

Transcript

00:00:00 Hillary Booth

We love to talk about the work that we do, so it's nice if you can find a contact that lives maybe in a geographic region you're interested working in. But other than that, I would say there's a lot of different groups out there talking about the work that we do. So, plugging in to see what kind of offerings those folks have and just trying to find an opportunity to get into the work, I think, is the biggest challenge.

00:00:21 Hillary Booth

So don't give up. We need you out there if you're interested. If you like this work. If you're passionate about it, we need you to come work with us. So find a way to do it.

00:00:29 Nicole Marshall

You just heard from Hillary Booth, and I'm Nicole Marshall with the Washington Integrated Food Safety Center of Excellence. Throughout this season, we've explored the complex world of foodborne outbreak investigations, learning from the epidemiologists on the front lines. But in these interviews, we didn't just hear about the science and stories behind each case

00:00:45 Nicole Marshall

We also heard really valuable career advice from the experts solving these outbreaks. Today, we're compiling that advice, pulling together the lessons learned from their years of experience.

00:00:56 Nicole Marshall

This is Foodborne.

00:01:01 Nicole Marshall

Mentorship is often mentioned as one of the most vital components to success in the field of food safety. They do more than just teach technical skills. A mentor helps you navigate emotional and intellectual challenges of the job. Offering both support and insight, we'll hear from our season 1 experts who share how mentorship has been instrumental in shaping their careers.

00:01:22 Nicole Marshall

First, we'll hear from Lyndsay Bottichio about the importance of reaching out to mentors in the field.

00:01:28 Lyndsay Bottichio

It's important to really find good advocates and mentors, and sponsors too. And by doing some of that shadowing work, you get that. So I always tell people that, inherently in science, I actually think a lot of us are introverted by nature.

00:01:43 Lyndsay Bottichio

But it's actually really valuable to put yourself out there and reach out to people that you want to learn more about the work that they're doing, because you would be surprised how many people are super excited when you ask them questions about the work they've done.

00:02:00 Lyndsay Bottichio

Both Sam and I we're like heck yeah, that sounds like fun to talk about an outbreak that we worked on, because it's cool to us still. Public health people will always want to talk to you about the work that they're doing. We're here in public health for a reason. And so I always tell people, reach out, ask about the work that's being done, ask if there's something that you can learn from that, or work with them on, and if somebody might be willing to mentor you or sponsor you.

00:02:24 Nicole Marshall

Next, Allison Longenberger from our raw milk episode tells us how mentorship played a role in her career.

00:02:31 Allison Longenberger

I was really fortunate to have folks around me who knew a lot about foodborne outbreaks and were willing to mentor me throughout this large outbreak, and really just trying to get involved in helping with as many outbreaks as possible.

00:02:45 Allison Longenberger

Definitely, no two outbreaks are the same, so the more that you can work on, the more experience both students and new staff will get.

00:02:55 Nicole Marshall

As we heard from Lyndsay and Allison, a strong network of mentors can provide the support, encouragement, and perspective necessary to navigate complex outbreak investigations and progress in your public health career. Now that we've explored the

power of mentorship, we'll shift gears and hear more about the fast-paced nature of outbreak investigations.

00:03:14 Nicole Marshall

Foodborne outbreak investigations are often compared to puzzles where every piece of data serves as a clue that gets you one step closer to solving the case.

00:03:24 Nicole Marshall

As you'll hear from our guests, solving these puzzles is one of the most rewarding aspects of their work.

00:03:28 Nicole Marshall

First, let's hear from Kirk Smith and Josh Rounds from our hazelnut episode about their shared love of disease detective work. Here's Kirk.

00:03:37 Kirk Smith

You know, I love foodborne disease outbreak investigations when the subtyping tells you there is an outbreak, there's not just one common thing. Like they went to the same petting zoo or daycare, something. And you know it's a commercially distributed food product outbreak like this.

00:03:55 Kirk Smith

They're riddles and they're challenges and it's just so much fun and so gratifying to kind of follow the investigation along and to see in advance and then you get to the moment where you implicate a vehicle and then if the vehicle is something that's never been implicated before, then you remove a product from the marketplace and control a specific outbreak.

00:04:19 Kirk Smith

But then on a broader level, kind of broaden the science base on the epidemiology of a certain pathogen. It's just absolutely one of my favorite things. And then, like we always tell our Epidemic Intelligence Service Officers, we always start them with foodborne outbreak investigations. So if you can do a good foodborne outbreak investigation, you can do a good investigation on any pathogen. So we would like to have them cut their teeth on foodborne outbreak investigation.

00:04:48 Kirk Smith

But no, public health, it's just such a very noble business. But beyond that, it's just fun and interesting and challenging, and I wouldn't have done anything different.

00:05:03 Nicole Marshall

Next up is Josh, also from the Minnesota Department of Health, on the rewarding nature of investigating outbreaks.

00:05:08 Josh Rounds

Like Kirk was saying, there is something that's exciting when you're trying to tell the story of what happened, and it's usually in reverse, right? You're starting with people who got sick, and you're trying to figure out, OK, how did this story happen?

00:05:19 Josh Rounds

And figuring that out when you get to that point, like, uh, it was the hazelnuts, is really gratifying. And kind of working with the other people you know, the other Epi's in other states, and your other colleagues within your state and laboratory, agriculture, kind of bringing everybody together is really fun. When you get a successful investigation like this, it's really rewarding.

00:05:40 Josh Rounds

The nice thing about foodborne epi is usually these outbreaks there short duration in time. So you're dealing with this acute problem. You're figuring it out, and then you can move on to something else.

00:05:52 Josh Rounds

You are not, hopefully, stuck with something for many months or years, like with some other public health areas. You know, chronic disease or even some other infectious disease. So, for those of us with shorter attention spans and wanting to try new things, this is a nice area to be in where you can focus on one problem for a while and then hopefully move on to another new food problem.

00:06:12 Nicole Marshall

Hillary Booth and June Bancroft, our guests from the International Outbreak Museum as well as the Washington and Oregon State Health Departments, say keeping an open mind is key when working in the world of outbreaks. Here's Hillary.

00:06:24 Hillary Booth

One of the things that is most compelling about the museum is the way that it shows how what happens when people follow their data to the source of an outbreak investigation. Sometimes we have old ways of thinking about certain pathogens. For

example, people really have associated, and rightfully so, Salmonella with raw eggs and chicken for a long time.

00:06:46 Hillary Booth

But what we've learned in the past 20-30 years is that it's associated with all kinds of things, right? Different types of produce, vegetables, fruit, lots of different furry little disease vectors, animals out there, all kinds of different ways that folks are making them sick, with reptiles and amphibians that are distributed commercially nationally, that we would have anticipated in certain ways.

00:07:06 Hillary Booth

So I think it's a really nice opportunity to just remind folks when you're doing this work, keep an open mind, do a good job designing the way you're collecting your data and believe what your data tell you and follow it to the conclusion until you figure it out what you can do to intervene in an outbreak.

00:07:23 Nicole Marshall

June from Oregon also shares her love for the puzzling nature of foodborne outbreak work.

00:07:28 June Bancroft

A great field to be in there is a lot of work that's done around outbreak investigations, that you don't often solve it. So I think over time the work that you do makes a difference, makes a difference in people getting sick or not getting sick, and in solving a puzzle, if you like to do puzzles, I think it's a good career for you.

00:07:46 June Bancroft

I think, it's the pandemic has shown us that we need more epidemiologists and people who can help respond to events. I will say that the tools that you learn as an epidemiologist for foodborne outbreak or waterborne outbreak investigations can be applied to other things. So when we had the vaping associated lung injury, they called on us to help them.

00:08:04 June Bancroft

And there's a more recent one, the outbreak that's just occurred associated with mushroom-laced chocolate. They've called on us to work on it, even though it's not an infectious disease. So the tools that you use to solve outbreaks can be used for other non-outbreak associated infectious disease, communicable disease outbreaks. So I've been here 27 years, not bored.

00:08:23 Nicole Marshall

These tidbits of wisdom shared by Kirk, Josh, Hillary, and June paint a picture of what it takes to tackle the complexities of outbreak investigations. Each piece of data offers a new clue that helps uncover the bigger picture. As we've heard, success in this field requires creativity, critical thinking, and flexibility. Foodborne epidemiology offers the opportunity to work on a variety of challenges that have a direct, real-time impact on public health. The complexity is what often makes the work so engaging.

00:08:50 Nicole Marshall

Before you can fully dive into the fast-paced world of outbreak investigations, it's important to gain hands-on experience. While classroom learning is a great start, there's no substitute for real-world exposure to practice work. Whether you're a student or earlier in your career, getting involved in real investigations will help you build the confidence and competence to tackle future challenges. We'll hear from Allison Longenberger again, sharing her thoughts on how to get this experience and why it's so important for new EPIs.

00:09:15 Allison Longenberger

I highly encourage students to consider applying for an Applied Epidemiology Fellowship. CDC and CSTE have several options with various degree requirements, ranging from a bachelor's degree to terminal degrees like a PhD, MD, veterinarians, etc.

00:09:39 Allison Longenberger

Internships and health departments can also be extremely helpful, and I recommend that new epidemiologists who are interested in outbreak work consider applying for jobs at CDC or at a state or local health departments. This is really the best way to get boots on the ground experience. Learn as much as possible from subject matter experts.

00:09:58 Nicole Marshall

Another theme that popped up during the interviews was the shift from traditional epidemiologic studies to the quicker analytic methods used in conjunction with testing and traceback to identify food sources.

00:10:08 Nicole Marshall

Here's Kirk Smith again discussing this shift and how it came about.

00:10:12 Kirk Smith

And so, traditionally, we would have done a community case-control study, usually matched on age group and geography. Used to be anchored on people's telephone numbers, but we all know how much of a problem that is nowadays. But even if you get significance, you need something else to kind of verify those finding anyway, like traceback convergence or positive product on laboratory testing.

00:10:37 Kirk Smith

So this was the time within a two or three-year period, I would say, where we as a foodborne disease outbreak investigation community in this country really started getting away from these community case control studies since there's so much work.

00:10:51 Kirk Smith

And since they needed to be kind of verified with other investigation findings anyway.

00:10:57 Kirk Smith

Why not just skip all that work and do the binomial probability model, or a case-case?

00:11:04 Kirk Smith

So why not just do those quicker methods to kind of solidify or advance your hypothesis, and then get on with the business of actually confirming the vehicle through things like traceback.

00:11:18 Kirk Smith

So this also was about the time period where informational traceback were starting to be used a lot in outbreak investigations.

00:11:29 Kirk Smith

Traditionally, tracebacks would only be done after a vehicle is implicated by more formal methods or by laboratory testing of the product. But again, we started using them as part of the epidemiologic investigation to help confirm the vehicle in the first place.

00:11:48 Nicole Marshall

Kirk's story is a good reminder that many legs of evidence are needed to solve an outbreak

00:11:53 Nicole Marshall

Investigators use information from epidemiology, product traceback, and lab testing to fully hone in on a food culprit. Traditionally, epi investigators might use resource intensive matched case-control studies. However, the field has been shifting towards

other methods like the binomial probability model or case-case comparisons, mentioned by Kirk as a quicker way to generate and test hypotheses.

00:12:13 Nicole Marshall

Allison Longenberger shares a similar experience during the raw milk outbreak as well.

00:12:17 Allison Longenberger

I want to know that it isn't always necessary to do fancy analytics studies during outbreak investigations. I think in our schooling, to get so excited to be able to do case control studies and cohort studies. And while those are very helpful tools, they aren't always necessary. In this instance, we didn't do any formal statistical analysis, and we really just relied on basic epi and outbreak investigation skills.

00:12:46 Nicole Marshall

These experiences are great reminders that the best learning in public health often happens outside the classroom, whether it's through fellowships, internships, or volunteering at a local health department. Getting hands-on experience helps you build the practical skills like case interviewing and exposure analysis, that you need to solve these outbreaks.

00:13:06 Nicole Marshall

Next, let's turn our attention to another key element of building a career in public health: finding your passion. It's not uncommon for professionals to take some time to explore the many subfields and specializations that make up the wide range of public health, and it's in those niche areas that many of us find a place where we belong.

00:13:22 Nicole Marshall

Public health is a dynamic field, with opportunities ranging from epidemiology and lab work to policy and communications work. It can feel overwhelming to decide where to focus your efforts when there are so many paths. Lyndsay Bottichio shares her advice on finding the best fit for your public health career.

00:13:37 Lyndsay Bottichio

I teach now also in addition to working at CDC. And I generally tell my students when they're trying to find project ideas that look for the things that actually make you excited in the morning, and it is still work, like let's call that out where it is. But it makes it a lot better when you are super interested in the topic that you're working on. So if you want to get into foodborne outbreaks, you know, reach out and volunteer your time to work on one of the teams that does interviewing.

00:14:09 Lyndsay Bottichio

A lot of programs, a lot of schools will do that. We do that with Emory right next door to CDC It's a good opportunity.

00:14:15 Lyndsay Bottichio

You know, reach out to people who are already working in the field and talk to them and get their specific advice, and say hey, what was your path to get here. A lot of us actually took kind of winding paths where we ended up, and I think that that is actually a really cool thing because it's bringing a lot of different expertise together.

00:14:36 Nicole Marshall

Here's Sam Crowe, who worked on the same flour outbreak as Lyndsay, sharing some sage advice on finding your path and managing expectations when it comes to the realities of public health work.

00:14:46 Sam Crowe

I think Lyndsay touched on something that's really important, which is just that public health is an enormous field. There's a lot of stuff under that umbrella. There's epidemiology, lab work, program work.

00:14:53 Sam Crowe

where we're actually implementing public health interventions that are effective in the field. There's domestic, local, and international work as well. And then beyond that, there's communications and policy and partnerships and kind of legislative affairs work and a handful of other things that all fit under the umbrella of public health.

00:15:13 Sam Crowe

And so for folks who are in school, I 100% agree with Lyndsay that try to find something that you find interesting. But I also would say to keep your mind open in terms of what might be interesting, because it could be do you think you want to work in epidemiology, but come to find out you've interact with some health communicators. And that's actually where your heart really is. So there's tons of great work to be done. I would say studying public health in school obviously helpful, but more importantly is the shadowing work that Lyndsay was talking about where you really get a sense of what people do day in and day out, and you can better understand if that's something that you'd like to do with your career as well.

00:15:49 Sam Crowe

I got one last point.

00:15:50 Sam Crowe

Not to be Debbie Downer. But public health is a really challenging work, and one thing that I've learned over the last decade working at CDC is that a really important virtue is patience. So, bringing excitement to the table, but then understanding whatever you're trying to do likely is going to take time. And I mean, we're talking about an investigation that was successful, so to speak, as far as we identify the source and the product pulled off the market.

00:16:13 Sam Crowe

But there are a lot of investigations that unfortunately don't end in that sort of conclusion and remain open-ended in some way that can be very frustrating. In addition to, if you go into parts of public health where you're really trying to change the way a system works, for instance, policy, it's a very slow grind and can be challenging, so having patience and fortitude are important virtues for public health practitioners.

00:16:40 Nicole Marshall

Lyndsay and Sam both emphasize an important point. Finding your passion is key to building a fulfilling career in public health. They encourage students and early career professionals to focus on what they genuinely enjoy, not just what looks good on paper, and highlight the value of staying open to new opportunities while being patient with the process. Public health is a journey, not a sprint.

00:17:00 Nicole Marshall

You've heard from our season one experts as they share valuable insights into the diverse and dynamic world of outbreak epidemiology. We hope these conversations have sparked inspiration for your own path and that you dive into opportunities that excite you most.

00:17:14 Nicole Marshall

I'm your host, Nicole Marshall. Foodborne is created and produced by Piper Brase and Nicole Marshall. Our producer and sound designer is Kevin DeVoss. This episode was written by Shalom Mhlanga with support from Erica Ellis. Foodborne is brought to you by the Washington Integrated Food Safety Center of Excellence, which is a collaboration between the University of Washington, the Washington State Department of Health, and the Northwest Center for Public Health Practice. Special thanks to the International Outbreak Museum for their partnership on this season.

00:17:44 Nicole Marshall

Thank you for joining us today on this episode of Foodborne and our finale to season one.

00:17:48 Nicole Marshall

We would like to thank all of the guests who contributed their expertise to make this first season a memorable one. And finally, thank you to our wonderful team here at the Washington Food Safety Center of Excellence for making this work possible. For more information about this episode, check out our show notes or visit foodsafety.uw.edu/foodborne.