



Dorset Pain Management Service
Soaring above pain



**Dorset HealthCare
University**
NHS Foundation Trust

MODULE 2

The science of persistent Pain

Dorset Pain Management Service

Understanding how pain works and explaining it to our patients is an intervention in itself.

Here is Lesley who has lived experience of pain to explain how understanding her pain affected her.



Aims for Module 2.

- Consider *your* Learning objectives.
- What do you already know?
- Defining Persistent pain
- Biological mechanisms of Persistent pain.



True or False?

It is possible to have pain and not know about it.

When part of your body is injured, special pain receptors convey the pain message to your brain.

Pain only occurs when you are injured or at risk of being injured.

When you are injured, special receptors convey the danger message to your spinal cord.

Special nerves in your spinal cord convey 'danger' messages to your brain.

Nerves adapt by increasing their resting level of excitement.

Chronic pain means that an injury hasn't healed properly.

Worse injuries always result in worse pain

Descending neurons are always inhibitory.

Pain occurs whenever you are injured.

When you injure yourself, the environment that you are in will not affect the amount of pain you experience, as long as the injury is exactly the same.

The brain decides when you will experience pain.

Neurophysiology of Pain Quiz. *Journal of Pain*, 2013; 14(8): 818-827.



We have to dispel the myth that pain always equals physical damage.

Pain \neq Damage



Can you think of examples of when you have had a lot of pain but very little damage?

Have you heard of people having severe injuries and feeling very little or no pain at the time?

With phantom limb pain you have pain in a part of the body that is no longer there.

Pain \neq Damage



Pain – What is it?

- Pain is useful
- Pain is a protective system
- Pain is complex
- Pain is real
- Pain is contextual
- Pain is your brain's best guess of your state of health based on the evidence.
- It doesn't always get it right!



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DEFINING PERSISTENT PAIN





IASP Definition of Pain

"Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."

"Pain" is produced by the brain when it perceives that danger to body tissue exists and that action is required"
(Moseley 2003)

"Pain is whatever the experiencing person says it is, existing whenever the experiencing person say it does" (McCaffrey and Beebe, 1989)

Acute pain is your body trying to protect you from real or perceived danger by making a sensation so unpleasant you have to do something about it. It is essential for survival.

Persistent pain is the pain system still producing pain for longer than expected after an injury or illness. In the absence of harmful factors, persistent pain is a maladaptive response by the pain system itself.



To understand how much of your life pain affects think of the worst pain you've ever had.

How would it affect your life to constantly live with it.

Write down 5 areas you think would be affected.



Energy

Coping with pain drains energy. Lack of energy makes it hard to be active and stay in shape.

Activity

Pain and lack of energy make it hard to be active. Lack of exercise worsens pain.

PAIN

Mood

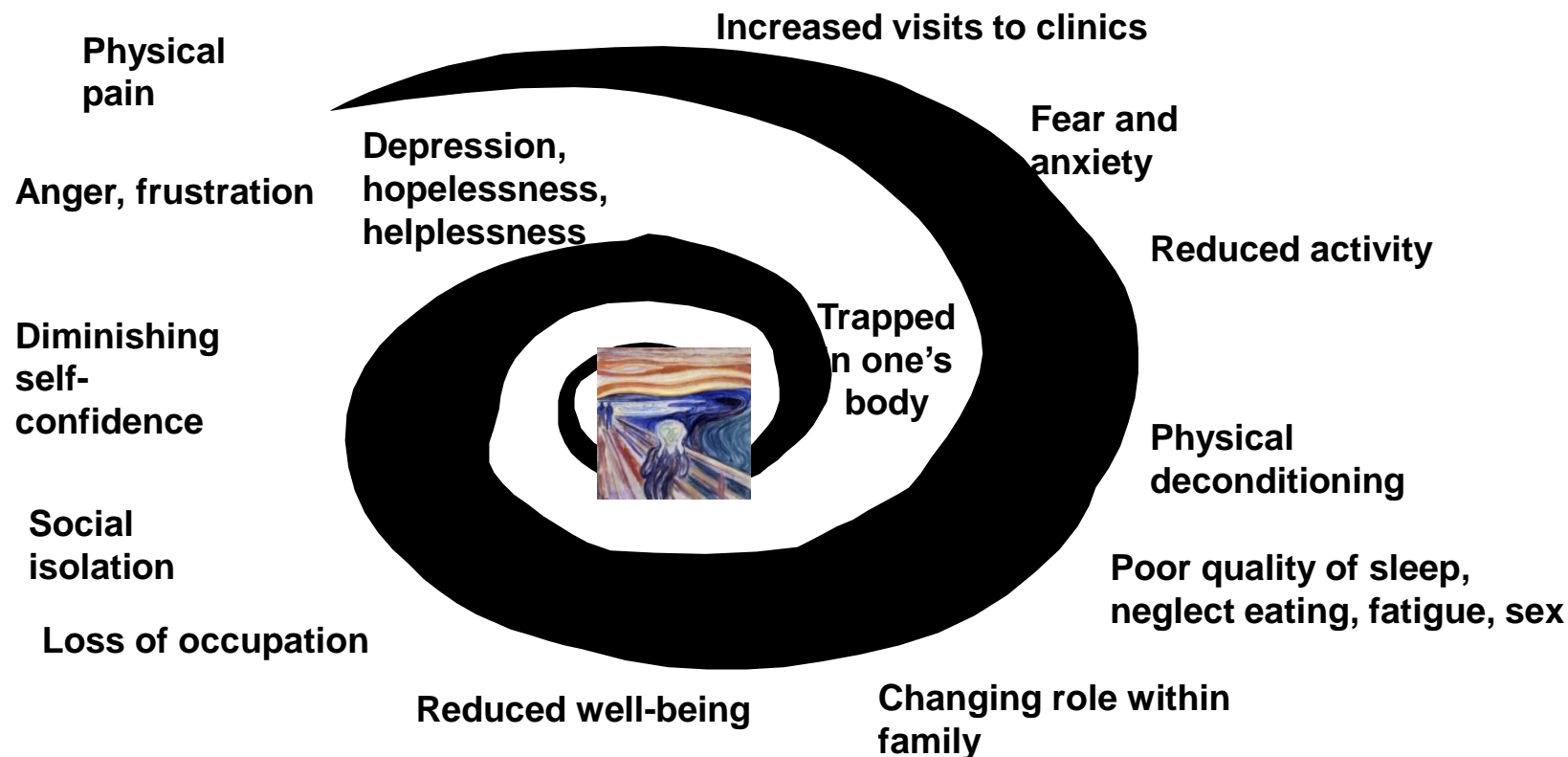
Chronic pain and the limits it puts on your life can lead to depression, anger, and anxiety. These feelings make coping with pain harder.

Sleep

Pain and anxiety make it hard to sleep. Lack of sleep makes pain worse and lowers energy.



Living with 'unmanaged' Persistent Pain can feel like a downward spiral.



People with persistent pain will work hard to:

- fight their pain
- control their pain
- ignore their pain
- sometimes fail in their attempts
- just keep on trying
- prove the existence of their pain (themselves and others)



Biopsychosocial model of pain





- Understanding pain in under 5 minutes;

https://www.youtube.com/watch?v=C_3phB93rvI





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BIOLOGICAL MECHANISMS OF PAIN





Nociceptive
pain



Neuropathic
pain



Central
sensitization

‘Nocicplastic’

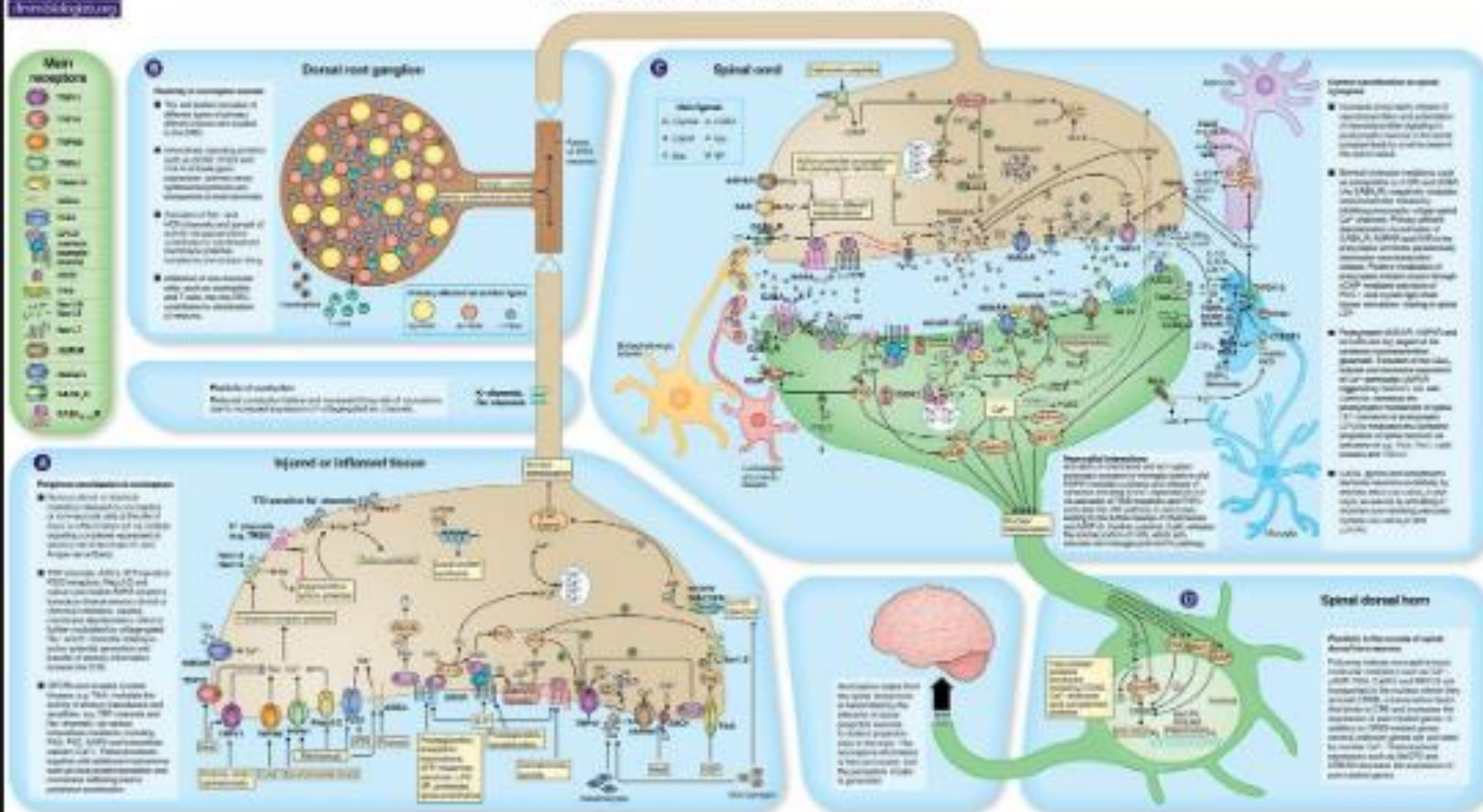
A new term which incorporates, but is not restricted to central sensitisation
Lancet ,2021.



Nociceptive pain	Neuropathic pain	Central Sensitisation/nociplastic
<ul style="list-style-type: none"> • History of damage to body tissue in past six to eight weeks • Clear, proportionate mechanical/anatomical nature to aggravating/easing factors • Pain diminishes according to natural healing phase • Pain is local, most often with signs such as oedema, hematoma, skin coloration etc. • Pain is described as sharp, aching, throbbing 	<ul style="list-style-type: none"> • History of lesion or disease of nervous system, or post-traumatic /post-surgical damage to the nervous system. • Positive neurological findings (e.g., altered reflexes, sensation, and muscle power in dermatomal/myotomal or cutaneous nerve distribution). • Related to a medical or systemic cause such as stroke, herpes, DM or some form of neurodegenerative disease • Pain and sensory dysfunction are neuro-anatomically logical • Pain is frequently described as burning, shooting or pricking 	<ul style="list-style-type: none"> • No history of a lesion, damage or disease to the nervous system • Pain severity does not correlate well to diagnostic imaging findings • Disproportionate, widespread, nonmechanical, non-anatomical pattern of pain provocation in response to movement/mechanical testing. Positive findings of hyperalgesia and/or allodynia within the distribution of pain • Pain is heterogeneous; there is no standard presentation

Pain hypersensitivity mechanisms at a glance

Vijayan Gangadharan and Rohini Kuner





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<https://www.retrainpain.org/>



How the pain system works

In order to judge if you are in danger or not, your brain subconsciously makes a “risk assessment” based on lots of factors including:

- The input from your peripheral sensory nerves such as from tight or irritable structures.
- Your memories “have I been here before?” “what is my experience of pain and suffering and how did I deal with it”
- What you can see and hear “is what bit me snake shaped or spider shaped?”
- Do I feel resilient today “how did I sleep?” “how much stress am I under”
- What are your beliefs about the pain “is it my cancer returning?” “this pain will never go”

Pain is the brains “best guess” at whether we are in danger of harm.

If the risk assessment concludes you are in danger and need to do something about it, your brain will produce the sensation of pain.

ALL PAIN IS A PRODUCT OF THE BRAIN

Like every other sensation that we feel. This statement does not mean that pain is psychological or not real.



The brain can conclude you are in danger and need to do something about it and will produce the sensation of pain

BUT IT DOESN'T ALWAYS GET IT RIGHT

Descending facilitation and inhibition

This is a system where hormones mostly produced in the brain and the gut, will act as neurotransmitters and increase or decrease the danger messages as needed.

For example a stone in your shoe will not be felt when running from a lion.
Stubbing your toe may hurt more if you have had previous injuries in the area.

This the pain system's way of ignoring or paying attention to peripheral information as it needs to in order to keep you safe.



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PSYCHOLOGICAL MECHANISMS OF PAIN



The emotional context of pain changes the pain.

- What is causing this pain? For example “do I have cancer?”
- What is my emotional response? If you feel trapped or helpless or despairing you do not only suffer more but you will feel the pain more strongly.
- Have I been here before and what was the outcome.



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SOCIAL MECHANISMS OF PAIN





Social and psychological conditioning;





Types of affect response

Paul Gilbert





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Lets see what you have learned.

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