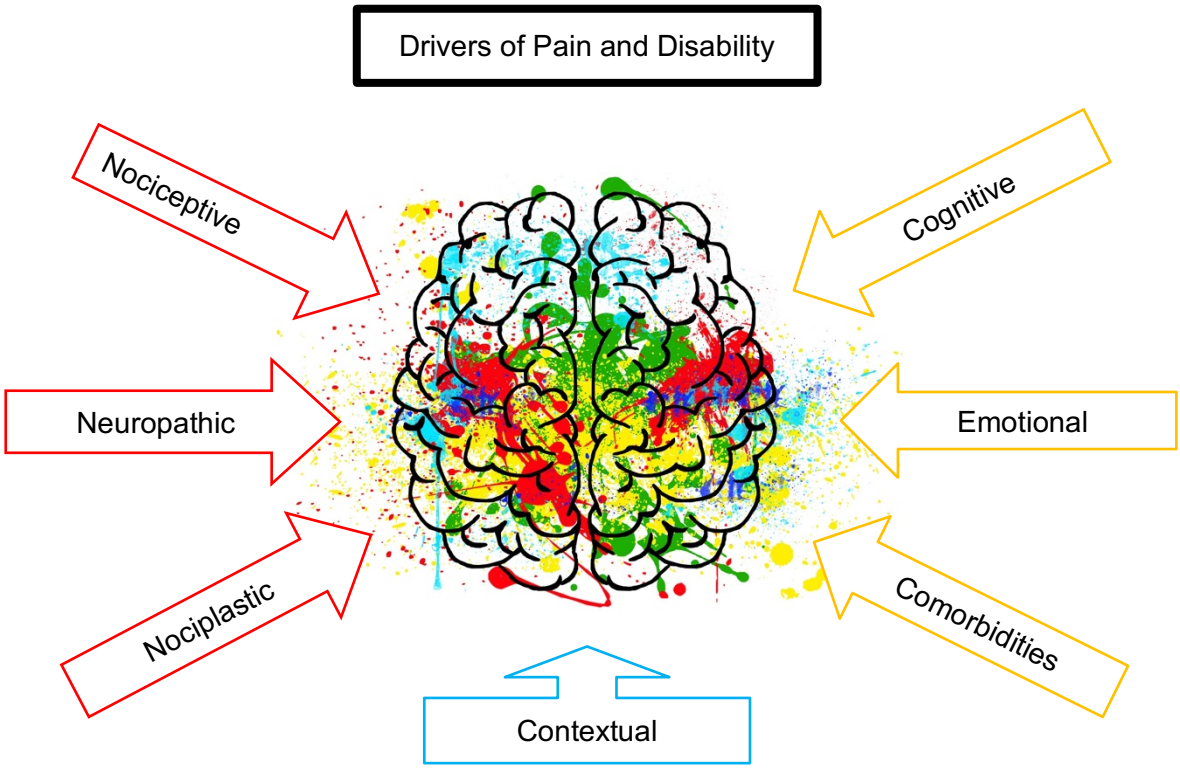
Understanding Pain and Disability Drivers and Their Relationship to MDT Classification

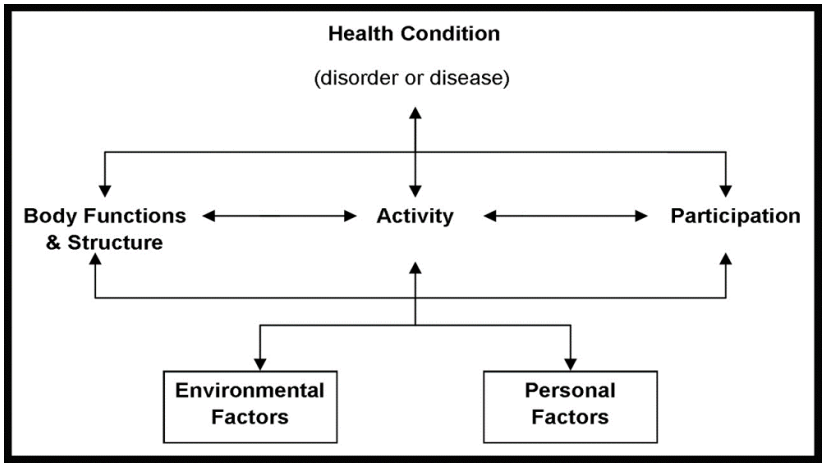
Current understanding of pain and its effect on patient outcomes

Pain is a sensory, cognitive and emotional experience, framed and influenced by personal circumstances, behaviours and the social environment. It is the recognition and understanding of the potential influence and overlay of these multidimensional mechanisms that allows the MDT clinician to assess and interpret the patient's response to their therapeutic interaction and personalise the management strategy.



Notes:

These drivers will be discussed in the context of the International Classification of Functioning, Disability and Health (ICF) framework. This is a standard that describes and organises information on functioning and disability; "The ICF conceptualises a person's level of functioning as a dynamic interaction between her or his health conditions, environmental factors, and personal factors." All components of the ICF may interact with each other and provide a framework with which the assessment of disability can be assessed:



Another way to think about this is the idea of how biological processes relate to movement and psychological factors. These biologic factors (Nociceptive, Neuropathic, Nociplastic) relate to Psychological or Psychosocial factors (Cognitive and Emotional) and in the process can affect the context of the environment or the way the individual behaves or moves in their environment. Prognostic indicators such as various comorbidities can influence how the patient will behave on a trajectory of pain. The overall movement system can influence pain with antalgic or altered efferent processes and movement patterns (Chimenti 2018)

Drivers of Pain Explained

Nociceptive, peripheral neuropathic and central nociplastic are all possible drivers of pain and all relate to the ICF, as their presence is linked to **deficits and impairments in body functions and structures**.

Nociceptive

"Pain that arises from actual or threatened damage to non-neural tissue and is due to the activation of nociceptors" (IASP Taxonomy)
This nociceptive input is activated through either noxious **mechanical, chemical or thermal** sources. Pain is occurring with a normally functioning somatosensory nervous system. (Kosek 2016) The wide distribution of nociceptors throughout the lumbar spine make it impossible to devise testing procedures that selectively stress individual components or structures of the spine. It is well recognised and accepted that for the majority of patients with low back pain **we are unable to identify the specific pathology or structure** that is the source of nociceptive pain.

Related to MDT: Nociceptive pain would ***likely*** be the primary pain driver in the following MDT classifications:

Derangement | Dysfunction | Postural

and OTHER subgroups :

Inflammatory | Mechanically Inconclusive | Post-Surgery

Structurally compromised | Recovering Trauma

Screening / outcome tools that may be useful: NPRS, 4 Item pain intensity measure 'P4'

Peripheral Neuropathic

Pain caused by a lesion or disease of the peripheral somatosensory nervous system (IASP Taxonomy). The clinical presentation related to the lumbar spine would be a painful radiculopathy and its associated distribution of pain, numbness and paraesthesia. It is not as common as nociceptive pain, but patients with neuropathic pain tend to have poorer outcomes than those with nociceptive LBP and no nervous system involvement (Baron 2016, Spahr 2017). Neuropathic pain is distinct from 'referred pain' from somatic tissues in the lumbar spine, as referred pain does not implicate the nerve root.

Related to MDT: Peripheral Neuropathic pain would *likely* be the primary pain driver in the following MDT classifications and OTHER subgroups:

Derangement | MUR | Spinal Stenosis | Adherent Nerve Root

"Patients had symptoms and clinical findings that would qualify them for surgery (radicular pain) in most hospitals, and yet they experienced highly significant improvements in all outcomes…It is possible that a considerable number of operations have been avoided by this safe, low-cost, and low-technology treatment" (Albert 2012)

"The results suggest that the combination of transforaminal epidural steroid injections and MDT might reduce surgery rates in this (MUR) population" (van Helvoirt 2014)

Screening / outcome tools that may be useful: Standardized Evaluation of Pain (StEP), Pain DETECT (PD-Q), Douleur Neuropathique en 4 questions (DN4)

Nociplastic

Pain associated with changes in the central nervous system that result in the amplification of peripheral input. (Eller-Smith 2018)
The official IASP definition states: "Pain that arises from altered nociception despite no clear evidence of actual or threatened tissue damage causing the activation of peripheral nociceptors or evidence for disease or lesion of the somatosensory system causing the pain." (IASP Taxonomy, updated Dec 2017)

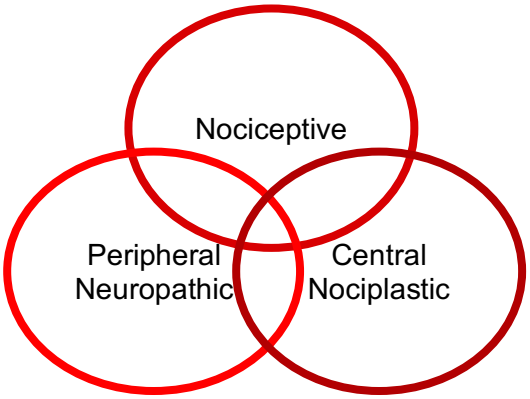
Similar terms for Nociplastic include 'Central Sensitisation', 'Algopathic' or 'Nocipathic'. In all these circumstances, patients experience widespread pain with hypersensitivity in apparently normal tissue (Kosek 2016)

Related to MDT: Nociplastic change would *likely* be the primary pain driver in the following MDT OTHER subgroup:

Chronic Pain Syndrome

Screening / outcome tools that may be useful: Fear-avoidance belief questionnaire, StartBack questionnaire, Orebro MSK screening tool, Central Sensitization Inventory

Interaction of Pain Drivers



Even though each MDT classification will have a primary pain driver, there can be overlap. Hence, both nociceptive and neuropathic can co-exist in patients with low back and radicular pain (Baron 2016).
A Derangement with accompanying radiculopathy may have nociceptive and neuropathic pain. It is also possible that a Derangement may have some central nociplastic changes. Nevertheless, Directional Preference exercises will still be a vital component of management.

Notes:

Drivers of Pain and Disability Explained

Cognitive, emotional and comorbidity factors are all possible drivers of pain and disability, and relate to the ICF, as their presence is categorized under the **Body Functions** component. Such factors influence how pain and disability are experienced by the individual.

Cognitive

This is one of the factors that may influence how pain and disability are experienced by the individual. It includes, but is not limited to:

- Beliefs about pain
- Expectations
- Perceptions of illness
- Catastrophising
- Fear
- Low self-efficacy

If these beliefs and perceptions are maladaptive, they may be specifically addressed by the clinician or as a consequence of appropriate therapeutic alliance and management of the presenting MSK problem by a trained MDT clinician:

"Many of these patient self-care principles are similar to the patient educational strategies emphasized and reinforced within formal cognitive behavioural training programs. Evidence suggests positive effects of MDT for decreasing individual psychosocial risk factors, such as elevated distress or elevated fear avoidance beliefs, while simultaneously improving patients' functional outcomes" (Werneke 2018)

Related to MDT: Cognitive drivers can be influential in All MDT Classifications

Screening / outcome tools that may be useful: Fear-Avoidance Belief questionnaire, StartBack Questionnaire, Pain Catastrophising Scale.

Emotional

This is another of the factors categorised under the ICF component of **Body Functions** that can affect the experience of pain and includes anxiety, anger, distress and depression (Walton 2018, Linton 2018). Emotions inevitably accompany pain and can be useful in its management. However, when pain is associated with negative emotions a poorer prognosis is likely.

Additionally, when the patient has a clinically diagnosed psychological condition or mood disorder, such as depression, this not only is a predictor of poor outcome but may demand a greater complexity of intervention, such as can only be provided by a multidisciplinary team. (Pinheiro 2015) Hence, the awareness of the relationship between depression and pain has important implications for clinicians.

Some of these factors have been evaluated in relation to MDT intervention; with respect to depression, one high quality RCT found that patients with lumbar Derangements having an MDT intervention led to significant improvement in the Beck Depression Inventory. (Long 2004) In another study, if individuals with LBP did not centralize, they were 1.23 times more likely to have depression symptoms after adjusting for confounders (Christiansen 2009).

Related to MDT: Emotional drivers can be influential in | All MDT Classifications |

Screening / outcome tools that may be useful: Beck Depression Inventory, Pain Catastrophising Scale, Patient Health Questionnaire (PHQ)

Comorbidities

Physical as well as psychosocial comorbidities can have a significant effect on the patient's experience of pain and an influence on other drivers of pain severity and disability (Tousignant-Laflamme 2018). Comorbidities would also be covered under the ICF's **Body Functions.**

Comorbid symptoms include medical conditions such as diabetes, cardiovascular disease, migraines as well as mental health disorders such as depression, sleep disturbances, anxiety disorders (Green 2018)

"Typically, these co-occurring problems emerge together and become entwined with the pain problem" (Linton 2018).

Those with more comorbidities tend to have more persistent symptoms and hence have an adverse influence on outcomes (Beneciuk 2018)

Related to MDT: Comorbidity drivers can be influential in | All MDT Classifications |

Screening / outcome tools that may be useful: Charlson Comorbidity Index, Functional Comorbidity Index

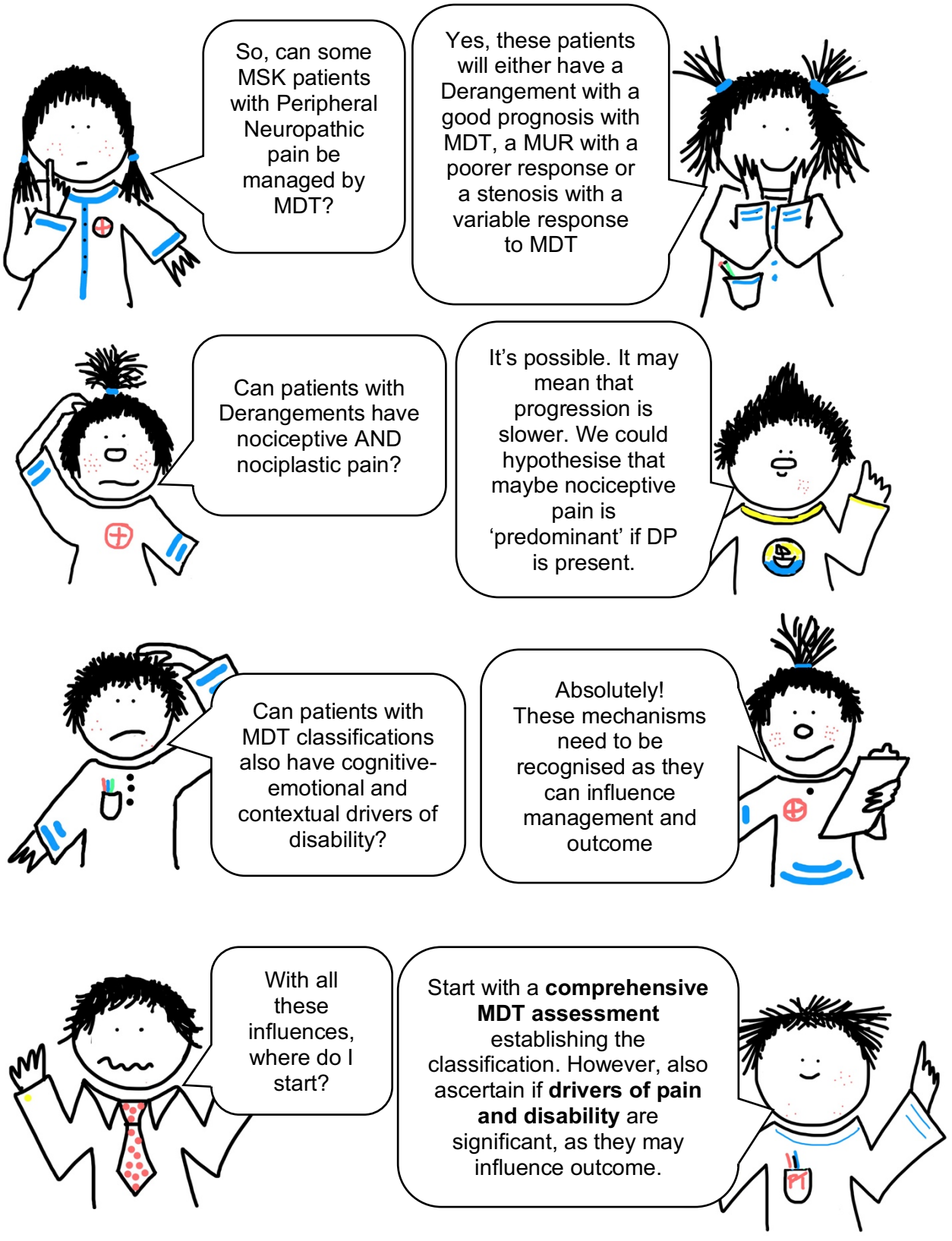
Contextual

Contextual drivers are one of the **Environmental Factors** that can drive disability or the perception of disability and may have a significant effect on outcome. These include individual's relationships, work environment and work attitudes, cultural setting, cultural beliefs and the attitudes of friends and work associates (Tousignant-Laflamme 2018). These factors may not just affect their disability and their perception of pain, but also access to suitable care. (Walton 2018)

Related to MDT: Contextual drivers can be influential in | All MDT Classifications |

Screening / outcome tools that may be useful: Orebro MSK screening tool

Questions about Pain Drivers and MDT



How are these Drivers of Pain and Disability acknowledged and documented on the MDT assessment forms?

Drivers of Pain

Whether the pain is Nociceptive, Neuropathic or Nociplastic is implicit within the MDT classification. So for example, Derangement (without any radicular symptoms), Dysfunction and Postural syndrome will likely have nociceptive pain. An MUR will likely have neuropathic pain and Chronic Pain Syndrome will primarily have nociplastic pain.
Keep in mind that there can be overlap between the pain drivers.

Drivers of Pain and Disability

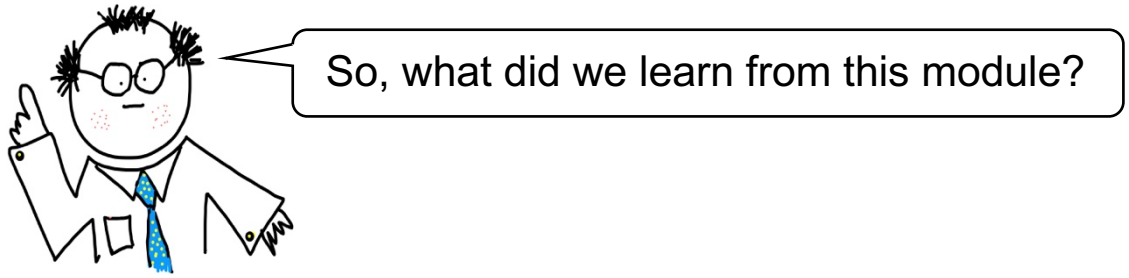
Comorbidities can be noted on the bottom section of the history on the assessment form.
The specific drivers of pain and disability are listed under the Provisional Classification section of the examination on the assessment form and should be circled to indicate that one or more of these drivers are present.

The specifics of the driver/s identified can be noted on the line below, as illustrated in this sample from the assessment form:

Drivers of pain and/or disability: Contextual (Cognitive) Emotional Comorbidities

Believes pain indicates damage, fearful of work making them worse

Screening tools / outcome measures are documented in the demographic section of the history. Worth noting is that physical therapists appear to have difficulty being able to accurately identify psychosocial factors without using any formal screening questionnaires (Brunner 2018)



(1) A person's pain experience is **highly individual** and can potentially be influenced by multiple drivers of pain and disability.

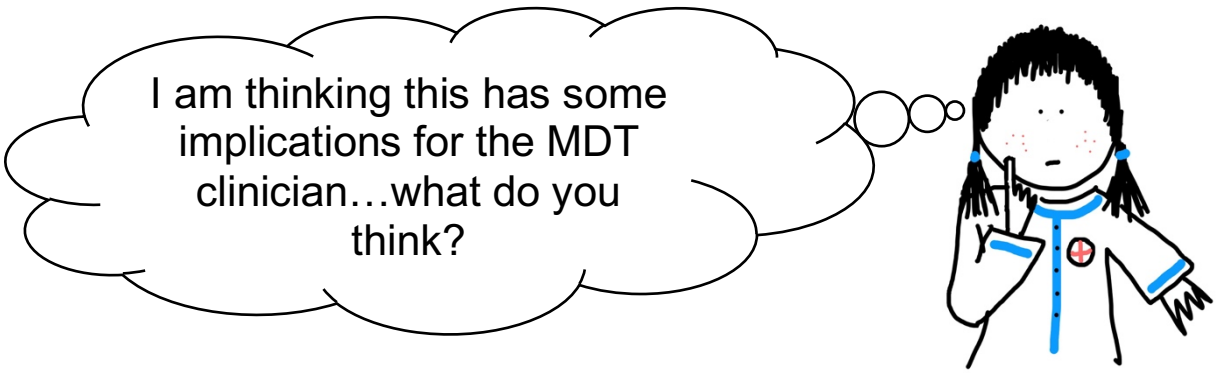
(2) Pain drivers describe the physiological origin of the pain experience: nociceptive (local tissue), peripheral neuropathic (peripheral somatosensory system), or nociplastic (central nervous system).

(3) Individual pain drivers **may be dominant** in specific MDT classifications, but some **overlap may occur** (e.g. Derangement with nociceptive and peripheral neuropathic influences).

(4) Personal and environmental factors (e.g. cognitive, contextual) can be drivers of pain and disability, and may be relevant within any MDT classification.

(5) While it is vital to determine an MDT classification to optimize treatment, **understanding the "big picture" of the patient's pain** and disability experience is critical for individualized management.

(6) Screening tools/outcome measures **can be useful** to identify potentially relevant psychosocial factors.



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