

So, Riya, do you remember your first days of EIS? The excitement and anticipation of what the next two years would hold? Yeah, like jumping on a flight the next day to lead an Epi-Aid. Being in the field every week, being Kate Winslet in Contagion, jumping out of helicopters. They didn't say that happened once. And then they specifically told us it was unlikely to ever happen again.

True, true. Why do you think that is? Officers are so thirsty for these field experiences. I think part of it is the adventure, even if there aren't helicopters. But really, I wanted to see public health where it was happening, to be a part of the action, applying epi on the ground. Same. Yeah. I think I can boil mine down into one word — inspiration.

I love data, and playing with data feels great every day; but sometimes you just want to get closer to the field where the action is happening, right? Which brings us to September 2024. I've been in EIS for a year. For me, it's been a couple of months. And here we are at our desks. We are both in the mycobic diseases branch, where we've learned all about the fantastic kingdom of fungi and the diseases they cause.

We can almost pronounce Coccidiomycosis. Close enough. Thanks! In our team of fun guys and gals, we study all sorts of outbreaks and do all sorts of consults like Valley Fever and California firefighters. Like that dog that had Candida auris in its ear. With each of these consults, there is an opportunity where we might get to go to the field.

It could turn into something bigger, and they'll need our help. But so far, the state and local health departments have been handling it on their own, which is great unless you're us trying to get to the fields to be those globetrotting disease detectives. Because really, the soles of my shoes were pristine. But then in October 2024, we received the call to assist with the complex outbreak spreading in Uganda.

Yay! Field experience! I'll deploy first and then after a month, I'll hand it over to Ria. I left for Kampala, the capital of Uganda, on October 20th. At that point, the outbreak had been going on for 104 days, and there were 165 cases of impacts in Uganda. And here's what I know about impacts. Walking off the plane. There are two types of Mpox clade one and clade two.

Most of what we know about how the disease transmits from person to person we learned during the global outbreak in that started in 2022. That was caused by clade two. So that's not what we're going for. We're going for a clade one strain that's not to cause more severe illness. And it's believed to have started in the Democratic Republic of the Congo.

And it's been seeding outbreaks to neighboring countries, including Uganda, ever since. Right. Which is why three flights and 26 hours of travel in, I'm on the ground in Uganda to assist with that outbreak. This is my first time deploying with CDC. My first time responding to an outbreak with more than consults or academic papers. I've been to Uganda before in 2022 to assist with an Ebola outbreak, but this response, it looks and feels different.

Then when I went for Ebola, I was part of an enormous team of CDC deployers. We work together during the day and then we hung out together at night. But now, aside from the few days that Elizabeth and, and I are overlapping, we're solo. And being a solo employer was pretty isolating. I ate a lot of dinners alone.

Same. And then there was the additional challenge that we weren't exactly given detailed objectives and SMART goals. Right. Our instructions were to help Uganda with impacts. You know would have helped Uganda with impacts more funding. This was a globally underfunded response at the time. But instead of funding Elizabeth's, what did they get? Two fun gals dropped out of the world of fungi and into an outbreak response.

And my first days on that response, I was overwhelmed by this behemoth outbreak response machine that I was stepping into. There were so many partners. There was Ministry of Health, Local Public Health, U.S.,

CDC, USAID, university partners. It seemed like chaos, but I learned it was practice chaos. They all had their roles to play in the incident management structure.

And while this was Uganda's first time dealing with clade one B and Mpox, they were no stranger to outbreaks. Just in the last five years, they dealt with anthrax, Ebola, Marburg, of course, COVID-19. And then there was the backdrop of ongoing HIV transmission, where they've been working for decades to build trust with the communities that were now being hardest hit by impacts.

So even with this new threat, they were drawing on this incredibly deep well of expertise, and we had our own deep wells of expertise. Like I said, in my contacts, we help with consults and outbreak investigations all the time. We just had to figure out how to repurpose our skills in this new setting. And honestly, really, I floundered at first.

I attended meetings and I took notes, and I tried to figure out what I could offer while honestly feeling like I was wasting my opportunity to contribute to this response. But through listening, an urgent need emerged. Talks to allocate vaccines were ongoing and Uganda was getting a tiny share. We knew looking at the Epi curve that we would need more vaccines and models and could help Uganda advocate for their fair share.

As it just so happened, I had spent the last six years modeling vaccination strategies and disease transmission. So, I had the tools to help. When I jumped in though, sadly not from my helicopter, I saw that the outbreak was starting to overwhelm. And that made me feel incredibly uncomfortable to ask for help or seek input. Instead, I felt a lot of pressure, mostly from myself, to add value immediately.

So, I started shadowing our sister program in Uganda, the Field Epidemiologic Field Epidemiology Training Program, in particular Joyce. She was put in charge of all case investigations. And she was also eight and a half months pregnant. And I remember watching her trying to keep up while also just being really physically uncomfortable. Joyce, along with all of the FETPs, had been investigating and Mpox cases for months, and they've been all hands-on deck.

They were exhausted. So, where I saw my value add was to help them systematize their investigations so that they could prioritize them later. At this point, cases were being reported in Fischer communities. Boda boda drivers, truckers, and street side vendors. The links between these communities were confusing to me. That was until I was seated in a meeting with Kampala City Council and among all the big players at this crowded table in this conference room, one woman introduces herself as Mary.

She's a sex worker and a peer representative of a female sex workers network in Kampala. And as we speak through the challenges of impacts, Mary is speaking up on every point saying, what about female sex workers? What about brothels? How do we how do they protect themselves? Yeah. That tracks. So, when I was briefed, I was told that female sex workers were an incredibly important but complicated part of this response.

So maybe we should take a step back, though, Elizabeth, and talk about what female sex workers are in the context of Uganda, because as with many countries, they're not just one thing. Great point. There are commercial sex workers. That's the group that Mary was representing at that city council meeting. But then there are other groups who lack representation.

These women perform sex work, but it's not their main gig. They're wives and mothers, shopkeepers, augmenting their business. Some might identify as a sex worker, while some would vehemently oppose being called one. So, we're learning that female sex workers are a key population, but a complicated one as part of this outbreak. Right. And as the outbreak response turns on, we've identified ways we can support supporting case investigations and building them a database using transmission models to evaluate vaccination strategies.

So now I could see how socio culturally complex things were on the ground. And I could also see the knock-on effects that that would have with our data. Maybe this won't come as a surprise to you, but some people might feel a bit shy speaking to a stranger in the government about their sex lives. And then also, sex workers might not be keeping records of all of their sexual contacts.

And then also, men might not feel comfortable disclosing sexual encounters with female sex workers, especially when they're being interviewed next to their girlfriend. That happened. Oh, that's awkward. But even with these gaps, we could see that female sex workers were playing an important role in transmission, even though our contact networks looked like a lot of unexplained community transmission.

And Ria, what better thing to do with unexplained community transmission than oversimplify it in a model? After many late nights courting over those lonely dinners and days spent at the embassy tracking down key variables with CDC colleagues, we had a working model. And my model showed that vaccinating sex workers could be the most efficient way to control this outbreak.

They also highlighted how protecting female sex workers, this key group that Mary had represented, could help protect many more people as well. So next comes the hard part, which is turning all of that great silencing into education, which can lead to behavior change. I remember looking for inspiration for resources on CDC's 2022 impacts web page. And I was sitting in the embassy, and I click on this safer sex link.

And I quickly realized, this is CDC's avoid lit sex parties and wash your sex gear after use web page. Uganda, by the way, is a highly conservative Christian nation. So, seeing this, there was my on the ground learning that cultural context matters. Definitely. And thinking of interventions. Uganda didn't have vaccines yet, but that didn't stop planning. On my last day in Kampala, I attended a meeting with Regional Public Health where they were strategizing on vaccine rollout and the complications that weren't in my models became apparent.

There were concerns about stigma if the vaccines were linked to sex work, concerns about safety and privacy at vaccine clinics, and fall back to that Ebola classic strategy of ring vaccination. My models were just this very first piece of support, Community trust and understanding built over decades would be key to implementation when vaccines finally arrived. So, at this point, we're nearing the end of our deployment.

Yeah. And we're realizing that these tools we've been taught to rely on are much more complicated when applied in the fields. I think for any deployer, when you get near the end, you're hoping that the Epi curve is starting to turn down, especially coming from my cortex. I've been used to seeing small outbreaks and clusters where you can implement an intervention and like not rolling around in a bat cave.

See my talk on Friday and all of a sudden, cases start decreasing. But that wasn't the case with impacts. We were to short term deployments, but this was going to be a long haul. I leave Kampala on December 15th, and at that time there's 1027 cases of impacts in Uganda. That's 900 more than when Elizabeth and I started our deployment six weeks ago.

So, Elizabeth, we had our field experience. We did. And over the course of our back-to-back deployments, we learned how to drop in and adapt our skills to support a small piece in a complex response. In a way, we did have our EISO experience of jumping out of a helicopter, at least metaphorically. If you stretch it a little because you're trying to find a heartfelt callback to end your Ted talk.

That's a nice try, I guess. But really, I think we learned that the inspiration isn't just in the work, but in the people we worked with. It was Joyce and the other FETPs. It was Mary and people like her who represent their communities. So, the people who stay long after the outbreak is in the news when it's no longer sensational, maybe there's no more funding and everybody is tired.

Our deployments ended four months ago, but the complexities and challenges that Uganda needs to surmount to combat impacts they haven't stopped. And in January, Ebola was detected in Kampala, further dividing public health resources. As of last week, there was 5386 cases of impacts in Uganda. That's 4000 more than when Elizabeth and I deployed. And since we've left, there have been five more EIS officers who have deployed short term to carry on that baton of the outbreak response machine.

Thank you.