On-screen: Unlearning How to Lead—EVALI in the Salt Lake Valley Nathaniel Lewis, PhD EIS 2019. April 23, 2024 Sarah Luna Memorial Ted-Style Talk Session 2024 Epidemic Intelligence Service Conference. CDC logo on bottom right.

[APPLAUSE]

NATHANIEL LEWIS: Hey, y'all. All right. Good afternoon, everybody.

So you might be wondering why I'm standing in front of a cloud of vape smoke. This is nominally about a vaping-related outbreak. But also, we could associate this cloud with the mystery that you might feel as an incoming EIS officer about what an outbreak investigation actually consists of in practice and what's expected of you as an EISO in terms of how to lead it.

So I'm talking to you in the spirit of this guy. We'll call him Professor Cat. Anybody who knows me knows I like a good cat meme GIF sticker. And so, yes, Professor, in terms of being a mentor as an EIS alumnus, speaking to incoming EISOs, but also as somebody who is literally a professor for five years before choosing to embark on a career in public health practice.

So first, I want to roll back to 2012. This is me graduating with a PhD in medical geography from Queen's University in Canada. At this point, I was 100% committed to a career in academia and as a professor for the rest of my life.

And any of you who have been through very specialized training in academia and, again, this is all of you incoming EISOs, you know that you get very familiar with a specific subject and sometimes with a specific population. In my case, this was looking at the sexual and mental health histories of gay-identified men who had moved to Washington, DC or Ottawa, Canada. This was easy. I had come out on my own as a gay man probably five or six years prior. I had moved from DC to Ottawa, Canada.

So that was pretty that was the easy part. You also learn the culture of academia. So that was taking these very detailed life histories of these men, and transcribing them, and parsing the details in a very complex way, and then publishing them in manuscripts, and manuscripts, and more manuscripts, as is the way in academia. Most of those manuscripts are written by yourself.

So some might say that I was kind of embarking on this Lone Ranger-type of career. And that did indeed turn out to be the case. I did a two-year postdoc in Canada, where I learned how to teach. I went on to take my first two-year professorship at University of Nottingham in the UK.
And while I enjoyed many aspects of this career, particularly teaching, I often found the other side of it very solitary, somewhat isolating, not necessarily always with an impact that felt very immediate. So I wanted more. I wanted something a little bit more applied, more collective. And I was kind of starting to look like this guy.

So a friend in DC had suggested there was this program at CDC called Epidemic Intelligence Service and that it was a program specifically to train people from other careers in the basics of epidemiology and set them up for a career in applied public health. And in 2014, I applied. I got an interview. Incidentally, the same week, I got my first tenure track job, and I didn't go to the interview.

So guess what happened? Four years later, I came crawling back and applied to interview again, still feeling very isolated and solitary in my career in academia and still wanting something more. And thankfully, they gave me another interview that led to some awkward questions about so what exactly changed over the last four years that's making you want to do this now. But I explained I had done what I wanted to in academia. I really wanted to get out into the field, learn the basics of epidemiology, and do applied public health and was ready to change this old way of working, change these old habits. Or so I thought.

So as many of you will be determining during this week, you have to pick a place that you want to do your first EIS position. And I chose Utah. So natural choice as a single gay guy in his 30s, right?

And so off to Utah I went. Moved into my apartment in the Avenues neighborhood. I think the view from my apartment in either direction kind of shows what people think of when they think of Utah and what I frankly thought of Utah. In one direction, the natural beauty and clean living of the Wasatch Mountains, in the other, the rules and regulations of the LDS church, represented here by Temple Square, you know, no coffee, no alcohol, definitely no drugs.

So a week later, I showed up for my first day of work at Utah Department of Public Health. And my primary supervisor said, surprisingly, we have an outbreak for you to investigate. And it's related to vaping.

So these five patients who we found, all of them have vaped in the past 30 days. All of them have these X-rays that look as though they have pneumonia. But then there's no infectious evidence of pneumonia.

So I said huh, EVALI in the Salt Lake Valley and started investigating these first five cases.

So for the first couple of weeks, my days pretty much all looked the same. I would get up in the morning, walk down South Temple Avenue to the train, wave to the missionaries along the way, get on the train, go to Utah Department of Public Health, and start doing what, at the time, were extraordinarily detailed case investigations. We were talking, like, 20 to 25 page Word documents.

And, you know, like I did in my dissertation, accounting for the data in these case investigations in excruciating detail, updating the database at night, and going home. Soon enough, 5 cases became 10, became 15, became 25. And, again, Utah surprisingly had one of the highest rates in the country of this vaping-related injury, or vaping-related illness.

And so life sort of started to shift at this point. This, of course, is not what I was putting on Facebook or Instagram versus reality. I was going hiking with friends who were visiting. I was carving pumpkins for Halloween. I was winning at pub trivia, all things that were very normal at the end of 2019.

Life in reality was looking a little bit different. I was actually staying at Utah Department of Health until about 8:00 or 9:00 every night, getting on the train, going back to downtown Salt Lake City, having a sad coffee at Dunkin' Donuts for 15 minutes, where I would muster up the energy to go across the street and go for a four mile run at the treadmill on Planet Fitness so that I could get up and repeat this whole process the next day. Interestingly, looking very isolated and solitary, isn't it?

So the cases continued to go up and up. By early October of 2019, there were 47 cases, again, with Utah having one of the highest rates in the west. And my secondary supervisor said to me, you know, I'm worried you're not having a good time.

I said, having a good time? There's only three people working on this. I'm staying at work until 9 o'clock every night, and I don't know what to do. But you know, committed to presenting everything that I had learned on this topic.

I was going to situational updates every morning, which I was in charge of. Those of you who have done EIS know this is meant to be an account of how many new cases, in sex breakdown, in age breakdown. I was giving you the age breakdown and also how severe the cases were, where they had gotten their vape products from, where the cases were located, what kinds of devices they had vaped, and brands of vapes that they had vaped. And my boss said, Nathaniel, you're really killing these meetings. And she didn't mean killing it like that.

So at this point, I finally became honest about what I felt I needed to finish this outbreak investigation. We called an Epi-Aid. Shout out to Amy and Ariana, if you're in here.

We found people to do medical chart abstractions. We found somebody to automate the database. And we found people at the lab to test the vape products that had been collected. And this is what effectively allowed us to summit the mountain, as it were. This is us literally summiting Snowbird on a brief, brief leisure trip during this Epi-Aid.

And this allowed us to finally get down to the essentials. Those of you who remember the EVALI outbreak knew that most patients were actually vaping THC and nicotine. We were able to whittle this to the essentials, that THC was indeed the main exposure in this outbreak.

And when we got results from our lab, we saw that these nicotine vapes looked normal. They all contained nicotine. The THC cartridges contained THC, but not as much as we would have expected.

And most of them contained this simple fatty compound. It's called Vitamin E acetate, not particularly different from cooking oil.

And finally, I did actually write another manuscript. It just looked a lot different than the manuscripts that I'd written before. This one didn't have one author. It had 25 authors.

You went through this thing called clearance where you would send out the manuscript every two days. And it would come back with comments, some of them to you, some to other people who had written comments in the draft previously. But the important thing was that we had a message to send out to the public.

Vaping illnesses are linked to Vitamin E acetate. And Utah took a strong stance on communicating this to the public. These are warning signs that we had created at Utah Department of Health, which were in every gas station, convenience store, and vape shop in the Salt Lake Valley.

And so the moral of the story is not that there's a light at the end of the tunnel in every outbreak investigation, but more that you should not put yourself in the tunnel in the first place. Instead, be open to what your supervisors tell you, however indirect or however much it might sound like a critique. Be honest about what you need to conclude your outbreak investigation.

Don't be like this guy. Be like this guy. And realize that EIS, as much as it's about learning the basics of epidemiology and applied public health, is also going to involve some degree of unlearning. Thanks.

[APPLAUSE]

On-screen text: CDC Logo (in the center). 2024 Epidemic Intelligence Service Conference