**LabMed Podcast Ep 8 - Elaine Cloutman-Green - FINAL**

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**VO - Welcome to *Life in the Lab*, brought to you by the Association for Laboratory Medicine. I'm Kamiljit Chatha, and I'm a Consultant Clinical Scientist at University Hospitals Coventry and Warwickshire NHS Trust. In this series, we bring you inspiring stories of clinical scientists and medics working in laboratories in the UK and around the world.**

**Elaine Cloutman-Green is a consultant clinical scientist at Great Ormond Street Hospital in London, one of the world’s top children’s hospitals.**

**She works in infection control and is involved in a variety of research projects. And not only does she oversee health and safety at the hospital, but she’s also really passionate about teaching people - both young and old - about infections and diseases.**

**In short, she’s got a lot of different roles!**

Otherwise I get really, really bored and people think I mess with things. So, they like keeping me busy. (laughs)

 I think there's a big pressure when you're kind of developing through. Everyone says you have to pick. You have to be either the person that's very academic and research focused, or you have to be the leader who kind of becomes more of a lab manager. Or you have to be the clinical person who then goes on to be the consultant.

And I think that we forget that there is so much power in sitting in places where you draw from all of those threads. My work-life balance is possibly not the best. My husband would be, like, you say yes to too many things.

But I think it's really important to actually maintain a balance of those three combined.

**Getting into clinical science wasn’t something Elaine had originally planned - it was more of an unexpected journey, with a few twists and turns along the way.**

I’m very much not that type of scientist you see on TV. You know, always the smartest person in the room. That's just not, that's not who I am. I'm the person who just keeps turning up and giving it a bit of a go and hoping that it kind of works out. Partly that was because actually I spent a lot of my childhood and even now with chronic conditions and just not being very well.

I couldn't do A levels the same way that most people did. No one thought I was going to make it to go to university. Ended up doing zoology, which was just amazing. Got offered a PhD, but in the jungle, and I am not really an outdoors kind of girl. I am very much a hotel rooms cocktail book and kind of en suite bathroom person. So, spending months trekking through jungles was not really going to be for me.

So, I went and got an admin job and didn't really know what to do next. And then, my brother was doing physics. But they needed biologists to go on this biophysics MRes and he was like, well, I know somebody and so, let's give it a go. And turned up to do physics, having never done it before.

My dissertation for that was looking at the use of catheters in spinal injury patients. So, spinal injury patients, they get lots of urinary tract infections. It can be really debilitating on top of an already difficult condition. And so, this was looking at how you change the surface of those catheters so they get infections less.

And all of a sudden, something just clicked in my brain. Like, don't get me wrong, I loved zoology, I loved all of that. But to actually be in a position where you could make life better for people was just something I didn't really realize that science could do.

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I had a best friend who was applying to become a clinical scientist. And she was like, why don't you try this? I had no idea what a clinical scientist was.

MUSIC INTERLUDE

Weirdly got shortlisted. And it was the most amazing job interview I've ever actually had, because they didn't ask you facts. They gave you scenarios, like: if you were talking about the MMR vaccine at a pub to your friends, what would you say? And at the end of the interview I walked out and cried because I really wanted the job and I did not think that they would give me the job. And then they phoned me the next morning and offered it to me and I was so shocked I was like: Why? And they said: because we can teach you facts but we can't teach you how to think.

**At the core of Elaine’s work is finding new and creative ways to solve problems.**

**Take something like setting cleanliness standards for patient rooms - it might sound simple, but it’s actually quite complicated!**

All of our national standards are on ‘visibly clean.’ I don't know about you, but I tend to find that the reason that microorganisms are called micro-organisms is because you can't see them with the naked eye and we use a microscope. Therefore, having visibly clean as the standard does not necessarily get you all the way you need to be.

So, there's a bunch of work out there, mostly from the States, on something called prior room acquisition risk, which means that if you are a patient who comes in and you go into a room that was occupied by somebody before you that has antibiotic resistant bugs really, you are more likely to pick up that bug in hospital than the person who goes into a room that was not acquired.

So, how do we make it so that a patient going into a room doesn't have an increased chance versus the person next door to them. How do we make cleaning, which people think of as being so simple, and it really isn't. If you think you have to clean your living room and you have to clean every square inch of it with something that you won't be able to see, how confident would you be that you could clean the entire space without leaving any gaps?

Things like hydrogen peroxide vapor as a fairly new way of cleaning. It creates a vapour, so it creates a gas that then obviously vaporises into the space, therefore can touch everything, theoretically, in a room.

If we get things like that right, it should be safer because it doesn't rely on a person to be 100 percent accurate. You're putting an extra layer in place.

**Elaine is also involved in genome sequencing, which is figuring out the genetic makeup of cells or even whole organisms.**

**She focuses on sequencing the genomes of microorganisms, like bacteria and viruses, to understand exactly how they spread.**

Has that bug passed from person A to person B to person C? Has it gone from person A to person C? Has it gone from person A to the floor to person C?

If it's going via the floor, I need to clean the floor better. If it's going from person to person to person, I need to work out how it's getting from person to person to person. And so, I do a lot of work both looking at the entire genomes of things but also looking at things like antibiotic resistance genes, which are really clever, and how they jump within people.

So, they'll jump from one bug to another, and then they can move from things that are kind of less pathogenic, so less likely to cause infection, into something that is already able to cause infection. And then I've just made it able to be resistant to antibiotics at the same time.

So, a lot of things about how we look after patients over time so that that transition is A, identified, but also is there something we could do to stop it long term?

MUSIC INTERLUDE

**The wide range of Elaine’s work is one of the reasons she was asked to join a very special research project with the Bill and Melinda Gates Foundation.**

**The project looks at a new approach to reduce infant mortality in West Africa.**

With the Bill and Melinda Gates Foundation, I ended up looking at a big study they had going on in Mali. And that is looking at using Azithromycin. And Azithromycin is a pretty common antibiotic. We don't use it that much in this country, but it's part of what we call the macrolides. So, if you are allergic to penicillin, it's the kind of antibiotic we then give you as an alternative. It has quite similar coverage.

And it had been shown, in Africa, that when little babies got given a single dose of Azithromycin to deal with a type of chlamydia infection in the eyes, that they actually did better than children who weren't part of those trachoma programs.

And then there was my favorite study of all time, a study called Mordor, which I don't know if there are any Lord of the Rings fans out there. The fact that people could go “I'm just going into Mordor for a meeting” just never ceases to entertain me. So, the Mordor study looked at: if we did do this kind of dosing in some countries in Africa, did it reduce infant mortality?

And it basically demonstrated that if the infant mortality was already pretty high, then yes, you could reduce infant mortality by up to 20%.

Now, the fascinating thing about the use of Azithromycin is  no one's quite sure about how it works. It has an anti-inflammatory effect. So, is it that just when they're getting parasites and things, as they're growing up as part of their first year of life, actually that inflammatory cascade is not so severe? Is it that we're stopping them getting colonized with a type of bug that could then go on and cause severe infection in a percentage of them? We’re not entirely sure. All they know is that when you look at the big data sets, it definitely does work.

So, you go from the point of going, okay, so this works in theory to actually, but how much should you give, and that's the bit that we've been involved with, the how much?

MUSIC INTERLUDE

It now looks like it's going to be implemented across Niger, Nigeria, and Mali which means that it will just be the standard of healthcare that is delivered in those countries.

 MUSIC INTERLUDE

We've moved from beyond the clinical trial into the implementation phase. They'll go in and they'll give them their vaccines at the same time. You're benefiting because you've got a health care professional who's going in to collect the samples, to give the drug, to have conversations with people about nutrition and all of those things.

So, you've also got that point of care stop that wouldn't have existed otherwise. And I think that's something that we also need to learn for our own healthcare system is that, actually, it's *how* these things come together that has the most impact.

**The project will oversee the dispatch of *millions* doses of antibiotics.**

**For Elaine, the endeavour really taps into a sense of duty, although it does bring up some tough ethical questions along the way.**

It's really interesting that kind of in Western healthcare, so much focus is on *not* giving antibiotics. And I'm sitting here talking about giving antibiotics to three entire countries. And that's a really interesting thing to sit as somebody who's interested in antimicrobial resistance to really talk about and to be advocating for.

And it's one of those things that I always get pulled up about. I think it's really interesting and useful to own the discomfort of that and the ethical dilemmas that are associated with it.

A lot of the original antimicrobial resistance drivers were from developed nations and have then spread out as we have gone further and further in terms of our health care.

 Now that we're doing medical tourism, you know, a lot of those things in terms of resistance markers moving around the world have nothing to do with Africa. That small village in Mali has done nothing to impact on antimicrobial resistance globally. And so, the idea that we would not reduce infant mortality in Africa, because we've already reduced infant mortality in developed nations in the West, and now we have issues linked to it, I think is unfair.

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**The project doesn’t come without huge logistical challenges though… especially when it comes to reaching people in remote communities.**

I thought it was shocking enough that I had to work out how to buy, like, 250 motorbikes. I'm not used to having to purchase jeeps and motorbikes in order to make something happen. And then you move to thinking how do we do it across an entire country to every child born. It has challenges that until I sat down and started having conversations, I don't think that I truly understood the impact.

How do you ensure that everything is set up so that everybody does get what they need to get? How do we ensure that we're doing the surveillance that needs to be done on that scale?

MUSIC INTERLUDE

**Back at Great Ormond Street Hospital, the variety of people coming through Elaine’s doors gives her an insider’s perspective on new global conditions and diseases.**

We take patients from across the world, with all kinds of conditions. So, we took patients from Ukraine when the war was originally, started off and they needed to evacuate patients that were already there.

We take patients through charity work from across the globe to come and have particular types of surgeries. And then we also have private patients that come. And so, we often see things that are new on the horizon before anywhere else in this country and so it's very much how do we identify the new, what do we do about it, what information do we need to get so that we can have those better conversations?

Everybody thinks that infection control is kind of easy. And that if you detect something, you stick somebody in isolation. And they stay there till they come out. And everything's great and everyone's protected. The reality is, no matter what decision you make, there is cost. Like, whether that be resource cost or personal cost. So, I work in pediatrics, we will have patients here who are going through things like bone marrow transplant who will be with us for, you know, up to two years. We've got respiratory patients that will be here for four or five.

You can basically be restricting somebody to a room that's six foot by six foot for years at a time. It has real consequences for that patient and their family. And their child is not going to be going to the playroom, won't be developing social skills like they would if they were able to go to the school and do other things. And so, it can have real impacts in terms of their development that can impact them long term.

None of this stuff is easy.

**The weight of these tough decisions led Elaine to start a blog in 2015, called *Girlymicro*. She only posted a couple of times at first. But since the pandemic, it's become her go-to space to write about the challenges and dilemmas she faces with her job. And last year, it got an impressive 21,000 views!**

I have the best job in the world, I do. But some days are really, really hard. And it's really interesting for me, the blog started out about helping other people. And actually now it's very much about how much it's helped me. I basically think of it as my therapy.

*(excerpt from blog) … How do we move from the person who cowers to the person who has the courage to stand tall and occupy the space they rightfully possess. The below are a few lessons I’ve learnt, sometimes the hard way, and some things I’m trying to embody in order to be a bit braver every day, especially when it comes to owning my success…*

I talked about the fact that I can't have children. I talked about the fact that actually leadership is hard and to be honest you don't necessarily please everybody. And the complexities of risk assessment and making decisions where you don't have all of the information. And sitting there and waiting and looking at a theatre list hoping that you made the right call.

We are people too. And that you will make mistakes and actually we all just ourselves back off and we get up and we try again and we learn from it.

It's always surprising to me that at things like conferences, people will come up and hug me and go: Thank you for sharing. I don't feel alone now.

**With her plate already full of amazing projects and responsibilities that are making a real impact in infection and disease control... what’s next for Elaine?**

The problem is I had a week off and during that time I think of things, and then I make plans, and my husband's like: please don't have any more leave, because I cannot afford for you to make any more plans. It's not good! So, there's a couple of things I want to do.

I am hopeful that I will find time to turn the girly microbiologist blog into a book. I'm currently trying to put together a textbook on environmental infection control, just to try to help all of us do things better, that's really practical focused and not kind of just really academic.

I am trying to get some different bits of research together to try to get some more PhD students. There's some really interesting lab development stuff that's going on. And eventually, in about ten years when I retire, I want to write pathology murder mysteries that no one will ever read.

So, you know, long term, there are things that I would like to bring science to a wider community in a different kind of way.

**VO - For a transcript of this episode or for more about Elaine Cloutman-Green and her work, visit our website at** [**www.labmed.org.uk**](http://www.labmed.org.uk)**/podcasts**

**This podcast is brought to you by the Association for Laboratory Medicine. Produced and edited by Caroline Bacle, sound mixed by Daniel Fletcher. Special thanks to Avi Surskas and everyone in the LabMed team.**

**And we’ll be back next time for more stories of *Life in the Lab*.**

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