Molly Layde Valleau: Good morning. Artificial intelligence is going to revolutionize public health. We've all seen the writing on the wall. Technology is evolving faster than ever, and we can hardly fathom the possibilities to come. But this is a story about the other side of public health. No matter how good our models and AI get, everything still comes down to the people. A year into EIS, I got off A 6-seater airplane in Pemba, a remote island off the coast of Tanzania, where I was deployed as a responder to the five-country wild polio virus response. I was picked up by a Ministry of Health pickup and whisked from the airport to my first training venue, where 50 nurses and clinical officers were ready and waiting to learn about acute flaccid paralysis. The incident manager from Zanzibar for the polio response, Abdullahi, broke the news to me that I would be leading the training. In Swahili right now. I knew from experience as a nurse that training even five or six other clinicians, and something is complicated in English. "Speaking in Swahili", Abdullah asked me. Are you ready? "Speaking in Swahili", I'm ready, I replied, wishing I'd done more reviewing medical terminology because I was psyched up. I was told that breakfast and tea were being served first. I was ready to give the presentation and trying to keep straight all the polio related vocabulary swimming in my head, Cognizant that we had several more sites we needed to visit that day. But lessons from my Peace Corps service in Tanzania 6 year earlier had taught me that the most important connections are often forged over a cup of sugar. Chai So I joined a table of nurses and sat down for tea and fish.
We drank tea that had followed the centuries old trading path, influenced by the Indian Ocean trade winds where hundreds of boats would sail across the Indian Ocean each year from Arabia, India and Persia, bringing tea dates and iron to Zanzibar and then mainland Africa and then returning months later when the monsoon winds shifted, returning clothes, slaves, tortoise shell and ivory to Oman in the east. The trade also brought shared religion. Language, genetics and culture and the same path today still connects East and West moving people, goods and now perhaps polio. Pakistan, across the Indian Ocean, is one of the last two countries worldwide with endemic polio eradication efforts that have made incredible progress in Africa and the rest of the world have been severely hindered in Pakistan by a history of attacks on vaccination workers over the last decade. Polio remains a stubborn threat. Last year, a case of wild polio virus showed up in Malawi and genetic epidemiology linked the virus to the wild polio virus last seen circulating in Pakistan. CDC together with the Global Polio Eradication Initiative launched A5 country wild polio virus response. Because less than one in 100 cases of polio causes paralysis and the girl nor her family had ever left Malawi, she almost certainly wasn't the only case polio was brewing. Africa had just been declared wild polio virus free in 2020, a huge milestone in the path for global eradication that was now at risk. We had to find out the extent of the outbreak and strengthen the surveillance systems that will be needed to ensure we found every possible case. There was concern that the polio case had followed traditional trading routes, and Tanzania, and in particular the island communities of Pemba and Unguja in the Zanzibar archipelago had the dangerous combination of having a very mobile population with strong family and work ties to the Middle East and having very low rates of AFP or acute flaccid paralysis surveillance. I was tasked with training clinicians on AFP surveillance, conducting active case searches and strengthening capacity to detect any possible future cases. But before the formal training could begin, I sat down with a group of nurses for Chai and breakfast. Taking the time to get to know each other, I bonded with a baby or grandmother nurse from Kojani, a small outlying island off the coast of Pemba. Had you just told me some of the challenges they've been facing in her community? During the first round of the national vaccination campaign a couple of months before, vaccinators never made it to Kojani. The budget for the campaign, created in the desert of Dodoma, Tanzania's capital, didn't include any budget for hiring boats to get to the small islands off of Pemba. My eyebrows raised upon hearing this, and Hadija pointed out it was probably a good thing she was getting this extra training on recognizing cases of AFP, which could mean polio. We shared stories of nursing school, which Swahili foods I did and didn't know how to cook, and everyone enjoyed watching the American eat the breakfast fish with her hands Peace Corps had trained me well. I knew this was a treat. Knowing which topics of conversation tend to go over particularly well with Tanzanian babies, I asked her all about her grandchildren and reassured her that I would definitely start having lots of babies as soon as I got back to America in Chala, we exchanged phone numbers and I promised to keep in touch. After Chai, I

gave the official training. Unlike the main island of Zanzibar, Pemba doesn't get many tourists and a hijab wearing muzungu casually discussing polio and Swahili went over big. As I started talking, I noticed people taking out their cell phones to record. Understandable. After all, no one was going to believe them if they tried describing their day at work. Eventually, people started moving closer to get better footage and. Take a deep breath and figured that the inevitable spread of these videos across WhatsApp networks and the island would at least be quite effective at disseminating my message. The next day we were in Whate district visiting clinics to conduct active case search and give more trainings. When I got a call from Hadija, my BB friend, I was just figuring she was calling to say hello, see how I was doing. But then she opened with “sister, you're not going to believe this.” A girl had come to the clinic in Pojani that morning, unable to move her legs. The district surveillance officer, Soleimani, sprang into action. Drove to the regional referral hospital to pick up extra polio test kits and a pediatrician and then we raced off towards Kojani. But the boat back and forth between Pemba and Kojani had already made its once daily trip for the day when testing an AFP case for polio. Everyday counts, and we couldn't wait until tomorrow to go. So we hung out on the shore talking to locals, trying to see if anyone could help us figure out a way to get across. Luckily, a passing group of fishermen agreed to let us catch a ride when they knew that a child needed help. Once landing on Kojani, we headed to Hadija's clinic. I was thrilled to see my friend, but the circumstances were heavy. She was devastated about this case of paralysis, and as a nurse it was really hard on her that a child was suffering, and she couldn't do anything to cure her. As we walked, we reassured her that she was doing everything she could to help the girl and her community. And if the girl did have polio catching it this early, it could be saving countless lives. We journeyed with Hadija to the patient's home and upon arriving and seeing the little girl, we were stunned. It was textbook acute flaccid paralysis, exactly what we've been looking for. The patient needed to be tested for polio. Hadija had recognized the symptoms, sudden onset, limp legs, unable to support weight, no other discernible cause, and knowing that polio was one of the causes of this type of paralysis, she did the exact right thing by reaching out and immediately requesting a polio test. We took the first sample and left the second kit with Hadija so she could collect a second sample 24 hours later and we arranged for the child to be transported to the Regional Medical Center for further care. We sat with the family giving our condolences and figuring out what else we might be able to do to support them. Weeks later, when the samples had journeyed from Pemba to Darussalam and eventually to the Uganda Viral Research Institute to be tested, we learned that thankfully, the tests for polio were negative. The little girl, although not fully recovered, continues to make progress. She was connected to good quality medical care and Hadija continues to check on her and her family. We had shown that the polio surveillance system and one of the most remote at-risk islands in Tanzania was prepared to detect any possible cases that would reach its shores. The nurse knew what to look for, recognized it, and had the phone numbers and the confidence. No small thing in this culture, to call the district surveillance officer if this would happen again. This far corner of Tanzania was ready to respond to polio. Public health now has powerful technology. Genetic typing, effective vaccines, sensitive surveillance systems, and the dawn of AI promises to take it even further. But none of this technology can do the job alone. As good as our systems are, they depend on people. And when dealing with people, there's no substitution for boots on the ground and personal connections.