

***Airing Pain* Programme 17: Primary care and pain in the brain**

The healthcare professionals transforming pain management, and we take a closer look at how pain is produced by the brain.

Airing Pain was at the launch of the British Pain Society's Primary and Community Care Special Interest Group where we heard from healthcare professionals who are working to improve the management of pain conditions in the UK. The crucial role of GPs in recognising and treating pain was especially emphasised.

Plus, is pain all in the mind? Paul Evans learns about the science behind pain in the brain and the exciting studies being done by Prof Irene Tracey and her team at the Oxford University Brain Imaging Unit.

Paul Evans: Hello and welcome to ***Airing Pain***, the program brought to you by Pain Concern, a UK charity that provides information and support for those of us living with pain. This program was supported by a grant from Pfizer.

Professor Anne Taylor: Up till now a lot of people have said 'Oh well, nobody will die of pain' you know 'let's not be worried about it'. But you are one and half times more likely to die if you've got pain and you are twice as likely to die from cardiovascular or respiratory disease if you have got chronic pain.

Professor Richard Langford: British GPs are probably the best primary care system in the world. I am very proud of what we have created. We are fantastic at trying to pick up chronic diseases before they develop or to stop them from developing further, but we are not doing that with chronic pain, which actually is the biggest part of the problem.

Evans: This April the British Pain Society launched a new special interest group which hopefully will be a milestone in the management of our chronic pain conditions. I am Paul Evans and for this edition of ***Airing Pain*** I went along to the event. I started by speaking to Professor Richard Langford – he is an anaesthetist and pain medicine doctor at Bart's Hospital in London. He is also the President of the British Pain Society.

Langford: Well today is actually a very important day for the British Pain Society. It is the launch of our Primary Community Care Special Interest Group. Some people quite like to call them 'special expertise groups', but special interest groups. This is one of eleven special interest groups in the British Pain Society.

At this particular moment in time, when we have two things happening on a national level: one is the opportunity to collaborate with the Royal College of General Practitioners over their decision to have a clinical priority program in chronic pain for the next three years starting from April of this year, for three years plus a further two years of activity after that, together with all that's happening in the wider NHS – particularly in England with GP consortiums and commissioning.

So whatever shape that should take we are going to see our primary care colleagues maintaining and if anything, becoming more influential in the management of the health service and the direction of care for patients. It couldn't be a better moment to be developing our general practice links and our general practice membership of the society.

Evans: Professor Richard Langford, President of the British Pain Society.

Now, Dr Martin Johnson is a GP based in Yorkshire. He has a long-standing interest in chronic pain and he is at the forefront of the medical politics and particularly the successful campaigns for pain to be made a clinical priority. Just recently he was appointed Royal College of General Practitioners UK Clinical Champion for Pain Management. So with 7.8 million of us living with chronic pain, why is it only now that now our pain has been granted official status?

Dr Martin Johnson: The unfortunate thing is that, even though we know pain is one of the biggest clinical challenges and there is so much data looking at the fact that pain is probably the biggest long term condition we have actually got, it is not recognised as a condition apart from... it is actually in Wales and in Scotland. But that doesn't make everything – we need to have prioritisation round it within the medical communities. There have always been these examples of assumptions: that people don't die with pain, but we know from the research – the excellent research from Scotland – that people *do* die quicker when they've got chronic pain.

So I think what we are trying to do is to raise it up a level. We are trying to educate people particularly within primary care and community care, because it's not just doctors with pain –

that is so important. We are trying to educate about the nature of chronic pain – that chronic pain is not just repeated acute pain – that actually there are changes that happen within our body and trying therefore to link this in to the GP consultation, to get systems running. In fact, literally it was only yesterday we got the approval as to what we will be doing in the first year.

Evans: So what's that?

Johnson: One of the key things is because of the some of the other priorities or some of the other initiatives that are happening within the pain world, we are trying to link them *particularly* into the development of the five pathways for the Map of Medicine project which is happening under the auspices of the British Pain Society. One is on visceral pain which is going to be pelvic and pain of both male and female...

Evans: Could you just explain what visceral pain means?

Johnson: Visceral pain means pain with your organs, but the commonest pain within that is pelvic pain. In fact, those that deal with it constantly will actually say that the figures for pelvic pain is actually just as bad as the figures for lower back pain, though probably not within actual people attending GP practices.

We are going to look at spinal pain, so that's going to be of all descriptions, including neck pain. We are going to look at musculoskeletal pain when it is not caused by inflammation, which is the rheumatology aspect – they will deal with that. We are going to look at neuropathic pain, so nerve-ending pain. We are also going to look at quite a unique pathway, which is going to be a pain assessment, particularly aimed at GPs, but really pain assessment at any point of contact.

Evans: Dr Martin Johnson, the Royal College of General Practitioners' newly appointed Clinical Champion for Pain Management.

Now, Dr Mark Porter is a household name as a journalist and a broadcaster. He is chairing this launch of the British Pain Society's Special Interest Group for Primary and Community Care. He is also a GP and has a long standing interest in pain management, having worked as an anaesthetist and in a pain management clinic back in the 80s.

Porter: Secondary care, hospital management of pain is very good, but I still think there is a lot we could be doing in primary care – the community, general practice, call it what you will

– for two reasons: I think there is a big problem with people self-medicating – I don't think Joe Public has much understanding of how painkillers are working or the best way to take them or what they should be taking them for or what mix should they be taking.

Evans: What do you mean by self medicating?

Porter: Well, I mean treating themselves over the counter. You buy aspirin, ibuprofen, paracetamol or codeine type drugs – we spend a fortune on these products – and people use them, often long term, without really understanding what they should be doing, without seeking expert help. When they do seek expert help in the community, GPs have varying degrees of expertise. You know, we could be doing a lot better at making sure... for instance, we don't even have any national guidance on how to tackle pain, so it's great if you are a hospital consultant or if you a specialist or an ex-anaesthetist but if you are a GP then it is one of a thousand things you have to know and you may not be as good at it, as you think.

Evans: But as a GP you are the first point of call, at least the first point of call for help for somebody in pain?

Porter: Yeah, we are first point of call after self-medication. So often, it is not unusual for me to see people who have taken medication for headaches for nine months before they come and see me. I mean there are others who come after nine minutes, but, you know, nine months they come and, actually, about half a million of people in UK have a form of headache that we think is caused by them taking painkillers. So they start off with something, they take painkillers for it and it ends up giving them a headache for which they take more painkillers which are creating more of a problem and all we do is simply stop the pills and they magically get better and they find that remarkable.

But that's an example of when you have knowledge and you use it properly, you can get the best out of pain relief. But, for sure, for people with arthritis and lots of other conditions we are the first port of call and generally we manage it very well. But for more complex, long term conditions – managing somebody's pain effectively, making sure they don't have side effects – isn't always a matter of simply getting the right medicine. It is also about state of mind and we know that the psychology of the patient, the doctor-patient relationship, all of those sort of things, explaining to patients what is going on, makes a massive difference to

whether they are going to be someone who is going to be disabled by pain or be able to live with it.

Evans: You as a journalist and a frontline broadcaster with access to six million people – are you aware as a mouth piece that people look at pain correctly?

Porter: Well I think it's a complex subject and the problem is that there is no such thing as an average patient, an average person with an average amount of pain. Each person is different. Our response to pain is very similar no matter what the cause may be. What I think what I want to do, is to address some of the myths and prejudices that surround pain and that's probably the most useful thing we can do.

I'd love to say we can educate the public and teach them about pain and make a massive difference that way. But actually what we can do is cherry pick a few items. For instance, the use of opiate, morphine-type painkillers – there is a this general perception that these are addictive drugs – you know, you can end up becoming a junky if you start them, that they are given to people who are at the end of their life – all of those sorts of things. And that, for a while, held back the proper use of those drugs in cancer patients and they are myths. Used appropriately, these are not generally addictive drugs and they are very effective. I've got patients who carry on working on them in perfectly normal jobs.

Evans: A lot of pain patients come away from a GP, thinking – they have been sent for cognitive behavioural therapy, whatever – 'it is in the mind'.

Porter: I think one of the things that people need to get to grips with – both professionals and the general public – is that pain is largely in the mind. The stimulus – whether it be a stubbed toe or an arthritic joint or a cancer in the bone or whatever, is very real – but the pathways that are taking that nasty signal go into the brain and it's the perception *there* that matters.

To try and just identify pain as purely a problem with a joint – so if I get rid of that joint problem I will be fine – is simply not true. And we know that is not the case, that in or around, at least one fifth of people with long term pain, *that* signal going into the brain *permanently* changes the perception of that pain and it can blow it out of all proportion so it becomes an all-consuming thing. In the same way that, if I was to stub one of your toes and at the same time it was announced that you had won the lottery, you probably wouldn't notice the pain coming from your toe [**Evans:** I'd be fine about it!] [laughter]... until afterwards.

We have all heard these situations – you are playing rugby and you get out of the scrum and there is huge gash on your leg and you never felt a thing – the minute you see it, you feel the pain. Well, the opposite can happen and in chronic pain, you over-perceive the pain and that is where interventions to try and change the person's behaviour and perception – we are not saying it is all in the mind, but it is largely in the mind. And if you ignore that, you are just being daft.

Evans: Dr Mark Porter.

You are listening to ***Airing Pain*** and can I just remind you that whilst we believe the information and opinions on ***Airing Pain*** are accurate and sound, based on the best judgements available, you should always consult your health professional on any matter relating to your health. He or she is the only person who knows you and your circumstances and therefore the appropriate action to take on your behalf.

Now for a person with chronic pain, to be told that pain is largely in the mind, needs some qualification. For the launch of this Special Interest Group for Primary and Community Care, the British Pain Society invited Pain Neuroscientist Professor Irene Tracey to address the question. She directs the Brain Imaging Unit at Oxford University. So, *all in the mind?*

Dr Irene Tracey: *It is*, because, basically, pain is generated by the brain – that is the organ that gives you the experience of pain. A lot of patients get confused about this and get worried about that because they think when the doctor says that, the doctor does not believe that the pain is real, because they think the mind is something not real.

Evans: They think it is imagination

Tracey: They think it is imagination and in the world of neuroscience, which is the world I work in, and the world of brain imaging, the mind is the brain. And it plays out through brain regions and chemicals in the brain and different what we call physiological processes that basically allow the mind, if you like, to change experiences and so not only do those tissue damage signals – say from your bad knee or your bad hip – arrive into the spinal cord and then they go up. They can do all that but if the brain doesn't get a hold of them, you won't feel pain, so it is just as real as having more tissue damage sending more signals over the periphery. These things that can go on inside the brain can turn the volume up and they can turn the volume down.

Evans: Irene, you seem to have sorted all my problems out. I'm in pain, you are doing all this marvellous research in Oxford and you have found the region in my brain, one spot in my brain that sorts my pain, so we will mend that spot in my brain and I am done.

Tracey: Pretty much, but it is not as simple as that. It is not one spot in the brain and people have for many, many centuries thought that there must be a bit of the brain that is the pain bit – just like the vision bit or the touch bit – and it turns out, it is not like that. There isn't one bit, because pain is not like that – pain is what we call an 'emergent experience', that ultimately you control, if you like, so that you have the appropriate pain for the situation that you are in, because sometimes you don't want to be distracted by the pain.

If you have had half your leg bitten off by a lion, you really don't want to be lying on the ground, worrying about the pain, because you are going to be eaten and killed and that is much worse so that is a worst outcome – so, you have a fantastic ability in the brain to switch it off. So in certain situations like that – that flight or fight response, you can just switch off those signals and the brain is the organ that does that. The brain just stops the signals even arriving inside the brain, so you don't feel any pain and can get away from the lion. Of course, when you are away from that high arousal situation, those signals coming from the half-bitten leg will arrive and then you will realise that you are in a lot of pain.

So, it is the case that there are dedicated areas of the brain that allow you to experience pain but it is a whole network – it is about ten different regions and together, in a very flexible way – these regions will activate more or less, sometimes not, sometimes yes and they will vary their activation, because in effect, that is what is going to control what the type of pain is you are going to experience, depending on the situation. And sometimes, it will do it such that it won't even allow the signals to come in, so it is a flexible system.

There are certain structures that are very important and seem always to be there and on so that does give us some idea where we should be targeting, in order to get pain relief. So there is a common set of structures that always seem to activate and that is very useful to have as a marker and to have as a target for therapy but there are many other structures that can or cannot come in and that will give you the change of quality of the pain.

Evans: How do you know this?

Tracey: Well, we have several different brain imaging tools that can look inside the brain or spinal cord whilst you are living and sitting here right now here with me, talking and

breathing, because they are non-invasive. And so, we have these tools, which allow us to see where, in effect, oxygen and blood and glucose is being delivered to feed the neurons that are doing the job of whatever it is that you are doing, feeling or experiencing.

For pain, in our lab, we will take healthy people, we will burn them, we will poke them, we will do all sorts of nasty things to them. They'll have pain experiences and we will see where the blood flow is going to different parts of the brain and that tells us which are the bits that are important for experiencing pain. And then we test that that is real in patients and we show that different parts of it might be more dominant in one type of patient – other bits of the brain, say giving you the fear side of pain as opposed to the location of where the pain is – these are processed by different brain regions.

What we might show, is that in one patient group threat and fear and anxiety might really be a very, very key factor for their pain and that is turning the volume up. So that it is not just changing the way they describe the pain, which you might suspect from someone who is more anxious or depressed about something – you might just say 'well, that's changing the way you describe things' – what we have shown, is that indeed, these changes in your anxiety or depression fundamentally act through brain systems, they switch them on and if they are switched on and then that pain signal comes in, it is going to be processed differently and what it does, is it changes the processing and actually makes it worse, unfortunately. So again, it is changing the pain, just as much as if you were sending in more tissue injury signals.

Evans: Knowing what is happening is all very well, how will your research be used to conquer chronic pain?

Tracey: We need to characterise our patients better and to understand what it is for that patient, predominantly making them in pain. Is it really a peripheral input – is it really the bad hip – or is it actually these amplification mechanisms? You will never very easily unravel that, just from the person saying 'yeah, it really hurts'. Is it hurting because it is sending more signals over the periphery? Should I be targeting my therapy to the periphery or targeting it centrally? So by us, sort of showing, which bits do what and having these sort of markers, we can help dissect and diagnose what is underlying somebody's pain and that can guide where the therapy should be most appropriately placed.

It can also be used for predicting outcome of say, surgery of joint replacement. The prediction of whether that particular type of drug is going to work for you or not, or whether it is going to work really well or okay and, if it is going to work okay to not at all. This is really valuable – don't put the patient on the medication if there is a very low probability that it is going to work, because they have a certain type of mechanism underpinning their pain that is not suitable for that drug.

Again, what we can do with the imaging is to start to contribute to the better understanding of those mechanisms. Now, I am not suggesting that all patients are going to come and be referred for an fMRI exam or functional imaging exam because it is very specialised and quite expensive. But if we can prove the science and understand it and come up with these markers, then our job in the next phase is to, what we call, reverse engineer that understanding into simple tests that can be done on the bedside, that reflect what is going on with the brain imaging but could be done by their GP, which then, in effect, classifies – 'yes, you are the type of patient who if I put you in for the fMRI would have that type of signal; you are the type of patient that would do that and I don't need to do the fMRI because we have already done the science to prove this. This test I am doing proves that you have got that'. And then you would be able to guide the therapy better. So that is what we hope to do. It is the translational bit of it, now to come.

Evans: Does this mean that therapies like cognitive behavioural therapies, relaxation therapies are a waste of time?

Tracey: Oh, not at all. I think again that what the brain imaging has shown is that these therapies are basically training patients to cope with the pain, to use the power of their brains to modulate. We have got these incredible inbuilt systems of modulation which are unique to pain. We don't have them for any other sense and we have them because it is really important to be able to control pain, going back to that lion biting your leg off – you know, it is these control systems that block the pain. It is really important to be able to control pain and what a lot of these therapies are doing is training people to use the brain and access different parts of their brain which can help take the hurt away and help them cope with it and think differently about it – you know, change the meaning of the pain.

An analogy: you know we have done some fun experiments – I call them our Friday afternoon experiments – where we have made pain pleasant. Now, there are some people out there who know people who find pain pleasant for many reasons, but let's just take,

people who like hot chilli peppers, people who go on marathon runs and extreme exercise where the body is aching, they like it because the associated meaning of the pain is good. So we know pain and pleasure interact. It interacts, it actually overlaps a lot in the brain so, these sound like fun and slightly crazy experiments but what they are telling, at a very deep level, is that if we can work and understand how we can flip pain into being pleasurable or changing at least the hedonic value of it – that is an outcome. We can take the hurt away, we can change the meaning and we are learning what brain regions can do that and what we have got to do, is work out how to train patients, whilst we are still waiting for new drugs that are going to block it in the periphery or in other places.

These are incredibly effective therapies, which are acting through these wonderful systems that we have got. Some people naturally just tap into them and use them and they are great copers and they find they can get a lot of pain relief without having to go on a course, others are not equipped to know how to access them, so they need the formal training as to how to do it. As I say, they are very powerful and they are tapping into fundamentally to the very similar overlap of systems that in effect the drugs are going to work on. So, ideally, we always want to be addressing that angle, as well as trying to get the right drug for you.

Evans: Professor Irene Tracey, Director of the Brain Imaging Unit at Oxford University. You are listening to *Airing Pain* with me, Paul Evans and I am at the launch of the British Pain Society's special interest group for primary and community care. Now one of the speakers was Anne Taylor of Cardiff University, she specialises in pain education and her presentation was provocatively titled 'Nobody dies from pain or *do* they?'

Anne Taylor: Up till now, a lot of people have said 'oh well, nobody will die of pain' you know 'let's not be worried about it', so pain has not necessarily had the focus as it deserves or prioritised as it should. But Blair Smith has produced figures now to show that in fact you are one and a half times more likely to die if you have got pain than a person who hasn't got pain and you are twice as likely to die from cardio-vascular or respiratory disease if you have got chronic pain.

I think that is because of things like you are unable to move so you are unable to exercise, you lose your job, so your diet is poor, you resort to smoking and alcohol if you are not well managed, so it is multi-factorial reasons and those are just some of the reasons off the top of my head.

I think my quest has always been trying to educate health professionals to understand that chronic pain is a condition and it is totally different from acute pain as a symptom – if only chronic pain was that simple, that you had a physical pain and nothing else. So it is not a simple entity and I think that punchy message is just to get people to have a wake up and to think that yes, people can die of pain and we need to be prioritising it and doing something about it.

Evans: So what's the answer?

Taylor: Joined-up thinking is really, really important – actually moving away from these kind of helpful silos where you have the NHS working independently from the Department of Health, Work and Pensions. Getting those joined up, getting more involvement of occupational health services, getting more services closer to patients homes, so that people are assessed and managed early in their pain career so that patients do not have to resort to trying to persuade people constantly that they are in pain and actually trying to get something sorted early – so early management, joined up thinking and better education across the board but all of that is going to be difficult.

Evans: You are involved with the training of medical professionals

Taylor: Well, I'm involved in the undergraduate pain curriculum which is chaired by Nick Allcock, looking at a generic curriculum for all people who have been training as healthcare professionals and there is patient input into that. I am also involved with running a post-graduate masters programme which is a multi-professional course – it is e-learning which involves all healthcare professionals. I have just launched a 12-week foundation in pain for primary care for GPs, to get better educated – again it is an e-learning course. In the future we are going to be developing a diploma in pain management specific for the primary community care because that is where I think the majority of pain should be managed.

Evans: So since the launch of your e-learning website, is there any evidence that GPs and health professionals are really beginning to take up the gauntlet?

Taylor: [laughing] No, is the easy answer, because we know that we have had 12,000 hits of unique user hits since October, so it is doing really well, so people are accessing the material, but the problem in education is always this theory of practice gap – how much of that education is actually going to influence practice? So, yes we have got lots of proof that the education we run is being taken up because we are inundated with people for the

masters programme and the stand-alone module on the website, but how that reflects in practice? We don't know and that is always a problematic area to research.

Evans: Anne Taylor of Cardiff University. You are listening to *Airing Pain* and Professor Richard Langford, President of the British Pain Society asked his audience at this launch of their Special Interest Group of Primary and Community Care, whether the profession should abandon the terms 'primary' and 'secondary' care. I have to say that he did not get much of a response.

Langford: It was to tease them a little bit with this concept but generally speaking there is a move towards more seamless care although there may be geographical differences – there will be different buildings still – there will be a hospital and general practices and community clinics and so on – that the concept that people move fairly freely between them and some people who are actually employed in the community will nevertheless have activity in the hospital clinics and vice versa. That there is free movement and it is really seen as one system is the way we should go. So, there may be delivery of some very specialised services in the hospital, but essentially the generalised care is the province of everybody.

Evans: The title of the launch, you have put at the top of your title, 'how to change heart sinks into favourites'. What do you mean by that?

Langford: Very straightforwardly, that this is not meant remotely in a derogatory way about patients – it is very straightforward – that a number of patients have very complex problems and it is not that there is any dislike or so of the patients themselves – it is that the conditions they have are complex and when practitioners are often in control of what they are doing find they come up against something which is really difficult, or for them – they are not adequately trained or experienced enough and that can always be the case, especially in general practice where, I take my hat off to colleagues who have to be jacks of all trade and deal with everything that comes in through the door – that clearly it can be frustrating and it can be an anxious or stressful matter for the doctor or nurse dealing with such a complex set of problems.

Johnson: British GPs are probably the best primary care system in the world – I am very proud of what we have created – we are fantastic at trying to pick up chronic diseases before they develop or to stop them developing from further but we are not doing that with chronic pain which actually is the biggest part of the problem – so we need to address it in a more of

a system and just think about within the holistic type of consultation and hopefully, we can give you some tools to help you. At the moment, the GPs will probably struggle, because they probably don't have the tools but I am hoping they soon will.

Evans: An average appointment lasts 10 minutes

Johnson: 10 minutes, yes

Evans: Is there money for this?

Langford: No, there is no money actually physically associated for the GPs managing this correctly *at the moment* though, this is why we need to get it linked in with quality standards. But, there are also other incentives, for example being very blunt – what we have seen in the States for example, patients have been pursuing their doctor if their pain has not been managed correctly and in fact, if it is over-managed. Hopefully, we don't have that model in the UK but I think we need to look at other incentives. An incentive for prescribing correctly even though from what I have been told this week, prescribing incentives are probably going to go out the window. Well, actually one of the incentives for the GPs – the GPs are going to become the purse string holders and if we actually manage pain correctly, we reduce costs – that for the GPs will be a very, very big incentive.

Evans: What would your message be to GPs?

Johnson: Just think pain, be aware of it and be aware that you can do something about it.

Evans: Dr Martin Johnson, the Royal College of Clinical Practitioners UK Champion for Pain Management. That is the end of today's edition of ***Airing Pain*** which is made by Pain Concern, the charity that provides information and support for pain sufferers and those that care for and about us. You can download all the past editions from Pain Concern's website at painconcern.org.uk but before I left the launch of the British Pain Society's special interest group for primary and community care, I asked Professor Richard Langford, President of the British Pain Society what he hoped the outcome of the new group would be and what would leave him smiling at the end of his tenure.

Langford: If we could see that the special interest group will grow and flourish, it will increase in membership – that there is ever increasing dialogue between the traditional secondary care specialist, many of whom are moving into delivery of care into the community and primary care as well. If we have ever increasing dialogue and a stronger

relationship with the Royal College of General Practitioners and actually in so doing, provide a smoother and better service for the patients, then that would be I think, something I could look back on as a very pleasing outcome.

Contributors:

- Professor Richard Langford – BPS president
- Dr Martin Johnson – RCGP clinical champion for pain management
- Dr Mark Porter – Celebrity GP and journalist
- Professor Irene Tracey – Director of the Oxford university brain imaging unit
- Ms Ann Taylor – Pain community centre, Speaker at event

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