

Transcript : Anjelo Ratnachandra NPW 2022

Explain Pain: Consumer guide



Page 1 of 5

Hi. Welcome to this. Beyond Pain presentation on Understanding Pain

My name is Angelo Ratnachandra,

So in the next 15 minutes or so, we're going to look at how pain works in our bodies and really answer some questions like what does the weather impact our pain why is our pace feels like a burning sensation or stabbing sensation?

And how does our mood impact our pain? So to start with, let's look at pain.

There are two main parts. All the types of pain, this acute pain

and then this chronic pain. Acute pain is short term, up to three months.

It's a natural healing occurs within the first three months. And then the pain stops like a typical injury. Chronic pain, on the other hand, it's more long term, it's past three months. It's where the natural healing occurs but the pain continues and it's where the complexity of the issue start for most people because you get scans and X-rays and often they come back as normal or unexplained.

Now when we talk about pain, as you can see, it doesn't matter how bad the pain.

So acute pain can be eight out of ten, chronic or persistent pain that can also be eight out of ten. But the difference between acute and persistent or chronic pain is the time you've had the pain for. So acute pain is less than three months. Chronic pain is more than three months.

When we talk about pain, we talk about the nervous system. The nervous system is the hard real pain, yet the central nervous system, which is the brain and spinal cord, and then you have the peripheral nervous system, which are all these other nerves in the body.

There's big nerves as well as these little ones. So historically, what we thought was pain had a one simple pathway where you had the injury like burns messages about pain went up to the spinal cord then up to the brain and you just felt pain. But we know it's more complex than that. The way we explain pain on Beyond Pain is like this We say, think of your nervous system to be like a street map your brain and spinal cord is the CBD and the inner suburbs Your body patio, your legs, your arms, your back, your neck. They're like the outer suburbs. And the outer suburbs are linked to the, the inner suburbs in the CBD on a map by major highways, which are then interlinked by dense network of back streets. So in our bodies, our brain and spinal cord is linked to the body parts by major nerve highways.

And those nerve highways are interlinked by a dense network of smaller never, a bit like a street map. So when we talk about pain, a lot happens at the level of the spinal cords.

If you take a section of the spinal cord and put into a diagram, it looks like this.

The transparent blue cylinder is you spinal cord and inside it you have this major nerve highway going up to the brain. And those major highways are interlinked by dense network of smaller nerves, which are not normally used to active, a bit like backstreets.

Transcript : Anjelo Ratnachandra NPW 2022

Explain Pain: Consumer guide



Page 2 of 5

We don't normally use backstreets unless we really have to. And just like on our roads where backstreets join highways and there's a traffic light system in an intersection, we have these traffic lights like systems where nerves join bigger nerves and there's millions and millions of them on all the highways.

So since we're talking about pain, let's look at the traffic light and the pain highway or traffic light system on the pain highway a bit in detail. So there are three main things that control the traffic lights on the pain highway. And those things are the number of messages which is called a threshold so it means that you need a certain number of messages coming to the traffic lights in this level of the spinal cord or the pain highway, the traffic lights to get triggered to go to green so that messages can go up to the brain to be processed as part of the pain experience. So you need a certain number and that certain number is called a threshold. And it varies from person to person and it also varies from highway to highway.

So for example, touch temperature movement always they tend to have lower threshold than the pain highway because you can feel light touch, you can feel slight temperature changes or slight movements or subtle movements, but you can't feel pain all the time for the average person. And that's because the threshold or the amount that needs to trigger pain is a lot higher on a typical person than the other sensations. The second thing that controls the traffic lights are whole ones. When you're happy, confident or doing okay, your body releases adrenaline and endorphins. And what they do is they they work on these traffic lights by changing the lights from green back to red and they block pain messages going up to the brain to be processed.

So and that's why a lot of people with chronic pain say when they had the you enjoying themselves or doing things they get satisfaction out of or they feel confident they don't feel their pain as much. The opposite is true with cortisol.

Cortisol is a stress hormone. When you're feeling stressed, upset, frustrated, angry, down, what the body tends to do is release more cortisol. And what that does is act on these traffic lights and changes lights from red to green and allow more messages to go up to the brain to be processed. Now, cortisol has other important activities as well. So what it does over time is, reduces blood flow to the gut and redirects that blood to the muscles because it's a fight or flight response type of hormones. And so the food you eat and the medications you take might not be absorbed as well. It also reduces blood flow to the brain and redirects to the muscles so that you're ready to fight or flight. And so aside from the side effects of the medication, you might also feel that brain fog sort of sensation.

And because it's a fight or flight response, tries to keep you alert. It keeps you up. So it means you don't sleep well either. And finally, because all this blood is going to redirect to that muscles, the muscles are in constant tension and therefore you feel fatigue.

Transcript : Anjelo Ratnachandra NPW 2022

Explain Pain: Consumer guide



Page 3 of 5

So cortisol can have lots of adverse effects if there's too much of it. But at the same token, we don't want to get rid of it all because if you got rid of all your cortisol, you'll probably fall asleep. So you need to regulate it. And so that's what we try and do with good pain management programs.

The last thing that controls the traffic lights is your brain. The brain can directly say turn red or turn green, depending on the circumstance. Now, evolutionary pain is a defence mechanism and pain is a sign of danger or damage typically. Now the brain doesn't know the difference between say danger type pain where you're burning yourself versus a typical chronic pain state where there's no danger, you just got pain. The brain just knows it has pain and is dangerous. So it tells the traffic lights and the pain how it's turning green and therefore you continue to feel pain. So there are the three things that control the traffic lights. So let's see what how it all works now. We'll put it together.

So putting it together, if you have a typical injury, you know, what happens is that there's enough messages comes to the traffic lights at the level of a spinal cord on the pain highway. The lights get triggered. The threshold reaches, the lights get triggered to green, and it goes up to the brain. And now, interestingly here, the brain not only processes this physical information about pain, but also what you might smell, seen or heard, what you may have felt, your past experience, your fears and anxieties, your thoughts about the future, and puts everything together as an experience. So pain is more than just the physical sensations. Pain is actually an experience. And that's why pain is so complex to treat. That's why no two people can ever feel the same pain. And that's why an approach to pain management needs to be tailored and individualised to the person.

You cannot just have generic stuff. And so and this is why pain is complex. And so the brain then creates its experiences, "oh, it's danger, I want to know more" "Keep the lights on green" and the cycle continues now often want to get treatment and things like that. The volume of messages coming to the traffic lights on the pain hallway is less at the level of spinal cords. So the lights go back to red because it's not triggered The threshold is not reached and everything sort of goes back to normal and that's a typical injury. So what would happen if you have a more serious injury? So then what you're going to do is look at, okay, well, think about what would you would do if you were going on a hallway and all of the sudden, it's all banked up. There's lots of traffic and you really need to get to your point. What would you do? Well, what you typically would do is jump on some side streets or back streets, get on another highway and get to your destination. So you're not late, well, similar things happens with these physical messages about pain. So they all come to the pain highway it gets flooded, But what happens is that these little nerves are not normally used to active. They become active. And some of these messages related to pain jumps on some of the other highways and they go up to the brain to be processed.

And so all of a sudden the brain is not just processing pain. If some of those messages

Transcript : Anjelo Ratnachandra NPW 2022

Explain Pain: Consumer guide



Page 4 of 5

got the temperature hallway, it might feel like a burning sensation. If it goes up the touch highway, it might feel like a stabbing sensation. If it goes up the movement hallway, it might feel like spasms and all of that gets processed as the experience. And because pain is just processed by the brain as danger although may not be, lights turn green, and the cycle continues. And again, until you get the appropriate treatment. So I guess let's look at what you would do if you had a lot of pain angst and all your highways are far enough. What can you do? And I guess to answer this question, think about what you would do if you jammed your fingers in a door and you don't keep your hands still, do you? Sort of shake it, you rub it, you suck on it, you blow on your mouth, put ice. You might swear, you know, why do we do all of that? And it's because what we're doing here is distracting the brain from focusing on just pain. You know, when there's pain and you're rubbing it, you're sucking on the brain also has to process all these other information that's coming, that's being produced. So it sort of distracts the brain from focusing on just pain. And that's why good pain management programs don't just look at medications and rest. They look at exercise stretches, activity, scheduling, meditation, relaxation techniques, psychology or cognitive strategies and other set and self-management strategies like heat, ice, or all different things. Just because we need to look at a multifaceted approach, you can't just do one or the other. And that's what happens. And if I'm using the analogy of the street map, it's like you're in a highway and there's an accident and all the traffic choppers, the news choppers reporting on traffics on that one highway.

But if some of the other highways start getting busier, some of those choppers might go and report on those highways. So the attention isn't just on the pain highway. And that's that's why we need to do what we doing now. We've talked about a simple injury. We talked about a bit more of a complex injury and what happens. Let's look at chronic pain. So remember, chronic pain is pain that has lasted for three months or more. And there's this constant level of activity at the level of the spinal cord. Now, our bodies are incredible machines because they adapt to a circumstance. It's no different when it comes to pain. If you're constantly feeling pain for three months or more, the brain basically says, pain is now the new normal. I need to feel pain all the time. Let's recalibrate our body systems to feel pain. So that's exactly what it does at the level of the spinal cord or the nervous system. What it does, it drops the threshold on the pain away. So it's not being hundred to trigger. The pain is now only ten or twenty. And so pain ...the traffic lights are triggered a lot faster So you process pain information a lot more. So also it means that these little nerves, instead of going on off, on or off, depending on the volume of messages in the nervous system, they just stay on the brain states just keep it on because that's what it's it's more energy efficient to do that for me. So that means that even if you're managing your pain well, those illness stay on. And the problem here is that if, say the temperature changes slightly instead of messages,

Transcript : Anjelo Ratnachandra NPW 2022

Explain Pain: Consumer guide



Page 5 of 5

it's going up the temperature highway that normally would then be processed as a slight temperature change because these nerves are open, some of those messages might creep across and go off the pain hallway. And all of a sudden, the changing weather is painful. If it's the touch, you know, often light touch should only be felt, a slight touch. But if these little nerves are open, often people with chronic pain, light touch can be painful because the messages jump across into the pain hallway and they get processed as pain. Some movement and slight movements can be painful because messages jump across and scientists, or people working in pain field call this Central Sensitization It means that the central nervous system is more sensitive to pain, at normal, and therefore that's why you have it and you need to desensitise. And the best way to do it is a multifaceted approach of different strategies to help you.

Okay, so that's the end of this presentation. I hope you enjoyed it and enjoy the rest of pain week.