Airing Pain 143: Personalised Medicine and Empowered Pain Relief

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Listen to Airing Pain 143.

This edition is presented and produced by Paul Evans, and includes interviews with:

Professor Tony Dickenson, Professor of Neuropharmacology at University College London

Dr. Beth Darnall, PhD, Professor of Anaesthesiology, Perioperative and Pain Medicine at Stanford University School of Medicine. Director, Stanford Pain Relief Innovations Lab.

Professor Irene Tracey, Vice Chancellor of the University of Oxford and a Professor of Anaesthetic Neuroscience in the Nuffield Department of Clinical Neurosciences.

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Transcript begins

Paul Evans: This is *Airing Pain*, a programme brought to you by Pain Concern the UK charity providing information and support for those of us living with pain. Our family and supporters and the health professionals who care for us. And this edition of *Airing Pain*, was made possible thanks to the continuing support of the British Pain Society. I'm Paul Evans.

Dr. Beth Darnall: We want to start to disentangle what pain has taught us in order to survive, because those hardwired responses overtime actually amplify pain. This is like the cruel irony of having a human body. Our body stores responses that end up working against us.

Evans: We are, of course individuals. Each of us is unique, all be it with common factors in our makeup. So why should medicine work on the one-size-fits-all principle? In this edition of *Airing Pain*, I'll be exploring why personalised medicine, that is medicine tailored to the individual is the way forward. So, let's go back to basics, the science behind how the body reacts to a painful stimulus. Professor Tony Dickinson is a professor of neuropharmacology at University College London. His research has hinged around trying to understand pain in patients and to take that back to the basic science of pain mechanisms and how treatments work. So, if I hit my hand on the table [bang sound] the pain is in my fist. What happens to it then?

Professor Tony Dickinson: So it kicks off yes, in your fist that's stimulus, and in this case it's a mechanical one, but it could easily be too much heat, too much cold. We have a whole set of specialised pain endings that tell us about the nature of the stimulus and they transmit electrical impulses up nerves into the spinal cord and the spinal cord doesn't sort of treat these passively at all. It often enhances them, if that pain input from your fist continues the pain message that's sent onto your brain, gets bigger and bigger, something called sensitization. Winding up of the pain and the messages from the spinal cord enter the brain. And they go to the sensory parts of the brain. So, we know that it's your fist, and you might say, well, that's seven out of ten, ten is the worst ever. This is pretty bad, but equally you find it unpleasant. You don't like it and pain produces an emotional response as well. Our brain puts those together. The sensory and the effective emotional component of pain and builds up a pain experience for each individual and it's different. The messages in the brain also interact

with what we call descending pathways, so pathways that come back from the brain to the spinal cord and the brain is able to switch that off. So, if you're in the middle of a podcast and you've entered your fist, you might say I need to kind of put this this pain aside if I can, but equally in other occasions your brain can make that pain worse. So, it's a network of pathways that we're very interested in and trying to place those mechanisms into the context of pain in particular patients.

The overall aim is really, I mean people have kind of called it personalised medicine, which is a kind of strange term, and it mostly relates to, you know, genetics in a sense. You know, you have your personal genes, and does that relate to pain, and that's pretty tough. What we're trying to think about is more what's been called precision medicine. So, can you target that pharmacological therapy, but it would be true for other therapeutic approaches to particular individuals, because for neuropathic pain, pain from nerve injury so many studies have been done looking at particular agents and you can pull them together and so you can build up a huge group of patients who've been treated, compare the treatment to placebo and it's incredibly disappointing that maybe one in four or one in five patients get a benefit from a particular agent, and so we're kind of interested in what's, what's going on? Why is this this? These agents work, but they don't work in everybody. So can we identify who they work in and that then becomes what we call precision medicine then, you know you don't just give somebody something for two months, hope it works and then try something else. You might be able to pinpoint a therapy and match it to a patient.

Evans: That seems very advanced to me because there are things called the pain management pathway. So you start off on one thing, doesn't work as you say. Then you go on to the next thing, then the next thing, and you end up at the very top of that with something that's still not working. So how do you work out…

Dickinson: Right, OK.

Evans: That’s the big question [laughs].

Dickinson: Yes, so this is coming from both the kind of basic science and the patient, and much of this work has been done again in, in neuropathic pain, things like osteoarthritis and inflammatory pains are kind of lagging behind in, in terms of our knowledge. But the principles are exactly the same. So what a group of German colleagues did was to do sensory testing in in their patients with neuropathic pain. So, there's a like a, a kind of kit you can get, which is like, you know, what's your response to cold, to warm, to mechanical. All these stimuli and you build up a profile. They just took patients with neuropathic pain, did this testing and it was so thorough and so comprehensive. Thousands, probably of patients in the end, and what they found is that there were three subgroups of patients. Their sensory responses were different from each other, and it didn't matter what the cause of their pain was, the so-called aetiology was absolutely immaterial. But there were three subgroups.

So, the premise was then if you take these patients and they're in subgroups, presumably those different sensory profile sensory responses, mean they've got different mechanisms, and if they've got different mechanisms, they might well need different treatments. Having established that, what is now going on is looking at drugs for neuropathic pain and saying, do they work in particular subgroups? And if that turns out to be the case, and there's a couple of good examples where it is the case, then you can be much more precise with your treatment.

Evans: So there's no point in giving somebody such and such a drug because they don't have the make up for that.

Dickinson: That could well be the case. Yes, that's why not everybody responds exactly. They haven't got the mechanism that that drug targets and so it doesn't work. Whereas if you can find patients where that mechanism is active, then you can. So, there's a very good example of a

very old drug, something called oxcarbazepine. It was a study done in Northern Europe and in Scandinavia and they just took patients and gave them the drug, gave them placebo and it didn't work. It was no better. This was all a bit mysterious because this drug is widely used by GPs in these countries. And they said, well, why are the GPs giving people something that clearly doesn't work. It's no better than placebo. But if you pulled out a subgroup of patients, ones who complained that their, their pain was much worse when stimuli were delivered, it wasn't like an ongoing pain. It's a, you know, if the bedclothes touched their painful foot, that caused pain. Then in that subgroup the drug worked really, really, well.

So, that's one example. And that came out a few years ago and the European Medicines Agency, on the basis of this, said from now on, you can do a clinical trial, a study of a drug and look at subgroups. This is sort of harnessing this idea that there's different mechanisms and we should start to see the results from these trials in in the next couple of years, I imagine where a number of other drugs will be looked at and saying do they work in everybody? No, they don't. And can we identify who's going to respond?

Evans: I guess the number of subgroups and sub subgroups should be infinite. We're all different.

Dickinson: Well, yes, that's quite possible. But if you do these studies in this mixed group of patients, it's clear that it it does work in some of those. And so the idea is to sort of try and get this sorted out, and there's another example of this which is complicated, but I find absolutely remarkable. So these pathways that come from the brain back to the spinal cord are deep in our brain stems. You know, they're completely invisible. You could do an F MRI scan and you could see activity, but that's never going to happen routinely. But what you can do, and it was based on science that's been taken into the patients. If you have a pain somewhere in your body and you apply a second one, the second pain will inhibit the first. And so it must be some sort of mechanism for the brain to focus on one pain when there's two.

But if one pain can inhibit another, it turns out that this is using these descending pathways, the inhibitory one and so the identity of the transmitter in those pathways was done.

It was where we actually did in basic science, so we said, OK, so you apply a painful stimulus. It inhibits the second one. It's a transmitter called noradrenaline. It's in the descending inhibitory pathway and this of course can be applied very easily to subjects and patients. All you do is apply a second painful stimulus and quite often you know it's, I don't know, heat on the hand or ice water on the foot or something. And in patients this pathway is lost. It's gone. This descending inhibitory control has disappeared, and it's in many patient groups, patients with neuropathic pain, patients with osteoarthritis, migraines etcetera, etcetera. So, this now enables you reasonably simply one pain against another in the patients. Does your descending pathway work, or not. And there's two drugs that elevate enhance noradrenaline levels and they were tried in these patients and interacted with this mechanism, so we can start to say now we have a mechanism that's gone wrong, we've lost it. It's failed in patients, but we can bring it back with the correct drug that elevates this missing transmitter nor adrenaline. So that becomes a very, very sort of precise way of looking at a mechanism in individuals.

Evans: So you're not treating the initial pain with further pain, you're actually changing the chemistry.

Dickinson: Yeah.

Evans: The Processes.

Dickinson: You're putting back the normal chemistry that should be there with the correct pharmacological agents. And if you take drugs that don't work on noradrenaline, they do nothing to it. So, it enables you to kind of like focus in on what's going on. And then one of the arguments has been well, you know if you have to do this sensory testing to try and get these

profiles of patients and if you're giving one pain against another, it's complicated. You can't use it routinely. But the clinicians who've been working on these have produced very simple bedside versions of these. Which should be much more widely applicable, so I think we'll start to see, you know, in a number of different contexts. The use of this idea of kind of profiling and homing in.

Evans: So the very basic kits, if you like, that you're talking about and what do they consist of, how do work?

Dickinson: Right, so there's these kits. So, you basically have like a cold roller, a warm one. You have a brush, you have a pokey [laugh] stick kind of thing. The other one has, as I said, you just kind of need a heat source on the hand for example, and then you go how painful is that? Put cold, ice cold water on the foot. In a normal individual, one inhibits the other. In these patient groups very often this system has failed, so you can do it sort of relatively sort of simply now, and I think that's the way that pain medicine is going to be going.

Evans: I'm going to go back to the explanation of pain that we started earlier. Are you saying there's just one spot in the brain that is the pain bit?

Dickinson: No, it's been called the pain matrix and the idea is that it's a number of areas that become activated by pain and some of them are to do with where is my pain? How bad is that pain in in terms of that sensory input? And then we have all the emotional parts of the brain, the kind of fear, the anxiety, the worry that the pain causes, the aversion, the unpleasantness. And so it's a combination of all of these events, and so in a very kind of focused way, theoretically you could do lots of brain scans on individuals and see what this pattern of activity is.

The trouble is it's no good for kind of routine work at all. So, the idea is to use these sort of sensory tests to apply stimuli and get the patient to tell you, and again the same German group but a French group did the same,

and again it's for neuropathic pain, but it needs to be done with osteoarthritis, post-surgical pain, you know other pains as well, but they just produced a questionnaire and so it's a very simple questionnaire. You could give it to somebody if they're waiting for a GP appointment or something and say just fill in this questionnaire, it takes a few minutes and it just says, you know, what is your pain like? Is it burning pain? Is it there all the time? And so you can build up a profile by questionnaires as well as using the more sort of complex techniques.

Evans: That's Professor Tony Dickinson, who I spoke to in 2022. He touched upon the role of brain imaging to identify areas within the pain matrix. We'll return to that a little later, but for now, we've talked about the pharmaceutical elements of pain relief. Well, what about the psychological elements? Psychologist and scientist Doctor Beth Darnall is a professor in the School of Medicine at Stanford University, where she directs the Pain Relief Innovations Lab. She's been involved through practise and research into the best ways of tapering or reducing the level of opioid medication the patient is taking using a psychological approach, I spoke to her at the British Pain Society annual scientific meeting in 2023 and the question I put to her was that, surely relief is pain relief. There is nothing psychological about pain relief.

Darnall: And yet everything is psychological about it. So I mean, if we look at, you know, even the definition of pain from the International Association for the Study of Pain, it's both a noxious sensory and emotional experience. So, psychology is baked into our experience of pain, and the intensity of pain that we experience and how much we suffer from it can be influenced by our history, by our gender, by our biology, by our expectations, our beliefs, our thoughts.

So, I'll give you an example, because this is involves opioids. So, Irene Tracy famous researcher right here in the UK, she and her colleagues did a really cool experiment and they brought people into the laboratory and

everybody in the experiment in this study got two things. They got heat pain on their hand and they had an IV placed in their arm, and what they were getting in the IV was remy fentanyl, which is a powerful opioid medication. So, you're getting pain and you're getting opioids, but there's three conditions. Condition one, people are told, OK, you're going to feel the heat pain, but no problem. You're going to get the medication, so you're not going to feel anything. Condition two. There was deception and condition two. And they said, well, you know, you're going to feel the pain. We're just giving you salt water in your solution, so be prepared that you're going to have discomfort. You're going to feel the pain. In condition three, they said you're going to feel the heat pain and we're going to give you a medication that's going to worsen your pain. So, we promise you won't be harmed. But be prepared that you're going to have more pain, now in all three conditions. They're getting the pain and the opioids. The only thing the researchers are manipulating is people's expectations, their belief about what they're getting in the IV. Fascinating studies.

So what the researchers found was that when people really and truly believed and were getting remy fentanyl, the analgesic benefit of that medication was doubled relative to when people believed they were getting the placebo, the salt water, and when people believed that they were getting something that was going to increase their pain, it completely abolished the analgesic benefit of the remifentanil all they were manipulating was a person's beliefs. So that's just one example of how powerful our mind is it. It doesn't just influence how much pain we may feel. It can influence how well our medications work. You know, that's just one example. But you know, look, you're right. I mean, any of us, any of us, you know, we place our hand on a hot stove. We're all going to have a universal experience. We're going to feel pain. We're going to feel shock. We're going to have automatic withdrawal responses that's universal.

Evans: With that experiment where you're basically lying to the patient about what's going in them and telling them this will work. This won't work.

Darnall: Yeah.

Evans: In the boldest sense of that, physicians should just lie to patients and say this is gonna be brilliant.

Darnall: Well, I will tell you I am not a fan of lying. I mean, I'm a very staunch advocate of informed consent always. Here's a caveat though. One of the ways in which we will do medication titration in the hospital settings is let's say people are on a, you know, a mix of high dose medications and there's a need for whatever reason to reduce those medications, decades of research has shown that one of the best ways to do this is using a blinded cocktail. So, what that means is that the patient isn't told what changes are going to be made to the medication, but the doctors know. Now, the caveat, though, is that the patient knows going into the hospital that they're going to have medication changes and they will not know what those changes are.

So, it's not that we're doing something without people's consent. Patients are consenting to have their awareness in the medication titration process removed. And what the literature shows is that when we remove our awareness, there can be some pretty stunning results. It's expensive, it's not scalable. Very few people have access to this type of, you know, it requires a lot of physicians and sensitive changes to medication. So that's, you know, an interesting truism, but I'm not an advocate of lying to patients.

Evans: Of course not. Well, Beth Dunnell mentioned the work of Professor Irene Tracey. And as luck would have it, she was at the same British Pain Society annual scientific meeting. She'd just been appointed Vice Chancellor of the University of Oxford and the British Pain Society wanted to publicly recognise her pioneering work in the field of pain.

Professor Irene Tracey: I am delighted to be at the British Pain Society to receive an honorary membership, which I've just been awarded just about half an hour ago and this fills me with enormous pride and I feel very honoured that I've been recognised in this way for the work I've done over the years and my team. So, for the past twenty-five years, the research team and I have been trying to unravel the mysteries of how the human brain constructs the experience of pain. Whether you're everyday, you know, acute pain that helps protect you as a warning signal, and then more challenging the problem of chronic pain, and how the central nervous system, particularly the spinal cord, in the brain. How that again puts the signals together to give the patient their experience of pain and also how the brain and the spinal cord contribute to the maintenance and the worsening of chronic pain states.

So what are the mechanism that are holding people in these persistent pain States and amplifying the experience. And so we've used brain imaging tools and other types of tools to try and look non-invasively inside humans to see what's going on. And it's been an amazing journey and I've been very fortunate to work with extraordinary people over those twenty-five years.

Evans: I can remember we did meet many, many, years ago I have fibromyalgia and the debate does it exist or does it not exist? I can remember straight away you saying I'll show you it.

Tracey: Yeah, so I mean, although that's one of the few conditions we haven't really focused on ourselves, I think what I was showing you was some of the amazing new imaging work done by other groups. In fact, just this week, I've had Dan Claw from Michigan in the USA who's been a real pioneer in the newer imaging of fibromyalgia come and visit us in Oxford and stay with us. He's a dear colleague and friend. And I think what I showed you there was unarguable data that showed that the brains of people who sadly suffer with fibromyalgia are miserably different to those people without a pain condition and fibromyalgia. And that is both using data

that looks at the structure of the brain and its and its wiring, as well as its, you know, its chemistry and that then becomes very difficult for people to argue against. When you can see it. And that's, I think, the beauty of imaging is, you know, it's so visible and it's more understandable I think for people than other types of scientific data.

And I think that helps again, give people who are patients who've maybe been felt that they've not been believed a sense of you know, finally here's some proof for what I've been saying. And you know, just giving that ability to give that visualisation and that objective data can be very empowering. And then we can move the conversation on and start to say, right, what are we gonna do about it? Let's stop arguing about whether it exists or not. It clearly exists. Now, why is it there and how can we fix it?

Evans: An interesting thing, not just fibromyalgia, but with all chronic pain conditions. What fascinated me was that through your imaging, you can see that when there's a pain stimulus, it's not just a pain area that lights up even if there is such a thing as a pain area, it's all sorts of things. Emotions.

Tracey: All sorts. That's right. So it's this incredible set of brain regions that becomes active even just to a little pinprick on your hand, both sides of the brain activate. It's all the bits of the brain that you need to activate so that you know it's on my right hand. It's a short stimulus. It's a long stimulus. It's a mechanical as opposed to maybe a thermal, you attend to it, so you need to grab the attentional system. If the stimulus is still continuing, you are gonna activate other systems in the brain that are gonna tell you what to do about it. You know, take your hand away or remove yourself from the situation that's hurting. Remember what caused it. Of course, you'll have an emotional reaction about it as well, so all of those different things, even just to a very simple you know, pinprick have to be processed by different brain regions and that's why it's such a huge area. And then the complexity in that is how in all those different regions, how can we sort of disambiguate, which

are the set of regions and networks that are encoding the hurt elements of it.

So, although those other areas are really important, because that's all part of the multi-dimensional experience of pain, the fact that it commands your attention and all these other features. In essence, you still want to try and track down where's the hurt bit of it, and that's still a bit of a mystery. You know, we got sort of various regions and networks that we think are really important and one can do preclinical studies to be more causal in verifying, you know where those bits are. So, the progress is coming along fantastically well now and it's been a great journey and it's a great area for young people to come into because there's plenty more really fantastic questions to pursue.

And so I shall, even though my role as vice chancellor, I will not be able to run the lab. And so I'm handing the, you know, the lab. The lab will continue. And obviously I've trained lots of people. So there's wonderful people carrying on with the work. And that's the most important thing. And I'll be cheering them on from the sidelines and doing everything I can maintaining my membership of the British Pain Society and championing pain in the role I have as vice chancellor. So, I'll be involved more from the sidelines and we'll be watching with interest. You know how the field progresses particularly in the neuroimaging space, which is where I've largely sat.

Evans: Well, congratulations on the recognition you've received today and it's greatly deserved.

Tracey: Thank you very much, Paul. And once again just you know a huge thanks to the British Plain Society and the council for the election and the honour, and I wish everybody all the very best going forwards. And keep up the good work.

Evans: Absolutely. Professor Irene Tracy, Vice Chancellor of the University of Oxford. Now, Empowered Relief. It's a psychology-based intervention that provides individuals with essential pain relief skills. It was created by Doctor Beth Darnall of Stanford University, who we heard earlier to be delivered by certified clinicians as a resource for those seeking relief from acute or chronic pain. So as we're finding out, there's more to pain relief than just medication.

Darnall: Look, we're humans and it's true. That there's more to everything than the thing itself. And what I mean by that is there's us. We're interacting with everything. Whether that thing is a person, whether it's an activity, whether it's a medication, but we bring ourselves in our current state into that interaction with people, with treatments, with what have you, I mean in this is why we have individual treatment response. You know, everyone's different. We're bringing ourselves into the equation, but because we're bringing ourselves, I have always felt very strongly that we need to set people up for success. And that's why when it comes to something like opioid tapering, we want to make sure people feel safe. They feel comfortable, they feel in control because from that foundation you have the best chance of that treatment working and this case, it happens to be a tapering intervention, but it's true for surgery too. So, we focus on giving people treatments before and after surgery to enhance their surgical outcomes.

Evans: You've used the word empowered relief. Does the patient have a role in their own pain relief?

Darnall: Yes, they do. That's essentially where I focus on is on helping people either reclaim or cultivate, you know, their own empowerment within the context of managing pain. So, there are things that you and I can do to help ourselves. We're not born knowing how to do that. It must be learned. This is true for all of us. With Empowered Relief, for instance, I just put together an efficient toolkit or intervention so that ideally people can get

that information, acquire some effective skills and tools, and then be able to use those to begin to alter neurobiological, physiological patterns. That without that skill set, we're going to respond to pain in a very predictable way, and it doesn't necessarily, it's not a helpful way.

Evans: So what are those tools that a patient can tune into?

Darnall: So several key ingredients. One of the first and foremost foundational principles is to provide education information. What is this? Why does it matter? How can this help you? So we just provide that general rationale because most people don't necessarily understand that or you know how and why would they? Right so, providing that foundational information, providing information on the connection between how pain naturally impacts us, how stress naturally impacts us, the connection between the two.

And then three core skills. These are pain management skills that are commonly taught in treatments such as cognitive behavioural therapy for chronic pain, acceptance and commitment therapy. These are treatments that typically a psychologist would deliver one-on-one or in a group format, covering a variety of topics. This includes people learning how to decrease hyper-arousal that stress and tension, that pain naturally causes. So, if you or I experience pain right now, we're going to have a response to that. That's neuromuscular, but it's also going to change our thought. You know, our attention is going to be grabbed by it. So, we want to start to disentangle what pain has taught us in order to survive and to be able to reverse some of that because those hardwired responses overtime actually amplify pain.

This is like the cruel irony of having a human body. Our body stores responses that end up working against us, so it's learning a simple skill set where we learn to calm the nervous system, where we identify our unhelpful patterns of responding to pain. So for instance, if I have migraines, I might

just sort of start to feel something coming on and then I might start to focus on it and worry about it. I'm not going to be able to finish this interview. I won't be able to do my session this afternoon. I might, you know, start to ruminate about it, that process, while we can understand that why I would do that makes perfect sense. And yet that actually can bring to bear the thing that I'm concerned about.

Evans: That's called catastrophising, isn't it? Worrying about things that may never happen?

Darnall: They may never happen, but they might happen too, so catastrophising can be rooted in deep learning. You know, this always happens so. I'm justified in thinking this way, and so I'm always here to validate people. Of course you're thinking that way. And of course this, that or the other. So it's there's no judgement about it. It's just simply recognising we have one goal and that's to help you get relief as quickly as possible, the strategy is to interrupt that thought pattern as quickly as possible. There's scores of studies that have shown that our thoughts and our attention can serve to amplify pain or we can de-amplify it. We can calm it.

So, I'm just invested in moving people as quickly as possible to relief by extinguishing unhelpful patterns that are not serving us because they're not helping us. They're backfiring against us. So, the focus of Empowered Relief is about extinguishing things that are unhelpful. The neuromuscular patterns that are unhelpful. OK, let's start to extinguish those cognitive and emotional patterns that are …let's extinguish those and then interrupting those using some key tools.

Evans: But for people starting out on their chronic pain journey, it's a huge leap of faith. People will go to the doctor and they want that pain relief. They want those tablets and it's a huge leap of faith to jump from that to seeing a

psychologist who says now we're going to change the way you think about your thing.

Darnall: Totally, absolutely. And I'll tell you that is the main reason why it's called Empowered Relief. It's not pain psychology 101. You don't have to be a psychologist to deliver Empowered Relief. So, I certify healthcare clinicians of any discipline. So, you can be a physician, a nurse, a physical therapist, you know, mental health practitioner you name it. Ironically, as a psychologist, one of my main goals is destigmatising the psychological elements of pain and the psychological treatments or those aspects. It's not psychological treatment, it's pain treatment. We're treating pain. We're treating pain proper. We're not just helping people cope with the pain they have. Our research shows that pain intensity decreases four months after people receive this treatment.

Evans: So, they have that before the operation. It's part of the complete process.

Darnall: It's part of the complete process. They may or may not receive it before, some people receive it right afterwards. It depends on the person and what they want. For some surgeries, it's better to get it right after surgery because before surgery there may not be time if it's an emergency surgery. Also, people are very focused on the surgery. There's a lot of details. People's minds are more focused on the surgery than anything else. However, after the surgery, they have nothing but time. They're focused on their recovery and they want to get better as quickly as possible. They're more motivated and so we find, you know, we can give people an iPad in the hospital after surgery. They can engage with this or they can take an online class from home. And get the information and then begin using those skills.

Evans: Doctor Beth Darnall. You can find out more about Empowered Relief at the website: www.empoweredrelief.stanford.edu . As in every edition of *Airing Pain*, I'd like to remind you of the small print that whilst we in Pain

Concern believe the information and opinions on *Airing Pain* are accurate and sound based on the best judgments available, you should always consult your health professionals on any matter relating to your health and well-being. They're the only people who know you and your circumstances. And therefore the appropriate action to take on your behalf.

Now it's important for us at Pain Concern to have your feedback on these podcasts so that we know that what we're doing is relevant and useful to know what we're doing well and maybe not so well. So do please leave your comments or ratings on whichever platform you're listening to this on, or the Pain Concern website of course, which is: www.painconcern.org.uk that will help us develop and plan future editions of *Airing Pain*. Last words to Beth Darnall.

Darnall: The most exciting aspect in my recent career is that medical institutions and surgical hospitals and clinics have adopted Empowered Relief as standard care. So, anybody who goes to Cleveland Clinic to have spine surgery, they get Empowered Relief, as part of their spine surgery care pathway, it's not separate, it's not psychological. It's pain care.

Transcript Ends

Transcribed by Owen Elias

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