

Breaking the Ice Ceiling Episode 1

Voiceover [00:00:02] This podcast has brought to you by the University of Aberdeen.

Clare Bond [00:00:10] Welcome to Breaking the Ice Ceiling, a podcast of conversations with women changing the world. I'm Clare Bond, and today I'm delighted to be in the company of Sharon Pflieger. This is particularly exciting as we're at the start of a 12 month journey together, undertaking the Homeward Bound Leadership Initiative for women in STEM. That's science, technology, engineering, maths and medicine, just so you don't have to Google it. We will try to be acronym free on Breaking the Ice Ceiling, but I make no promises. So Sharon is a consultant in pharmaceutical public health at NHS Highland in Scotland and the NHS lead for the One Health Breakthrough Partnership. Welcome, Sharon.

Sharon Pflieger [00:00:58] Hi, Clare. Delighted to be here with you today.

[00:01:01] Super, so I've had the pleasure of listening to some of your recent talks and presentations and at the start of many of these, you quote Hippocrates, that principle of first do no harm, and you argue that actually medicine is doing harm and that you see the health of the population and the health of the planet as being intrinsically linked and this kind of holistic, kind of view of how everything works together. And I'd just really like you to start by explaining a little bit about how you think the health of the population affects the health of the planet and why you take that kind of holistic view.

Sharon Pflieger [00:01:46] OK, I like to think of it as a one health approach, so one health means that the health of humans, the health of animals and the environment are all intrinsically linked. So what we do as humans can harm the planet and planetary change, climate crisis can also harm human health. So they've got links back to each other, so it's really important that we see it as one health picture and that whilst trying to keep fit and healthy ourselves and access health care services, that we try to do that in a way that does no further harm to the planet.

Clare Bond [00:02:25] You use this really nice phrase, Sharon, the one health approach, I guess, that encompasses both the health of people, animals, the biodiversity and the planet as a whole. And I think that's a really, really nice way of looking at it. But how do those different elements interlink? I think you have an amazing statistic in one of your talks that says 21% of NHS greenhouse gas emissions come from medicine. How?

Sharon Pflieger [00:02:57] Yeah, it's incredible, isn't it? And not so incredible, actually, when you think about the amount of medicines that we use in health care. So the use of a medicine is the most common intervention that happens in health care. And we can use medicines to diagnose conditions to treat, to cure, but also prevent. So almost every intervention in the NHS ends up with the medicine at some point. And if I was in front of an audience and I asked people to put their hand up if they'd use a medicine in the last month or the last year, almost all the audience would have their hands in the air. So medicines use is ubiquitous. Across the UK, the amount of medicines we use is about 20 billion pounds worth, and in Scotland it's about one point eight billion pounds. In Scotland, we prescribe over one hundred and four million prescriptions every year. So you can see that medicines use is massive and it's increasing because the bigger the population gets, the older the population gets, the better technology gets at curing conditions, the more medicines we seem to use. But I think that's something that comes into that is also about the pill for every ill culture in the public's minds. We have so many new-tech medicines

these days. Before if you got a diagnosis of hepatitis C or HIV or cancer, it was a death sentence. And it's no longer that we have medicines that can treat it, but also that pill for every ill culture tends to now come into full focus in lifestyle conditions. So if people can't get to sleep, if people are overweight, they automatically seem to turn to a medicine in many cases and not their lifestyle changes, exercising, eating healthy diets, etc. So, we use a lot of medicines.

Clare Bond [00:04:48] You describe it, the pill for every ill, is that we really look towards medicine for solutions rather than say, yes, more exercise or a better diet.

Sharon Pflieger [00:05:00] I think sometimes medicines are seen as the easy fix by the public. I think there's huge public expectation on prescribers and quite often it's sad to say, but quite often prescribing a medicine in the limited time that prescribers have in their consultations is the easiest thing to do. So I would advocate for more use of our blue green natural resources, get out there in the fresh air. And I think the pandemic has certainly brought that to the fore because it seemed that the government has prescribed an hour, a day of exercise for people. So we were locked up in our houses, but actually they said we could leave our houses for an hour a day for exercise. And certainly where I live, I've seen many more people out on the streets walking during the pandemic. So I hope this is something that's going to stay with people.

Clare Bond [00:05:49] I have to say it's amazing that you said that because I think that it's exactly the same here. And I've got friends who live in London and they have said "There are people jogging up and down the street who look like they've never left their homes before". And I think it was quite almost like it was the only thing you could do, so everybody did it. Like you I really hope that that kind of change stays with people as we come out of the pandemic and that the benefits that people got from going out for that hours worth of exercise every day, that people really kind of hold on to that and that it becomes part of their lives in the future.

Sharon Pflieger [00:06:33] Yeah, and I think that prescribing an hour outside each day has benefits for our population, obviously, because people get healthier not only in a physical sense, but we know that being out in nature, going out for a walk is really good for your mental health. And we also are acutely aware that the pandemic has had a huge impact on people's mental health. But getting back to the benefit, not only will it benefit our population, our people, it'll benefit the planet, because ultimately, if we keep that up, we will potentially be using fewer medicines and as you said, between 21% and 25% of the greenhouse gas emissions in the NHS come from medicines. So how does that happen? Well, that happens really partly from the medicine itself, but mainly from the transport of that medicine. So we get a lot of the base products for our medicines from places like India and China. So we're transporting them from the other side of the world and then transporting them to all our health care facilities. So the fewer medicines we use, the less transport, fewer greenhouse gas emissions we let out.

Clare Bond [00:07:40] Yeah, I think that's interesting and I don't know if our listeners will be aware, but we have this concept called the life cycle analysis and that can be of any product or any activity. And so if you think of a drug, you think of all the research trials that it has to go through and all of the chemical kind of research that has to go into that drug. And then, as you say, then the manufacture, the greenhouse gases we emit when we manufacture that drug and then that transport of that drug to people's homes. So actually, when you when you look at the full lifecycle from kind of initial concept through to getting

that medicine kind of into somebody's house for them to take, it is actually massive, and I guess something we don't really think about.

Sharon Pflieger [00:08:28] It is and the lifecycle is a really good analogy to use, Clare, because in a life cycle there are obviously many points that we can make change so many useful sites in that for interventions. And people will probably feel that they can't do a lot about the manufacturing of it or the licensing of it themselves. But what we can do as the public, as users of medicines, is actually think about whether we need a medicine. So one common example is children. They get lots of ear infections, but actually the best medical evidence tells us that infections do not need antibiotics. But as a mum of a screaming baby or a screaming toddler, all you want for them is to stop screaming and feel better. So mums tend to make that journey to their doctor to get a prescription. And prescribing for ear infections has gone down dramatically in the past few years. But I think it's still a message that we've got to get out there that quite often a medicine isn't the right treatment for you. There are lots of other things we can do so we can intervene ourselves in that part of the life cycle. And then another interesting thing, if we actually do get the medicine, when we take a dose of medicine and the medicine actually, and along with its metabolites, comes out in our wee and our poo and that in turn goes down the toilet into the drainage system and ultimately ends up in our oceans and rivers. So, again, we've got a part to play there because we must think about whether we need the medicine. If we don't need the medicine, then it won't be coming out in our wee and our poo. But we're not telling people not to take medicines because lots of people need medicines for many reasons. But if you do have a medicine and you have any leftover in your cupboard, any out of date medicines then whatever you do, please don't flush it down the loo, because it'll go straight into the waste water system again and straight into our oceans. So please do take it back to a community pharmacy, a chemist on the high street, and they'll get rid of it safely for you.

Clare Bond [00:10:27] Yes, so we've now leapt from kind of greenhouse gas emissions and the impacts of medicines on climate change to the impact of pharmaceuticals on pollution more broadly and on the environment that we share with other animals and plants and the importance of our stewardship of the Earth, I suppose. Well, I was going to say that my daughter would like this podcast because you've mentioned the loo, you've mentioned poo and you mentioned wee. But, I think the truth is that these compounds in medicines, they're not stripped out in our normal filtration processes as we process waste. So they do get into the marine biodiversity and they can make their way also back into the into the human food chain. You know, as you were saying, it's really important that we dispose of these medicines very carefully so that they don't affect the biodiversity of our planet in adverse ways. Can you just say a little bit about how much evidence there is for medicine getting into other species or affecting species?

Sharon Pflieger [00:11:43] Yeah, sure. So I think that the pharmaceuticals in the environment bit and the greenhouse gas bit of medicines are really closely linked because they both affect climate change ultimately. So, people tend to think of climate changes as the net zero agenda and we've got to reduce our greenhouse gases. But, actually a huge part of climate change is biodiversity and the loss of it. And if we lose our biodiversity, if we lose our environment, we won't have a planet on which to live. So, we won't have that net zero agenda because none of us will be alive and the planet will not be able to hold life, secure life for animals, humans or aquatic life. So, why is water important in climate change? Biodiversity actually, the ocean itself holds 90% of all life on the planet. And already we've lost quite a lot of the life in our oceans. And if we keep on losing life in our oceans, we lose the oxygen to the planet. And again, people think that trees are the big

oxygen providers for the planet. But, actually plankton make up 70% of our oxygen production and they absorb 50% of our carbon dioxide. So, it's really in all of our interests to keep our oceans clean. And it's not just about being clean, it's about what we're doing to the wildlife in the oceans. So, there's lots of evidence about how medicines and pharmaceuticals in the environment are actually impacting our wildlife. Much of it is around fish or aquatic life. We have seen the feminisation of fish and that means that our male fish have female sexual organs. Now, that's not too good for sex and reproduction. And I think your daughter's really going to love this podcast now, because now we're talking about pee, poo and sex. So, if we have a fish population that's only got females, then we lead to population collapse. So, we lose the fish in the food chain. And that's, that's not good for us as humans either, because many of us actually eat fish. And we also know that pharmaceuticals in our water cause fish to change their behaviours, so they can change behaviour, they can change their physical form. Some of those examples include migratory patterns, fish becoming less aggressive. And we have had an example of salmon smolts, baby salmon, in our rivers being exposed to a drug called Oxazepam and that's one of the benzodiazepine family, one of our antianxiety drugs. And the thing with medicines is that they're designed to have a biological effect on humans and animals. So, they're going to still have that biological effect if they go into our oceans and our rivers. And what happened with these baby salmon was they took this antianxiety drug, and when we prescribe it in humans we want to feel calmer, and of course the baby salmon's felt calmer as well. So, what they did was begin to migrate much, much earlier than they should have. And they left their riverbeds and went out into the sea. And that results in them being eaten up again. So, they haven't got the development. They haven't got the maturity to fend for themselves. So again, that leads to population loss. But, we also have evidence where sludge from our wastewater treatment plants is used to fertilise land. Now, if that residual sludge has got pharmaceuticals in it and it's laid on the land as a fertiliser, then it's going to be absorbed into the soil and into vegetables, so there have been instances where carrots and lettuce, for example, do contain pharmaceuticals and then as humans, if we eat those, it's another way of us ingesting pharmaceuticals. So, it is a worry and we need to protect our oceans, our rivers and the life that's in them.

Clare Bond [00:15:45] It's a very scary picture, actually, that you paint there Sharon, and it is also a picture that I think takes us back to the concept of one health. Health of the population, health of the planet, health of life on the planet more generally, and our biodiversity, they are all so intrinsically linked. It's not just a simple single solution. Everything is interlinked and we all need to take care of what we're doing and think about the health of the planet as well as that kind of health of ourselves. And I really like, for me, one of the things that's coming out of this conversation is this kind of power of the collective effort. So, you can ask what can you do for me? Do I really need to take that medicine? I've got this waste medicine, I can take it back to the chemist on the high street rather than flush it down the loo. And, you know, the bigger companies can look at their kind of supply chains and how they manufacture things to maybe decrease greenhouse gases there and how they also deal with their own ways and activities. So, there is this quite powerful potential for people to really work together at a lot of different levels to affect change and that brings me back to Homeward Bound and this exciting initiative Sharon and I just started. One of the hashtags for homeward bound is 'stronger together'. And I think one of the most exciting things for me is meeting you, Sharon, and the other women who were involved in this year's homeward bound initiative. And I'm learning a little bit about them and what motivates them. So, yeah, I guess I'm really interested to know what made you apply for Homeward Bound? And why now? What made you kind of step up and take the challenge now?

Sharon Pflieger [00:18:05] Wow good question, Clare. I'll tackle the question you've asked, but first of all, I'll give you my reflection on the first session that we've already had because we've started Homeward Bound. We're all in this incredible journey together. And in the first session, we had a kind of speed dating session where we met people and they asked us what drives us? And my immediate answer to that was making things better for people and making a difference, and I guess that's why I applied and, you know, I'm quite a way down my career. I'm not one of the younger researchers that has joined Homeward Bound. I've been there. I've done a lot. But there's still an incredible amount to do. And this agenda of pharmaceuticals in the environment, even though it's been around for two decades, more than two decades in research, it hasn't reared its head in health care. And I've been trying to get that message out for the last three years. And the climate crisis is going to have a big impact on health care. There's going to be more demand for health care services. And with that demand, we have more opportunity to create even more harm for the planet. So, I want us to have sustainable health care services, ones that help our patients, but ones that help our planet, too. And I guess my strapline is and my vision is, that I want to do for pharmaceuticals in the environment from medicines use what David Attenborough has done for plastics in the ocean. Now, it wasn't until David Attenborough showed us those heart rending photos of turtles being strangled by plastic fishing nets, seagulls stomachs being full of plastic that they'd eaten, that it really got to the hearts and minds of the population. And people started to think of plastic as a serious issue. So, I want people to start thinking of this as a serious issue. I don't want to scare people because medicines are very safe to take for humans and animals. They do have this effect on the environment, but we can get around that. We can mitigate it. And some of the work that I'm working on is greening medicines use. So, if we've got two medicines that do the same thing, cost the same amount of money to the NHS, I want to choose the one that's got the less harmful impact on the environment. So, there's stuff that I can do for prescribers, the stuff that I can do for patients. I can work with the pharmaceutical industry. And I guess I just wanted to build that worldwide network of people who've got the same passion for climate change and for making a difference and for leading as women. And that's essentially why I've applied for Homeward Bound and why I'm finding it so exciting.

Clare Bond [00:20:51] Awesome, so I've got one last question for you, Sharon. And that is, what would you say to young women who enjoy science, technology, engineering, maths and medicine, who want to make a difference in the world and who are maybe there at school just thinking about subjects they want to take. Maybe they're at university, but they're about to launch off on their lives and their careers in that sense. Do you have a message to them?

Sharon Pflieger [00:21:25] I've got a very simple message and also a little bit of a story about me that might help them. So, my message is just three words: go for it! And the story about me, when I came to Highland for my interview, the chairlady of the board actually asked me if you were an animal, what type of animal would you be? And I've probably got my environmental biology wrong, but I said I'd be a woodpecker, so I'd be a bird. And she said, why? Why would you be a woodpecker? And I said, well, I think that I am a woodpecker, because if something doesn't happen, if I've got a vision for something and that thing doesn't happen straight away, I just keep pecking away at it. And I come to that tree at different angles until it does happen. So, everything's possible. Everything's possible by young girls and young women. So just go for it.

Clare Bond [00:22:22] Brilliant, thank you very much, Sharon. So from pee, poo, loo and sex to this vision of one health, which is about the health of individuals in the population and the health of our planet and a very holistic view. Thank you so much for joining

Breaking the Ice Ceiling and I'm so looking forward to sharing this 12 month adventure with you. Thank you Sharon.

Sharon Pflieger [00:22:49] Me, too. Thanks, Clare.

Voiceover [00:22:56] This podcast is brought to you by the University of Aberdeen.