote-unquote, but we were there as CDC, so CDC did have a presence, but we were there with the understanding that WHO was pretty much really managing a lot of the surveillance and some of the other aspects. I think as time changed, we tried to really take on that role and work with them to do it, but it was definitely a collaborative role with them to do a lot of this.

Q: Who were the WHO people who were there?

Narra: It was a combination of people. There were people from WHO Geneva that would come in at times. There was people from WHO AFRO [African Regional Office], just because of their regional office. I believe that this part of West Africa came under that. So there was epidemiologists, they actually had some logisticians that were there to help also with getting supplies in and out and also for the contact tracing aspects and some of the cost management. They had a data manager that was there, who actually he had been working with Stop [Transmission of] Polio [Program], a polio aspect and polio

surveillance in the area. The nice thing was he knew a lot of the small, remote areas and the spellings and this and that and also the way some of the cases would be reported in the systems, so he was really useful and really great to work with actually through WHO. He was also hilarious. [laughs]

Q: Do you remember his name?

Narra: Yes. Diallo was his name. He would wear this funny hat, floppy hat every day and he had the funniest laugh, it was like a cartoon character. During really stressful moments—and he would get stressed and sometimes yell at people and other things, but then he would just sometimes bust out a joke and it would be like, thank God. We needed that. [laughs]

Q: When you had these stressful moments, what were you stressing about?

Narra: I think for me, I had a lot of personal anguish I will say because here I am watching MSF struggle because of every challenge possible, mainly not a lot of HR [human resources] and not enough beds and logistics and other things. And they're really doing their best not sleeping, working around the clock receiving patient after patient after patient, knowing that I've worked with them and that literally, the actual project coordinator there I had worked with in Bangui a couple months before. They would even ask, they said hey, can you come over and help us? And then of course I couldn't. I had to stay on the CDC side in the public health aspect. That was hard and sad to see. The

other thing was, truthfully, some of the other stakeholders and partners were really criticizing MSF for the way—they were saying, you're not doing enough and you're not doing it fast enough and you're not doing it safely enough. All of these things, which are very easy to say and do when you're not in that position. Again, to get logistics of enough personal protective equipment and everything into this area, like I said, it was an eighteen-hour car ride if the flights weren't really functioning. So for them to have all of the supplies they needed in addition to the HR and then all the lab things, it was just hard because I felt like a lot of people pointed a lot of fingers. It was just because it was stressful and there was a lot of needs and I don't think we had all the ways to fill those in a quick way. People's management of that stress came out in different aspects we'll say.

Q: Any memories that you have of the contact tracing that you did?

Narra: I do remember there was a couple different village elders that we met because we'd always, when we'd go in, meet with the village elder and sit with them and usually they wanted us to have tea of course. We talked to them and it was really moving to hear they were very open and they sometimes would escort us around if they were worried about the population being not even violent, but just even not really cooperative with us. You could tell these poor men, it was against what they wanted I think. Some of them are very, very traditional and they even said, we don't believe in sending people to the hospital. We don't believe in this. But then, over time I remembered I went once and that's what the first village elder had said. "I don't believe in sending people to the hospital. I want them to stay in our village and we'll have people cure them here." And

when I went a couple weeks later, he was asking, “Can we leave an ambulance here?” And “Can you leave a doctor here that can help us?” Even in a matter of weeks and I think he saw so many people in his own village die and with such deep engrained beliefs for him to change that quickly, it was eye-opening.

Another family that I remembered very well was a mother and her two kids. We came into the village and they were kind of roaming around. The husband and father had just died in the ETC. The saddest part was—they were just in the middle of the village. I don’t know how we figured out that’s who they were. The contact tracer said, “Tomorrow, where can we find you?” The woman had no idea. The reason is because, so their house had been disinfected and everything, but then nobody wanted to go back into that house. The family members would not let them come in just because of the stigma that maybe they were sick or going to get sick. The baby was maybe a nine-month-old baby and the little boy was like six years old. This poor woman is just walking around with nowhere to take her kids. That also to me was one of the most sad, stressful—there’s no answer. There’s no right answer. There’s just no answer. We can’t put her anywhere and you can’t convince the people in that village to take her and put her somewhere. That was hard. That was a hard day.

Q: And so you probably don’t know what happened with her?

Narra: I don’t, no.

Q; So what happens after the contact tracing?

Narra: So usually, so we go around and we try to find all the contacts and then we come back in the vehicle. It's usually a couple hours to get out and then a couple hours to come back in. We always try to get back before dark. There's a coordination meeting around four thirty or five. Basically, all these different teams that had went out and followed their contacts will come back and they'll report. So they'll say, out of twenty-five contacts, we found twenty-one and they are all healthy. Or, out of twenty-five contacts, we found twenty-five. Two of them had symptoms, so we called an alert and the ambulance is on their way to go pick these people up or something. So then they'd say all those things and then they'd also report problems. So, we started with contact tracing this and that, but then we were chased out of the village by angry villagers and people threw things at us or something, or people would hide. Some people would "escape" they'd call it and leave the village completely and try to go over the borders a lot of times, so into Sierra Leone and Liberia—actually the border was very close to where we were. There was a lot of stories that some people just kind of ran off because they were afraid. They thought, they're tracing us because they want to do something bad to us. Basically, everyone would just share their information and we'd write all the different locations and then discuss problems and how we can improve it and what the plans were for the next day.

Q: Do you remember solving any particular problem, helping to solve?

Narra: Trying to think. [laughs] Usually it was more logistics I tried to help with actually and just trying to say, okay, it makes more sense if we maybe drop these people off here and we go do this, we do that and then we can still meet and have this type of thing. It was more of a logistics aspect that I did. The nice thing is there was an anthropologist that was there, so for all the cultural things and everything, I would have loved to have helped, but that was not my expertise and especially when there was violence associated. There were some different ones. WHO had an anthropologist come in, MSF previously had one, and then even there was a local anthropologist, so they sometimes would be around to try to listen also to some of the refusals and/or just people that were not cooperative or violent or anything and really try to come up with solutions that way.

Q: Do you remember who the anthropologist was?

Narra: That time I do not. I don't remember his name. This was a WHO one and I worked with so many more after the fact in Mali as well, so I cannot remember him, but he was a great, great guy. He did good work.

Q: You know you had all of these teams going out to do contact tracing and then meeting and talking. Were these mostly like teams of local Guineans or were they with partner organizations?

Narra: It was a combination. Some of the local Guineans from that area were definitely partnering up with—and then some of the MSF people—it was mainly all national staff

and then a couple WHO AFRO guys were from different parts, so maybe a Congolese is a staff member or someone else. But a lot of I'd say regional and/or national-level staff that would go out. There was one woman, she was incredible. Her name was Madam Sia. Sia is her first name, but everything was Madam. She was a coordinator with the HIV [human immunodeficiency virus] program in that area before and very passionate about it. They did some contact tracing or just following up for people to get their antiretroviral therapy and she really spearheaded a campaign to even have a little safe house built for these people that would come in from out of town to stay in this place to get their antiretrovirals and all these things. She was just a big advocate for that community and she already lived there, so she had a lot of trust from a lot of the local villagers and leaders. She was incredible. I went out actually with her a couple times with the contact tracing and even if people would be a bit resistant, she would just be able to speak with them and she could change their minds and/or really just be like, I'm one of you. I live here. I've been doing this for this long. I've seen you guys through HIV and through malaria and all these other things. She was just a really powerful person. Even though she wasn't technically an anthropologist, she was just a really passionate, caring person. She was one of the local staff that was there that they kind of recruited from the HIV program. That was a lot of things. I think they tried to really pull—since the poor healthcare system there was already pretty fragile and small and understaffed, they tried to pull from already that health system to bring everyone in for Ebola.

Q: It sounds like at least in this case it facilitated people continuing to use treatment instead of going off of it.

Narra: Right, yeah. That's what they tried. The other thing is we took over almost part of these clinics with our coordination and everything, but the sad part was I would like to say that's the case, but a lot of people truthfully stopped also coming to the hospitals for any reason. I think it will be interesting to look back and to see what the vaccine-preventable diseases look like during these times because I think moms didn't want to bring their kids to be vaccinated. Even kids with normal health problems they would have brought in and adults. They really tried to avoid a lot of the hospitals and/or health centers that were associated with Ebola treatment centers because of the stigma. It will be hard, but it will be interesting to probably look back and see if there's a spike in measles around this time because these kids weren't vaccinated or something.

Q: So how long do you stay in Guéckédou?

Narra: I was there for three weeks.

Q: Three weeks. Finishing up with it, was the contact tracing the last thing you did there?

Narra: Nope. So that I did for a couple intermittent times I did that, and then I also worked with a CDC staff member from CDC named KP [Kpandja Djawe]. KP is Togolese actually and he's incredible and worked really well. Once Jenny Harris left, KP and I were the two left and then he ended up going into the field, Nzérékoré and Macenta and other things, to really help with building up and scaling up the surveillance systems

in those places. When he had left, the data management, the contact tracing, things were kind of at least on autopilot. Maybe not the most organized, but they were getting there.

Then I think one of the other areas that I saw that I both heard and then I saw with my own eyes was more infection prevention and control and also teaching healthcare workers that were not at Ebola treatment centers about Ebola. Do they know how to screen for that? Do they know how to triage? Do they even know what the case definition was? So I paired up with a local MSF staff nurse and that was a big passion of hers. What we did was we ended up holding a training actually at the Ebola treatment center. We brought in a lot of different local healthcare workers and had this training session with them and discussed a couple things and then what we also did was we went to some of the hospitals and health centers to give trainings to the people there and also ask, what do you think Ebola is in this? And when we were at some of these hospitals and we'd see Ebola patients in regular wards, but they just didn't recognize it as Ebola. They just thought it was malaria. It really was eye-opening to know that okay, we really need to educate the non-Ebola-treatment-center staff and the hospitals what is Ebola because this is going to spread so much quicker. We were starting to see that as well.

Q: How would you evaluate the progress that you made in that area?

Narra: I think it was a good starting point. Luckily, that was only my last week, so I got to put some time into it, but I think it really was at least eye-opening and it brought attention to the subject, and I feel like MSF really wanted to take it on and at least there

was some other interest in towards it. The most important thing, which was for me the attention getting drawn, it at least sparked interest and follow-up into making sure these hospitals were going to have better education about triage, and then really what a case definition is and then if you find a case, it was a long, arduous process, a cascading event, like oh well then what do you do? They were like, we don't know, we don't have an isolation unit, we don't have PPE. Oh no, now we need all of that. So then obviously, it uncovered a lot of challenges, but it also was like okay, well now we need to really come up with a better algorithm for all these hospitals once they do find a case.

Q: I know that you spent some time literally on the border. Is that within this time in Guéckédou?

Narra: Yep, so it was—so basically what we did, we had heard about this little health post and this little river that people were crossing to go back and forth to Sierra Leone, so we wanted to see it and also to check that health center and to see if they needed supplies and things. So we went down there. Again, a couple hour drive to get there and then we met the healthcare staff who were great and they showed us—they had their numbers of their ideas of possible Ebola cases written on this big piece of construction paper hanging up in the director's office and you saw the numbers. It was like two, eight, seventeen, thirty-four. It was just crazy to see those numbers and then since it was so far away, they would have to almost put them in like a holding area and wait for an ambulance to come and take all of them at once. Maybe some of them had it, maybe some of them didn't, but they're all going to be in the same ambulance. That was another thing we saw a lot of.

Again, you do the best with what you have, so we try to just give some education about infection prevention and control. And then there was this little tarp-made tent that was just at one of the border checkpoints where that river was located. There was some local staff that was working there, so we gave them some information more about Ebola. Even though they were working in this checkpoint they still didn't have a lot of the teaching of it. It was more they just staffed people, but I don't think they had enough people to educate. We went through some of the training with them. They were appreciative, it was great—that was a good experience.

Q: So then what happens?

Narra: Like I said, the last week is when numbers are again really starting to rise and you'd see the ambulances come and they were packed full and people would be falling out of the ambulance. I remember just thinking, oh my gosh, what if one of those people really just had malaria, but now they were in this ambulance ride getting thrown up on probably and this and that. So to really see that was sad and hard, especially because it was my last week and I felt very helpless. Also again, still seeing MSF trying to like make beds for all these people. But then, you know, you'd see—the one thing which—being part of the Ebola treatment center was hard because every day you'd hear people crying and wailing and mourning and just miserable and uncomfortable. But every so often, like I remember my last day I looked out and there was a woman and I'm like oh no, is she mourning? It wasn't, she was dancing because her daughter was getting released. She was just doing the nicest happy dance I've ever seen and her I think twelve-

year-old daughter was coming home with her. So at least you would get to see a few of these success stories through a lot of awful, awful, sad situations. Then I came back.

Q: And what's that like?

Narra: After a couple of my MSF experiences, I had survival guilt, but this was very different. The experience seeing an epidemic like Ebola, I've never had an experience like that. I think just the gravity of the situation, seeing how stretched thin healthcare systems were and really such despair with these communities—all of that in addition to some communities really still resisting the idea that Ebola existed and really wanting to even have treatment from it. Then shortly after I got home, about a week after, some people from one of our contact tracing teams were killed in Nzérékoré by angry villagers that didn't believe them. It was really hard to see and to read about all of it and then to be back in a cubicle in Atlanta. Like okay now, just work on this. It was hard. That's not even the right word. At least I think I had some classmates that were deployed around the same time and that were getting back as well from Sierra Leone and from Liberia, so we talked a lot about our experiences and these feelings of guilt and inadequacy and helplessness and I think that we just tried to do our best with that.

Q: What were you doing back here?

Narra: I got back and then within a couple days of actually getting back I was contacted by our—who's our deputy division head, his name is Rob [Robert V.] Tauxe. He knew I

worked with MSF in the past and he really wanted to develop a course for healthcare workers. Basically during this time, as I had told you, there was massive inadequacies of the healthcare system and especially healthcare workers that were going to be able to work in the ETCs. Not only the numbers of the staff, but the training—the staff that actually had proper training in Ebola and how to put on PPE and all of that stuff. Rob had this idea because he knew a lot of this was occurring. There was a lot of fearmongering because I think this is right when Kent Brantly was being sent back to Emory [University Hospital] as well with Ebola and so people were afraid to go help. There was a lot of difficulties and concern for first of all, we don't have enough healthcare workers, second of all, they're not trained. He really wanted to make a mechanism to train healthcare workers quickly, mainly US-based, and get them deployed to help with Ebola.

He had done a similar course for cholera, which was a training of trainers to rapidly teach people just basics of cholera, cholera treatment centers, surveillance, how you deal with it. It was really successful when they did it in Haiti actually for the cholera epidemic there. So he kind of had that in his mind. MSF at the time had a small, two to three-day course I think in Belgium, and that was only for their workers that were going to go to the field and even that was—they had a way bigger demand than spots. He talked to some people there, and him, along with two other people from CDC, went to this course in Belgium and they were allowed to videotape and take all the materials and everything. He wanted to recreate that course here in Atlanta—well, discuss the creation. So he kind of created his own—I think he called it his "dream team," it was nice. He had some of the best epidemiologists he could find, some of the best subject matter experts on Ebola and

even just pandemic things, so a flu [influenza] pandemic expert. He pulled in different logistics people that knew how to get cost and get things in and out quickly and arrange and be organized. And someone that can make a database for all the people that we would be hiring. It became an enormous task obviously, and then I was brought in because I was what they called a recent returning responder and also I had worked with MSF before. So I actually had a lot of friends in the field that were still actually working both with MSF and then with some of the other organizations.

Q: So what do you do?

Narra: Within a month—it's crazy, from the day of conception to the first day of our pilot course, it was one month. We managed to make an interagency agreement basically with FEMA [Federal Emergency Management Agency], which is located in Anniston, Alabama, because we thought that's perfect, they know disaster. They know how to set things up quickly. They have dorms we can put people in. So we at least were like, okay we got the place. Who are the people? How are we going to choose the people? So then we decided—we had a team dedicated to looking through all these applications coming through after they had to do advertisement obviously. Getting the word out first, how are we going to recruit once we did? How are we going to choose? We tried to really prioritize clinicians that were already affiliated with an NGO or some group that was going to take responsibility for them, and they had a deployment date. Those people were prioritized for the course. Then it's like, when are we going to do it? Well, as soon as possible. So then we gave ourselves a date and we're like, come hell or high water, we're

going to do it that day. Then how are we going to do it? So getting all of the PPE, getting all of our protocols in place. Getting all the materials printed for the books of everything—all the lectures made, all the people that were going to teach the lectures, and then getting all of that through clearance, which was also amazing. John [T.] Brooks was really instrumental in getting that quickly cleared for us. I think again, in a matter of a month, that's unheard of—especially with the amount of information.

And then, who is going to do the training? We continuously were growing as a group. By the end, there was over two hundred people that helped with this and over one hundred of them were CDC staff. It was stressful again, but a really interesting and collaborative experience. Also, the other "who" part was we pulled in some MSF experts that had been in the field and worked with PPE, and also WHO because we wanted to be collaborative, not favoritizing one group or another, but at least just really seeing all the different techniques there were for PPE, which there were a lot. That was another I think stressful thing, but I think we did our best to not really adopt a technique or a certain suit of some sort, but it was more to adopt the culture of safety. It's more of this mindset of safety and really adopt this proper idea of what you think is safe, not "I have to have this suit to feel safe." Or "I have to have this."

Q: Why was that important?

Narra: I think for people, really feeling confident and having this muscle memory of knowing the right things in this culture of safety, to me, was going to keep them safe.

When they're in hundred-plus degrees in a big waterproof suit and sweating their face off and people are dying around them and they're stressed and they're having to take blood, I think if you can really try to get them to practice and have something—like I said, become almost robotic in muscle memory, and have them be adaptable and flexible to that, then I think that will be what keeps them safe. If they feel like this actual suit keeps me safe only or these goggles or I need this, I think they'll focus on the wrong things and then in the field as you can imagine, there was like a rupture, kind of shortages of all kinds of different PPE, so they needed to have a very open, flexible idea, but still know what they felt safe in and not.

Q: Right, because you don't know if that suit that you're imagining you must need to have is even going to be there.

Narra: Exactly. And a lot of times it wasn't. That's why we just said—we're not saying wear any PPE that's there. Get an idea of what you think is safe. Here's what we consider safe: a water impermeable suit, face shield with this, two pairs of gloves, gun boots and an apron—we definitely tried to go through all these things. We said we don't know what brand it will be. We don't know what level, but just make sure that maybe it's waterproof for this—just a certain level for these. We tried to give them a bunch of those different things to really get them comfortable.

Q: Did you speak with people who went through these trainings?

Narra: Yeah, yeah.

Q: What kinds of things did you hear back?

Narra: We heard all kinds of things. I feel like, I'll be honest, I think my biggest fear for this course and for myself was people would think, who is this poser? She didn't go in and put on this suit and treat Ebola patients herself, because I technically had not and I was writing protocols to do it, but I was also speaking to my friends that were both with MSF and with WHO doing this every day. I tried to really in my mind picture—I had these suits at my house and I promise you I'd put them on and took them off like a hundred times to get comfortable. So people didn't know. If they asked me, "Have you worked in an Ebola treatment center," I would say no. I would never lie, but I got so comfortable and fast and good with that, I don't think anyone ever at least asked. I think we talked to people and they definitely found the course very useful. Actually, almost every single person that took the course, the feedback we received from the people we received feedback from, they said they definitely would recommend the course to someone else. They found it useful.

I actually—random chance from my small little farm town in Ohio, I was a drummer actually and this guy who was about three years younger than me, he was a drummer with me. Completely lost touch with him, hadn't talked to him in forever. He ended up working with Partners In Health. He's been working with them the last five years as a nurse anesthetist, but really got into public health and came through one of our courses

one day. He was getting ready to deploy to Liberia and he was going to be their team lead, so he was great because he was super unbiased and I got to talk to him and he's like, "I think this is great. I think that I would do this more. Maybe give us more practice with putting on and taking off the suits versus lecture. We do need to know some stuff with lecture, but maybe do more hands-on." After that pilot course, we tried to restructure a couple things. We added a mental resiliency aspect to the course and then also we had—I just threw this in for the pilot and it ended up being people's favorite part of the course, was what we called the returning responder hour. It was optional because these people were working their butt off for three days in this course. Basically, it was anyone that had recently deployed in whatever role and they came back and talked about their experiences. So these other people who are getting ready to deploy had opportunities to ask them whatever they wanted. Actually, people told me that was the most useful part because whether it was fears, being stoned, they at least got to get a really good insider's view of what it was like to be inside of an Ebola treatment center, what were some challenges they might not have thought of. Then also for the responders, the people coming back, it gave them an opportunity to really share and I think be really useful. That was a really cool part I think that I'm happy that it stayed in. But my buddy, he got to Liberia and he actually was in charge of buying PPE, training people and all these things. I was really happy to hear that he said "Look, the idea of what you guys said, training on principles, not on the suit itself, was the best thing you could have done. Because for example here, I have three different things from China, two things from the US, one thing from DoD [United States Department of Defense] and I'm trying to figure out what PPE

is going to work and how to take it on and off. Learning these principles the right way, I feel like I can actually manage." It was nice to get feedback like that.

Q: When is all this taking place now?

Narra: The Anniston course, the course conception idea was at the end of August and that's when it was just getting thought of and then when I came back—basically, I came back beginning of September and that was when they're just starting to decide. I came back, I think I started with the course September 5th or 6th and by September 22nd, we had our very first pilot course. The course ran all the way from the end of September just through March and they had sixteen courses and 570 people trained as far as healthcare workers. A lot of them were actually the Public Health Service, so I think 276 of them were the PHS people and those were the guys that went and worked in Monrovia. I think there was about four different teams that set up that healthcare worker hospital itself that they were working at in a few other local areas. It was fun to get to train a lot of different people.

Q: Were you involved in all of these trainings through March?

Narra: No. I was involved basically into October, so for about a month. A month's worth, so I think about three courses. Two or three courses. I'm trying to remember. It was a great experience though.

Q: So what happens afterwards in October?

Narra: Then, it's about the end of October and now November's coming up and I'm trying to figure out okay, now what do we do? Now my group, my water group is like okay, it's nice to finally meet you—you've never done a water project since you've been here [laughs]. No, they were really great. They were super open and really I can't thank them enough because they're really flexible with the needs of both the organization and with my interests. So they said, how about we think about a water project for you?

Q: Can we back up for just a second? So you choose to or you get assigned to work with water safety group, is that right?

Narra: Yep. Basically with EIS it's like a matching process. You rank a bunch of different groups that you find interesting and then they rank you and then there's some weird computer system that will try to make sure everyone gets happy. It will fill most of the positions that people are looking for and try to also keep people happy. It's kind of a random thing. Usually, if you like someone, they like you, that's kind of the goal and that's how it happened. I'm with the international waterborne branch basically. The Global WASH Team.

Q: But you were saying that you hadn't done any water before?

Narra: I had not. They were kidding, but they were just like okay, well, it's nice to have you back. So do you want to maybe try to do a water project? I said yeah, that would be great. In Mali, there is a project I'm still actually working on. Basically, as you can imagine being almost a desert area in half of the country, there is a huge water shortage. So we were trying to make—starting with mid-level solutions for healthcare facilities to receive water and then eventually long-term infrastructure that would be put in and then also to measure the impact on health before and after the ability to have water and washing your hands and things. That project I knew I wanted to do in Mali. The only thing was I think Mali, because of Ebola and some other things, it wasn't very easy for me to get in for that project. By chance, Mali also did have Ebola, so they needed CDC presence there. I was talking to Fred [Frederick J.] Angulo at the time who was running this response and he said "Hey, you're a French speaker, great. You were in Guinea, great. We'd love to have you go to Mali, and maybe you'll have time to also work on your project." I said "Okay, in what role will I be going to Mali?" And they said "Actually, could you be the team lead?" I think it was a combination of it was the holidays. Luckily, Ebola was kind of paring down there, but still. It was great. It was very stressful getting to go, but I was there as the team lead and that was from mid-December to mid-January then.

Again, it was just when Ebola was finishing, but we still had a lot of contact tracing going on. There was a big religious pilgrimage festival that occurred during that time at the beginning of January that people came from all over West Africa to come and see this really famous imam. There was a lot of concern obviously that sick people would be

trying to come and see this imam and possibly with Ebola and be in a very tight, enclosed space, and that would be just a recipe for disaster for the epidemic to really blow up in Mali. There's definitely a lot of stress that surrounded that, but it was a cool experience to work with a lot of partners there.

Q: Were you working closely with the Ministry of Health [and Public Hygiene] for that?

Narra: So mainly the Ministry of Health and then also again WHO for sure and then MSF was there. They had set up the Ebola treatment center that was in Bamako, there was only one at the time—really that was the proper one, and then they started popping up I think over other parts of the country. They were doing all the training and then UNICEF [United Nations Children's Fund] and some other groups were there too.

Q: You talked before a little bit and I remember you saying something about how part of the solution was in integrating infection prevention practices with faith practices.

Narra: Yeah. We thought well, if there's water available, a lot of people will go through. They'll wash their hands and usually wash their feet before they're going to see a religious leader to be clean. So we thought that's going to already be part of the—part and parcel, but the problem is they would never have water available for that many people in these locations. So we were like, well why don't we at least say we'll try to get as much hand gel as we can and try to stress that that's similar to the washing, and/or get as much water as we can to these areas and then try to screen at the same time that these

people are either washing their hands and/or using the sanitizer and then we can take their temperature. As difficult as it was with—it was hundreds and hundreds of thousands of people that came, we still did our best and we tried to also set up a little triage tent in case we did find someone that did have a fever so we could isolate them and then eventually take them by ambulance to get them screened. We had all these big triage posters and algorithms and protocols about how it would work.

There was an emergency operating center that was just getting set up and started, so having this incident command system and having this EOC [emergency operations center] in place for people to call in if there was any issues. It was really interesting and it was a great collaborative effort I think between the partners, and people that were really passionate about it were great. USAID [United States Agency for International Development] had a wonderful man that I worked with that was there doing that. The UN [United Nations] had a wonderful guy and we all became very close. WHO as well had a great guy and it was an interesting experience. But I remember we were in—so during this religious ceremony, as you can imagine, it's like high risk for the embassy. They'd say you're not allowed to go anywhere near it, and I'm like look, we're doing surveillance, we have to be around it. They said okay, if you go, you have to be in an armored vehicle. So it was myself, it was the head of the UNMEER [United Nations Mission for Ebola Emergency Response] response, so the UN guy and then the WHO had the Ebola response and the photojournalist also from OCHA [United Nations Office for the Coordination of Humanitarian Affairs].

The four of us were going around and we're like, we're going to really try to do surveillance and really check this out. We were going from all the big areas—we went to the soccer stadiums and things. One of the other biggest areas was actually this grand imam, he's the main reason a lot of people came in—his home. He has an actual mosque at his house in this five-story huge home and we were trying to do all the checking and making sure all the water points were in place. And of course, when we get there, one of the security guys is like oh, his highness wants to meet all of you. So we went up and we met this man and he was lovely. He was so collaborative with us and we kind of discussed a couple messages that would be nice for him to say and talking about Ebola and if you're sick and what to do. Make sure you wash your hands and if someone's sick you want to help them, but try to find help for them. We gave him a lot of messages and he completely agreed and he actually very graciously said most of those messages for us at his gathering. It was a really—again, really cool, interesting experience working with religious leaders as well as big groups like WHO and such.

Q: Were you there throughout the event itself?

Narra: Yes, because it was about a four or five day event. We tried to go to the stadium almost as often as we could. Make posters even for showing hand washing and we put all these different messages up there. But really getting the buy-in from that Islamic community because it was a Muslim pilgrimage is what it was. That was the religious aspect of it. But it was really great to try to work and be creative about how to get

messages out, but also make sure they were effective and culturally competent I think as well for all the partners and all the people.

Q: What month was that?

Narra: That was in January.

Q: January. So what happens next?

Narra: So then I wash my hands of Ebola—no [laughs]. You know honestly, Ebola at that time—there was a lot of stuff happening, but I really wanted to try to do some other projects, so interestingly in March there were these clusters of disease in Ethiopia. It was these clusters. We don't know many details, all we knew is we were getting calls from the Ethiopian Public Health Institute saying look, there's these clusters of unidentified neurologic illness and there's some people that they're just dropping dead and we don't know what's going on. We were trying to get numbers, we were trying to get this. By chance we had one of our own CDC staff was in Ethiopia. She was there helping do Ebola prevention and all these measures. So she, along with one of our other, the FELTP, the Field Epidemiology and [Laboratory] Training Program staff, resident advisors—so they're both CDC staff, started doing an investigation there and they gave us some preliminary results and said look, we really don't know what this is, but we do think a team needs to come out.

For that month, from March to April, I went out and it was myself, a neurologist, a botulism subject matter expert and a couple other people and we did this investigation. It was the first time in EIS that I got to do clinical exams and physical exams on patients and things, which was great. It actually ended up being two clusters, independent of each other, in different parts of the country, of botulism. Very random. So really interesting, but again, a lot of people in the country—it was sad because there was so much fearmongering again that they thought it was maybe Ebola. Sadly with botulism they need very, very close supportive care and because people were afraid of it, in the first cluster they were kind of left out in this hut and no one really checked on them again because they were afraid. These poor people died early in the outbreaks. It was fascinating. It was not Ebola but kind of still had the effects of Ebola on this disease process too. It was kind of sad but very eye-opening and it made me realize there's probably a lot of other countries that are going through the same thing. The other question was, maybe was it Ebola that even drew their attention to some of these deaths in the first place? We weren't sure, but yeah.

Q: What happens through the rest of 2015?

Narra: So that was in April, and then from June to August, I was in Kenya for a cholera outbreak. That was a fascinating experience too. It was the first time I had done cholera. I was allowed to be the principal investigator with that and so it was a great experience. It was very different from everything I had done before, but we worked very closely with the FELTP program in Kenya and two of my classmates actually, Katie [Kathryn] Curran

was one of the classmates I was with and then Samuel [J.] Crowe. They're both in the Division of Food and Waterborne [Division of Foodborne, Waterborne, and Environmental Diseases]. The three of us went out there and interestingly, Katie and I went as kind of the epidemiologists. Sam joined us. His background is political philosophy, he's a PhD. Kenya is one of the few—it's a decentralized country and there was questions about the response and the delays and some challenges. Was maybe was decentralization—not to blame, but was it a factor in part of this? I know that some people had a couple questions about it. So we asked Sam to come and join us for part of that aspect of the investigation too.

It was really interesting. We all were split up in different parts of Kenya and different sub-counties, so I was in Nairobi, Katie was in Homa Bay, Sam was in Mombasa. We did these community KAP surveys and then also healthcare worker surveys, which were knowledge, attitudes and practices surveys to see what both community members and healthcare workers thought about cholera and what were their thoughts. How much knowledge did they have about it? What were their attitudes towards it, and then what were their practices in response? We also tried to assess some of the local healthcare facilities to see if they really had the supplies they needed in these three areas too. Very cool study, but very stressful. We had to also get it up and running. I think from start to finish it was a matter of ten days that we started training enumerators, got everything ready and got everything done and then tried to present results to the Ministry [of Health] about some of the things we learned. Very cool though.

Q: What takes you through the rest of 2015?

Narra: So that was in Kenya. Oh, I forgot to tell you, I was also in Mali another time in May, but that was finally for the water project I was supposed to go for. That was mostly May, and I was working with the local water partners. WaterAid was the organization we were working with. That was great. In October through November, I was in Tanzania for their own cholera outbreak unfortunately. I was doing that. Interestingly, like a lot of similar problems that you see with the water sanitation infrastructure and/or lack thereof and the latrines or lack thereof, but really just seeing how horrible that some of the sewage systems and even the water treatment that was not occurring. Just how you see how vulnerable these populations are and you're thankful that they haven't had outbreaks bigger than this or every year for the most part. It's really sad when you go into the field and you see cracked pipes flowing through raw sewage. These cracked pipes are going directly to people's homes. It's no question how cholera really got there, but it was interesting. In Tanzania again, like I said, it was a great experience, but a lot of challenges and everything they go through.

Q: Bring me up to now.

Narra: That was my last deployment luckily was Tanzania and now I'm trying to actually do EIS things. So I'm writing up notes from the field about Tanzania in collaboration with the ministry of health that's there and their FELTP group as well and then some of our CDC co-authors and then just trying to write up some of all of this fun stuff. The

Anniston course, I'm trying to write a manuscript about that and then Kenya, all the studies and surveys we collected, I'm trying to write that up too. I'm trying to stay put if I can. The good news is, I'll be around, so I took a job with our waterborne disease and prevention group and so I'll be sticking around with our group at least for the next couple years.

Q: Reflecting on the Ebola experience, would you say that you came away with a different understanding of public health generally?

Narra: Yeah. I think I'd say EIS has been my main experience with being involved inside of the public health realm. I guess with MSF I would see it, but I was always doing the clinical. I would definitely say Ebola—and now being able to compare it to other outbreaks, I think between a lot of the panic and fear and lack of preparedness in a lot of these areas—seeing the way people can respond to that, it was very eye-opening. Also, in the same sense for example, what happened in Mali with a very short timeline and what seemed like the impossible, the collaboration that you can have with people and people really passionate and excited and experienced and creative, I think you can really make amazing things happen even under the most stressful circumstances. I saw I feel like the best and the worst of public health response, but it's all good. I guess it's all experience and growing.

Q; Is there anything that you want on the record that we haven't gotten to? Any person you think you'd like to describe a little bit—your work with them?

Narra: I'm trying to think, there's so many different people. There's a couple WHO guys that I worked with that, I have to say, before sometimes I'm like, WHO—especially coming from MSF, I was thinking—I felt like there was a lot more bureaucracy and other things and sometimes I would get frustrated with working with them in the field. I'm sure they would say the same about both CDC and MSF for other reasons, but some of the best public health people I worked with I feel like were from WHO. One of them was Dr. Mamadou [H.] Djingarey and he is pretty high up in their AFRO office and now he's actually been in Guinea the last year. I worked with him both in Guinea and also in Mali on the Ebola response. He was just incredible. He's from Niger originally. I think he got his master's in public health at UCLA [University of California, Los Angeles] but has been all over the world. He's done tons of responses—usually does a lot of meningitis surveillance and response and he's just such a great guy, so innovative, so calm under pressure and was such a pleasure to work with and I learned a lot from him.

The other person was a man named Jorge Castillo. Jorge came to Tanzania and I worked with him there on the cholera outbreak. He was helping with setting up the coordination and their emergency operations and just really overseeing everything. He's one of these guys, he's been in the field for twenty-five years. I think he worked with MSF over ten or fifteen years and really crazy, high levels of stress too—seen everything. Not just the way they interact with partners, the ideas that they have, the way they communicate their ideas and how efficient they are. It was people that—I would strive to be like one of these guys one day. They were really incredible.

Q: Well anything else?

Narra: No. That was good.

Q: Well it's been a joy to have you here, Rupa. Thank you so much.

Narra: Thank you. I've enjoyed talking about it actually.

Q: Appreciate it.

Narra: Thanks.

END