Persistent Pain; What is it? What can we do about it?

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Impact of pain

- Fayez et al (BMJ 2916)
- 30-50% population affected (28 million adults)
- Up to 30% in young people
- £584 million spent on pain prescriptions
- 1.6 million adults per year chronic back pain
- 25% lose their jobs
- 16% feel its so bad they sometimes want to die

Definition of Pain

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

International Association for the Study of Pain 1979

Because this is subjective,

- the patient is the authentic reporter
- pain cannot be confirmed or denied by reference to tissue damage or pathophysiology
- need other signs for infants and nonverbal children & adults

Acute v persistent pain

Acute pain generally characterised by

- clearer reason for occurrence
- likelihood of resolving with healing / recovery
- good response to treatment where available
- psychological component not very important

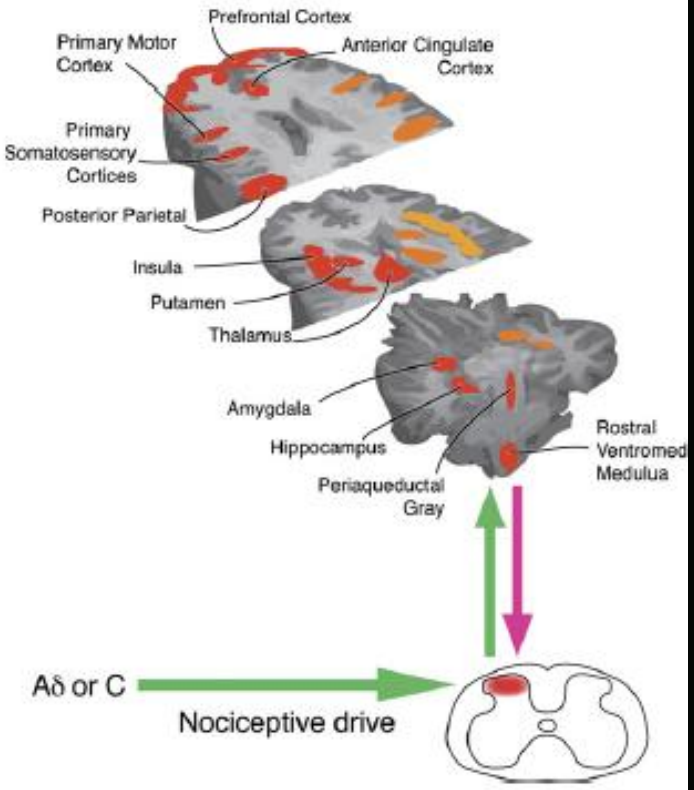
Chronic/persistent pain characterised by

- less clear cause; no ongoing pathology /injury
- mechanism *may* offer some treatment indication
- often responds poorly to available treatments
- psychological component needs assessing

Cerebral signature of pain: distributed, variable, complex

Tracey 2008, Tracey & Mantyh 2007

Activation in spinal cord, thalamus, S1 & S2, insula (divisions vary), anterior cingulate cortex (divisions vary), prefrontal cortex …..



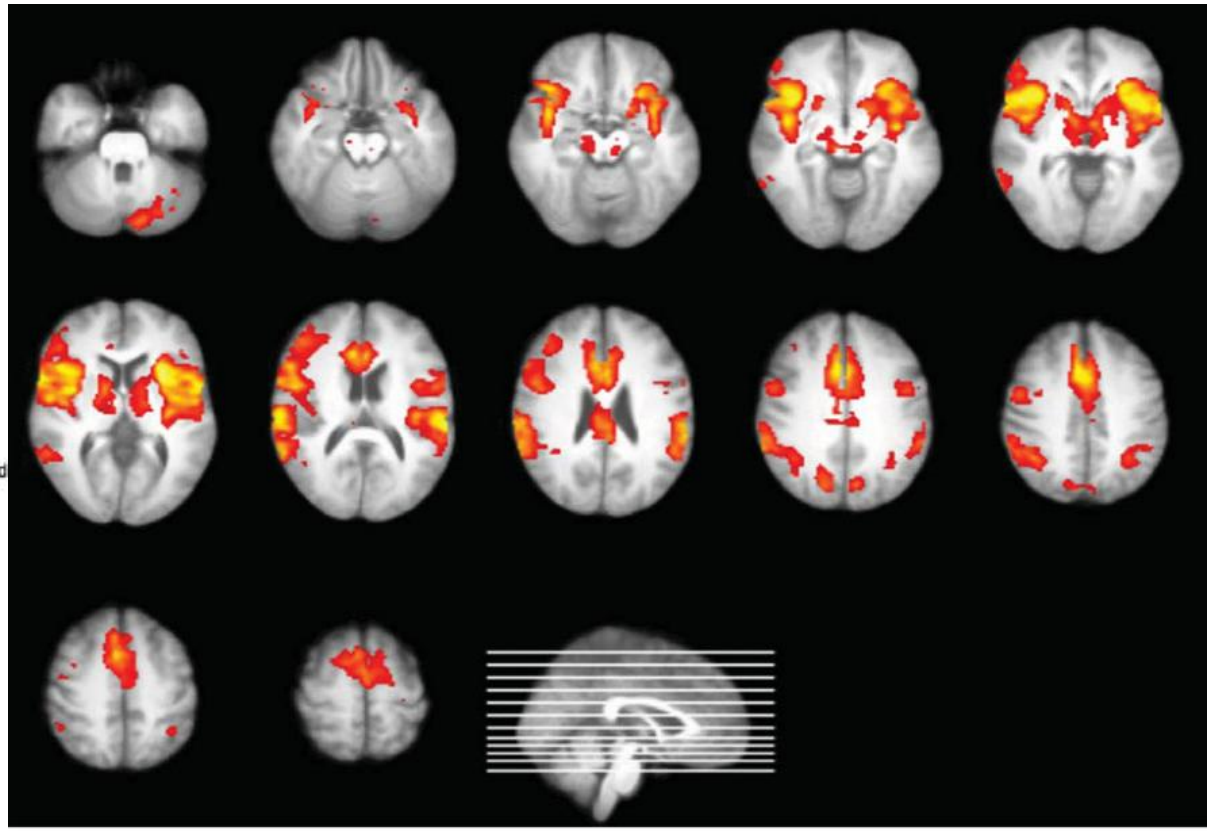


Figure 2. Neuroanatomy of Pain Processing
Main brain regions that activate during a painful experience, hig lighted as bilaterally active but with increased activation on the contr lateral hemisphere (orange).

… + (not so consistently) in amygdala, hippocampus, posterior parietal cortex, basal ganglia, brainstem.

Structural & functional changes in brains of people with chronic pain

Changes in activation patterns are seen both in people with disease-related pain (e.g. rheumatoid arthritis), with central sensitisation

Descending modulatory system is dysfunctional:

- inhibitory system is underactive,
- and/or descending facilitatory system is overactive.

PFC is a particular site of cell death in chronic pain patients.

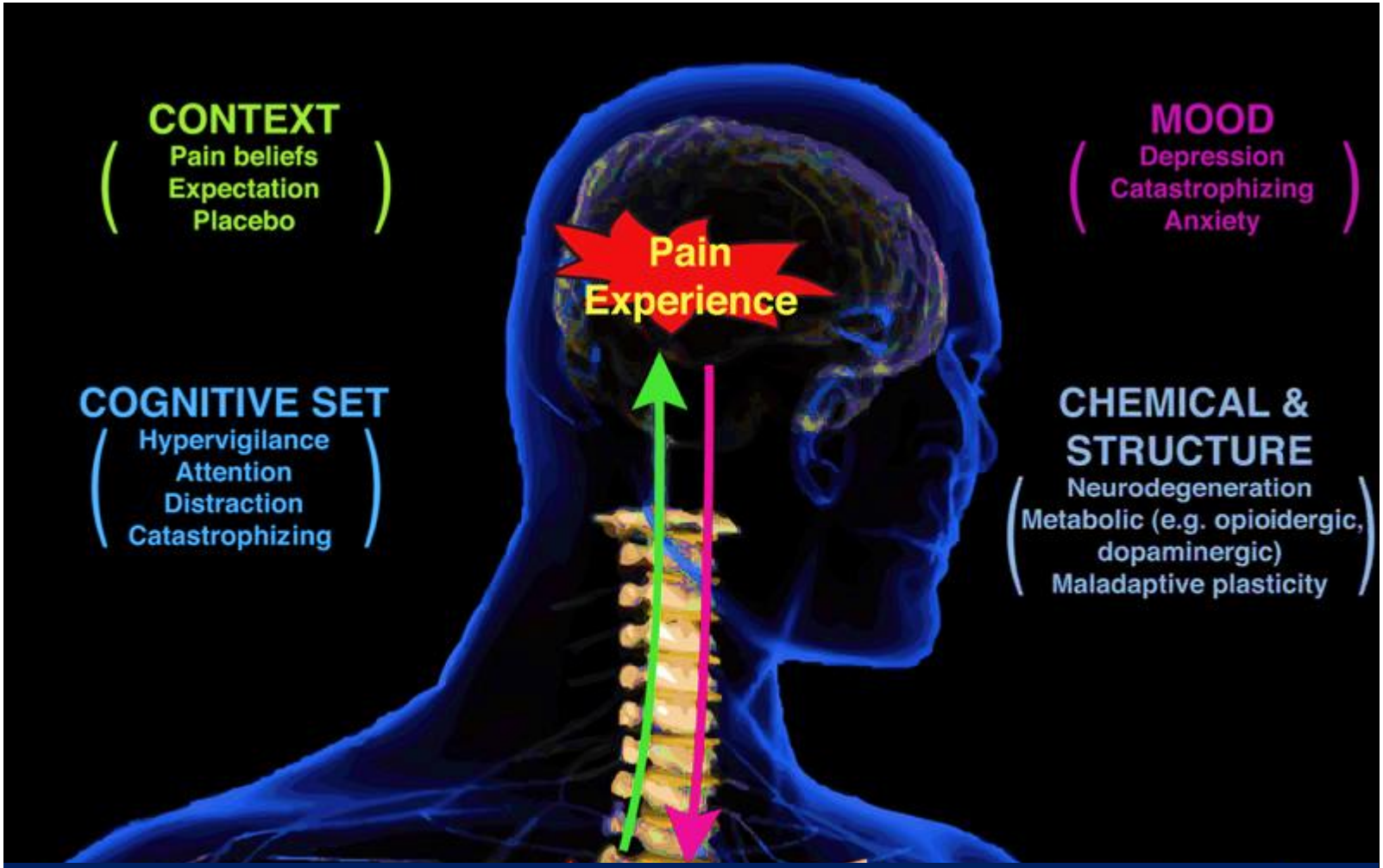
Opioid binding to opioid receptor sites in spinal cord is less efficient;

dopaminergic system also functions abnormally.

Chronic pain as a disease rather than a syndrome?

Tracey & Bushnell 2009

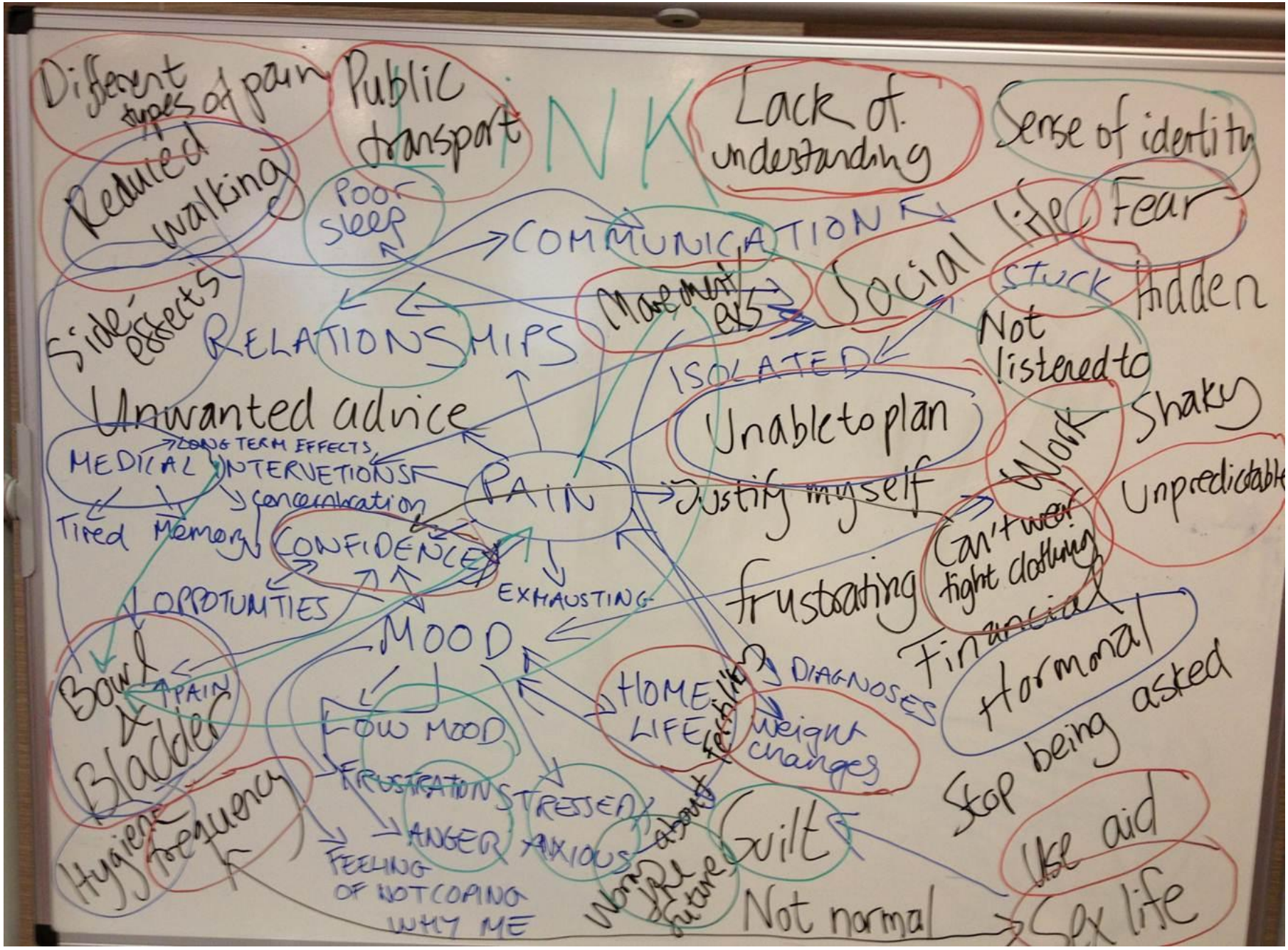
Pain processing *Tracey & Mantyh 2007*



input from body descending modulation

Pain disrupts emotion & behaviour

- **Mood** – higher incidence of anxiety & depression as a consequence of pain
- Significant psychological effects of pain
- **Activity** – not able to behave in the same way as pre-pain
- Pain as ‘dis-abling’


PINK
Different types of pain
Public transport
Lack of understanding
Sense of identity
Reduced walking
POOR SLEEP
COMMUNICATION
Social life
Fear
Side effects
RELATIONSHIPS
Movement
STUCK
Hidden
Not listened to
ISOLATED
Unwanted advice
Unable to plan
Work
Shaky
LONG TERM EFFECTS
MEDICAL INTERVETIONS
PAIN
Justify myself
Unpredictable
Tired
Memory
concentration
CONFIDENCE
Can't wear tight clothing
OPPOTUNITIES
EXHAUSTING
frustrating
Financial
Bowel & Bladder
MOOD
Hormonal
PAIN
HOME LIFE
DIAGNOSES
Stop being asked
LOW MOOD
Weight changes
Hygiene
frequency
FRUSTRATION
STRESSED
ANXIOUS
ANGER
Worried about future
Guilt
Use aid
FEELING OF NOT COPING WITH ME
Not normal
Sex life

Thoughts (cognitions) about pain

Pain is experienced as a challenge to physical and personal integrity.

Fears of injury and physical threat

"When I have pins & needles, I think I'll become paralysed."

"They say my back's worn out so I try not to use it."

Fears of pain and psychological threat

"The doctors told me there is nothing on the X-rays so it's in my head. I feel I'll go mad if no-one believes me."

Fears of effects of pain on life

"I'm a burden: my family would be better off without me."

"I'm told not to do heavy work, but that's all I've ever done."

Catastrophising (Sullivan et al. 2001)

focus on threat : *"my neck clicks when I move"*

overestimating threat : *"the bones are crumbling and I'll be paralysed"*

& underestimating resources to deal with it:

"nobody understands how to fix it, and I just can't bear any more pain"

In healthy subjects predicts pain intensity and tolerance.

At acute stage predicts chronicity and disability later.

In chronic pain associated with mood and behaviours.

Recent reformulations combine it with worry, problem solving, and fear/avoidance models: see *Van Damme et al 2012, Flink et al 2013*

Cognitive behavioural treatment

- Apply pain understanding to own pain and history.
- Identify & change habits which undermine activity.
- Identify & change unhelpful beliefs and imagery;
- Challenge beliefs which reduce participation,

… and thereby improve mood.

- Promote acceptance & emotional distance from pain and its implications.
- By various means, activate descending pain modulatory system.

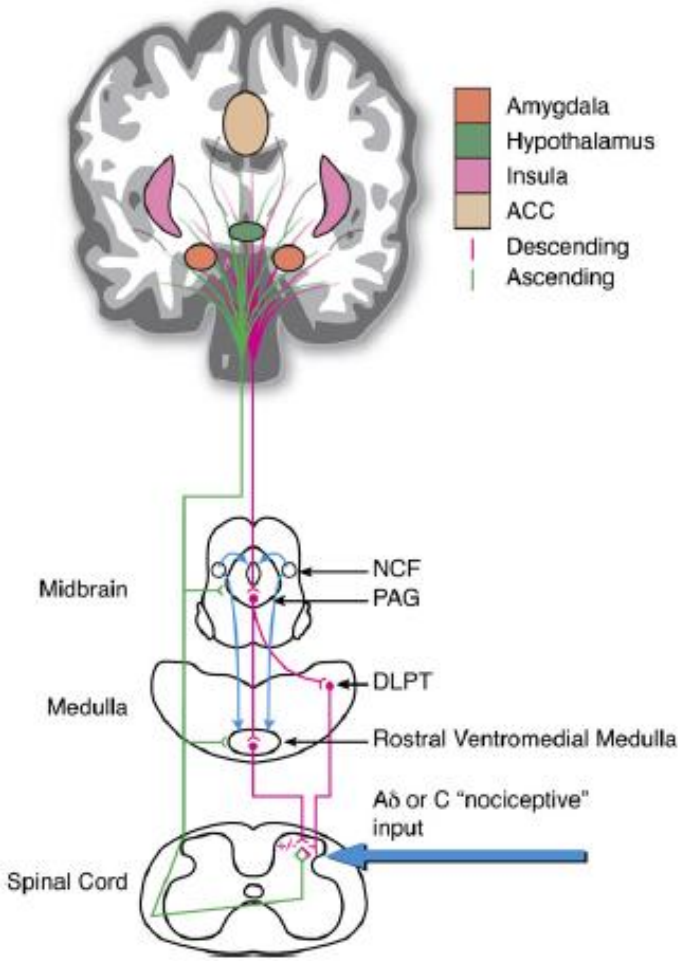


Figure 3. The Descending Pain Modulatory System
NCF (nucleus cuneiformis); PAG (periaqueductal gray); DLPT (dorsolateral pontine tegmentum); ACC (anterior cingulated cortex); +/– indicates both pro- and anti- nociceptive influences, respectively.

SITUATION What are you planning to do?	PREDICTION(S) What exactly do you think will happen? What do you think is the worst that might happen? How would you know if it happened?	EXPERIMENT What can you do to test your prediction? How can you do things differently when you test your prediction?	OUTCOME What actually happened? Was your prediction correct?	WHAT ABOUT YOUR PREDICTION? Did your prediction happen? What have you learnt? Do you have a different prediction now?
Pick up a 3 kg bag of cat litter	Logic tells me that my spine will be fine. BUT I can't help feeling that **my spine will crack and a disc bulge out and I'll have excruciating pain and be laid up for days**	Pick up the litter in PMP– where the physios will be, just in case. I can use my breathing skills to relax	I picked it up! My back didn't hurt half as much as I thought it would. It felt stiff, but that's to be expected	No it didn't!! I've learnt that I can pick up 3kgs without damaging my back. My back is stronger than I thought. Next time I'll feel stiff but my back can tolerate picking up 3kgs

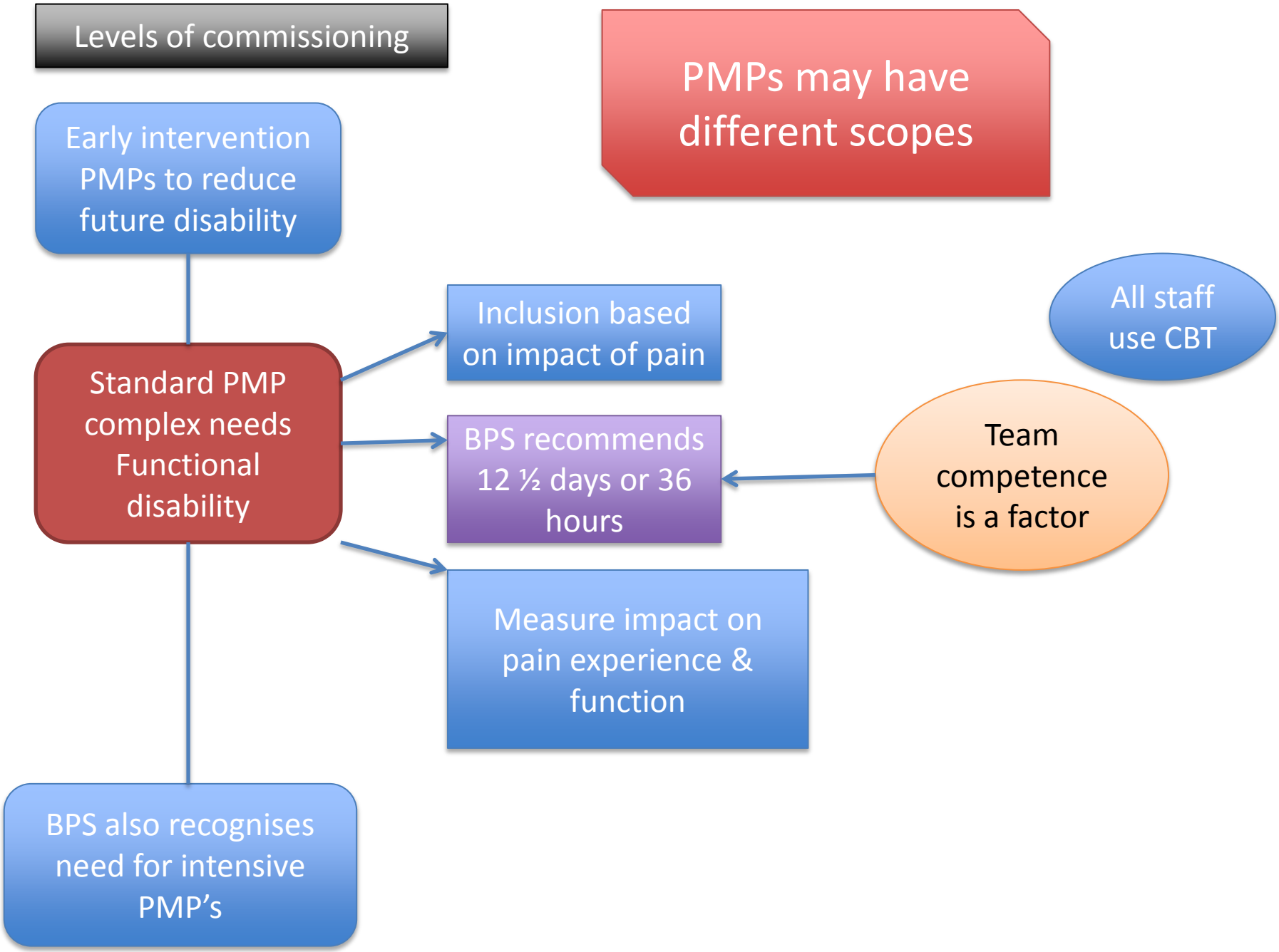
Major components of PMPs

Desired outcome

- Understanding of pain & implications
- Improved fitness / reduced disability
- Reduced distress
- Improved sleep
- Greater independence in health care

Treatment component

- Expert education (pain mechanisms) and review of history
- Physical exercise and changing bad habits
- Cognitive therapy
- Increase involvement in valued activity ‘relaxation’ & exercise’
- Drug & aid reduction
- Self management


Levels of commissioning
PMPs may have different scopes
Early intervention PMPs to reduce future disability
Standard PMP complex needs Functional disability
Inclusion based on impact of pain
BPS recommends 12 ½ days or 36 hours
Measure impact on pain experience & function
All staff use CBT
Team competence is a factor
BPS also recognises need for intensive PMP's

Systematic reviews & meta-analyses

authors	date	RCTs	N	pain site	improved
Turner	1996	4	>200	low back	multiple
Morley et al	1999	25	>1600	**mixed**	multiple
Van Tulder et al	2000	7	>300	low back	pain, function
Guzmán et al	2001	10	>1900	low back	pain, function
Ostelo et al	2005	21	>1400	low back	function
Hoffman et al	2007	22	>1700	low back	multiple
Nestoriuc et al	2008	21	>3000	tension headache	headache freq.
Williams et al	2012	42	>4800	mixed	multiple
Glombiewski et al	2010	23	>1300	fibromyalgia	multiple

PMP's cut costs by over 90%

- **Can a pain management programme approach reduce healthcare use? Stopping the revolving door** - Clare et al (2013) Br Jnl Pain 2013
- 55 patients CALM Lewisham

Appointments

(12 months) Pre PMP	Post PMP (12 months)
348	33

Cost of appointments

(12 months) Pre	Post PMP (12 months)
35,700	3879

What is helpful for HP's to remember

- Recognise you are a powerful gate-keeper
- Explain persistent pain as being based in a 'physical malfunction of the pain system'
- Brain is hugely involved but its not 'in the mind'
- Acknowledge our culture demands a 'cure'
- Up to 50% people experience pain which can't be cured by medication or surgery

Start to help create more flexible thinking

- Pain is stressful to live with
- We know our brain and behaviour have powerful effects on pain
- E.g people whose mood is low (because of pain) experience the pain as worse and more distressing
- People who can remain involved in things they value – pain is less interfering

Help create optimism

- We do have pain management teams who work with managing pain
- Not just relying on ‘medical cures’
- Looking at behaviour – e.g exercise, stretch, the way we do things
- Lots of evidence that people can be helped & lives improved by limiting effects of pain
- PMP’s – very effective

British Pain Society BPS

- Good source of initial information for patients
- Scientific
- https://www.britishpainsociety.org/

Relevant national frameworks

- DoH emphasis on self management (2005) LTC's
- NSF for LTC's dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/fs/;
- Clinical Standards Advisory Group 2000
- CSPMS Core Standards for Pain management Services in the UK (2015) Faculty of Pain Medicine of the Royal College of Anaesthetists.
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- Fayaz (2016) Prevalence of Chronic Pain in the UK: a systematic review and mets-analysis of population studies. BMJ Open June 20:6(6)
- Guidelines for Pain Management Programmes for Adults (2013) British Pain Society
- 5 year forward view – much better collaboration needed primary/secondary care and LA's.

Challenge of the future – Developing ‘behavioural medicine’

- Where health psychology and medicine really do work hand in hand…….