Brain fog and persistent pain in COVID & Work:

Collaborating to promote safe, sustainable and supportive workplaces

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Disclosures

- Lived experience of supporting whanau and friends with long COVID
  - Significant impact this can have on their lives
  - Frustrations dealing with MSD/WINZ, insurance, and a fragmented health system that has few options for those severely incapacitated
  - While recognizing the range of severity of presentations, from mild and self-limiting/self-managing, to catastrophic
- Working with people with chronic/persistent pain
- Working with people with long COVID, and other post viral fatigue syndrome (ME/CFS) presenting with chronic pain (as part of the CM Chronic Pain Service)
- I will briefly cover:
  - Long COVID, chronic pain and brain fog, and links between these
  - Chronic pain, brain fog and barriers to recovery
  - Approaches to managing chronic pain, fatigue and brain fog in long COVID

Work/Mahi

- Not being able to work or attend education is:
- A marker of illness severity
- A marker for significant disability
- Associated with poorer outcomes
- Associated with poorer mental health

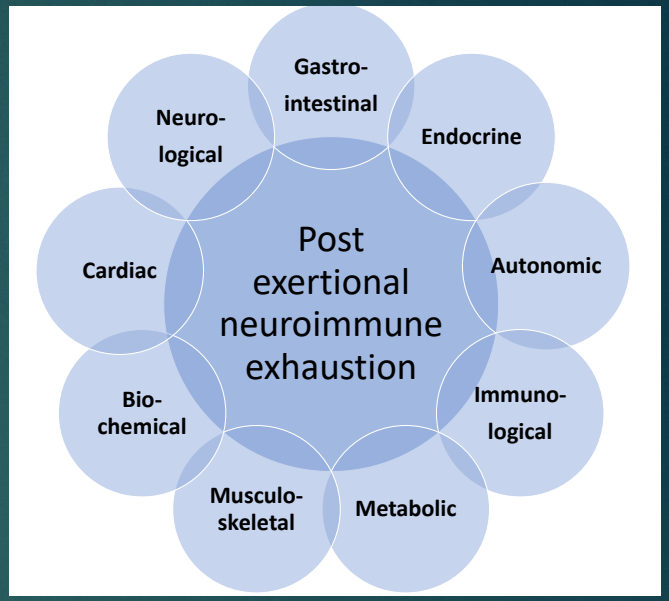
- Work is protective!
  - Not working itself impacts on hauora: Wairua, Tinana, Hinengaro and Whanau
  - leads to a loss of sense of purpose, meaning, role and mana (wairua
- Work is important, but not the only thing that's important!

Long COVID symptoms – may be comorbid, co-existing or consequential

- Work capacity can be impacted by a number of symptoms associated with long COVID syndromes:
  - Severe fatigue
  - Symptoms of autonomic dysregulation (cardiovascular - POTS, respiratory - breathing difficulties)
  - Persistent pain
- Long COVID syndromes can CAUSE:
  - Persistent pain
  - Mental health conditions, including neuropsychiatric conditions such as dementia, psychotic disorders, and bipolar disorder (8 M people following COVID hospitalisations)
- Comorbidity is common with Long COVID and other common chronic health conditions (including chronic pain and mental health conditions)
- Significant overlapping of symptoms with many chronic pain conditions
- Effects of comorbidities on Long COVID can be additive:
  - Persistent pain itself can lead to significant fatigue and brain fog
  - Secondary anxiety and depression may impact on work capacity

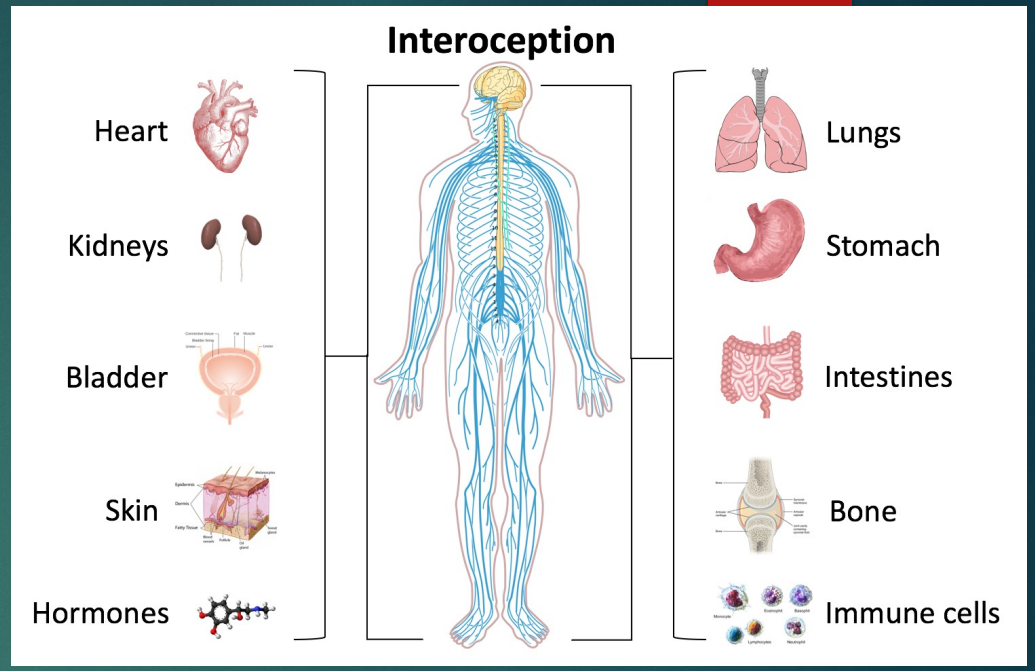
Persistent pain and long COVID

- Chronic pain post COVID is commonly reported across a number of surveys, complicated by high rate (~24%) of chronic pain conditions in whole populations
- COHORT Danish study, Risk Ratios for pain symptoms:
  - Muscle and joint pains 3.46
  - Headaches 3.04
  - Chest pain 2.01
  - Significant underestimation, given these compared people with COVID +ve and COVID –ve serology, prior to Omicron
  - Also reported: increased rates of testicular pain, atypical chronic pain conditions, abdominal pain



Brain fog, fatigue and interoception

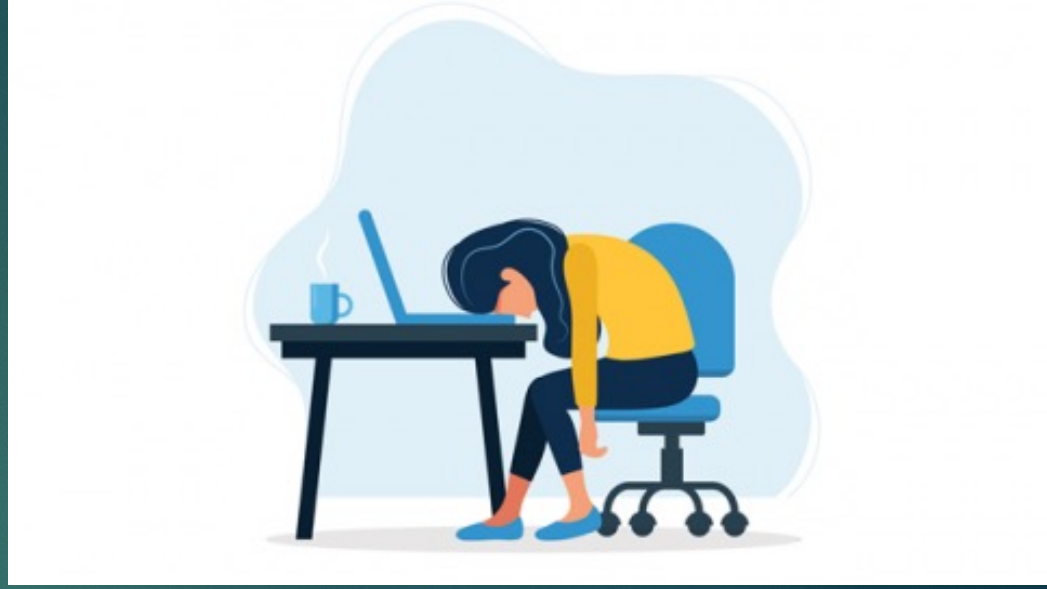
- Interoception - nervous system detection of bodily changes
- Signals originate from within the body
- Integrating internal signals
  - Maintains homeostatic control
  - Facilitates self awareness
- Fatigue has multiple causes
- Physical energy ⇌ cognitive energy



Embodied predictive interoception coding (EPIC) tracks available cellular energy:

- Interoceptive network
  - Insula
  - Anterior cingulate cortex
- Self control and future planning
  - prefrontal cortex
- Reward network
  - striatum
  - signals potential payoff for actions

Fatigue and impact on brain fog



- Cost benefit network analysis
  - determine how much energy is available
  - decide whether action is worth the effort
  - if the sums don't add up, fatigue sets in
- The output of this fatigue network subcircuit is motivation
  - NOT the disputed concept of "willpower", and NOT desire
  - motivation is a behavioral driver
  - Focused on the organism managing resources
- Chronic fatigue:
  - Following prolonged mental or physical effort cellular energy stores depleted
  - Sleep/rest/food replenishes energy stores – not in ME/CFS, some long COVID studies
  - ?↓blood flow, ?↓O2/glucose utilization by cells, ?↓?Autonomic dysregulation of sleep, ?↓ANS driven increased O2 delivery to tissues, ?microclots, ? Chronic Inflammatory cytokine release, ?vagus nerve inflammation (stimulating insula)

“Brain fog”

- A “fuzzy” concept, an umbrella term
- Includes a range of cognitive symptoms; dulled thinking, memory and attentional difficulties, effortful thinking, poor concentration, feeling confused, thinking more slowly than usual, fuzzy thoughts, forgetfulness, word finding difficulties, and mental fatigue/exhaustion
- Commonly seen in long COVID and other post viral syndromes, medical illnesses, persistent pain conditions, ME/CFS, and mental health disorders
- Usually associated normal cognition; cognitive dysfunction not disorder
- Some evidence that interoceptive focus on the effort of internal cognitive processing is a critical component of the experience
- And awareness of this effort may worsen experience of cognitive dysfunction

Barriers to recovery 1 - beliefs

- Stigma – “an invisible illness” (like chronic pain, depression)
- Belief that long COVID “is not real”
- Beliefs that sufferers are “just lazy”, “anxious” or “avoidant”
- Unhelpful messages from whanau, health professionals; (hopefully rarely) community “you shouldn’t be working” or “work is bad/harmful”
- “Take a concrete pill” approach to symptoms, “just ignore it”
  - can cause boom and bust/collapse
  - when symptoms are milder, there may be a “use it or lose it” component
- Failure for whanau, friends and work colleagues to recognise just how much effort person requires to undertake even minimal normal activities

Barriers to recovery 2 - behaviors

- Support groups
  - Encouragement to withdraw completely
  - Exposure to people who are much more disabled, or much less disabled
  - Associated distress
- Boom and bust pattern
  - person doesn't recognise their level of impairment
  - Or the costs of doing "too much"
  - and associated frustration (sufferer, and friends, whanau and employers)
- Employer needs for employees, employer inflexibility
- Disability support services hard to access in Aotearoa
- Financial support structures (WINZ, income support) are often binary - work/no work
- Perverse incentives "more money, less hassle if you're on a benefit"

Approaches to managing persistent pain AND brain fog/fatigue

- Agree on AIMs: Evidence based management is a gentle, graduated and individualised rehabilitation plan
- Education regarding long COVID symptoms and course , for sufferers, whanau and employers
- Management of associated or comorbid chronic pain conditions
- Identification and treatment of comorbid mental health difficulties
- Need to manage person and employers expectations
- Health coaching, problem solving and CBT, even for those that don’t have mental health problems (to support self management, NOT as a treatment)
- Flexible financial support – WINZ, income insurance need to be involved and understand the plan

Approaches to managing persistent pain AND brain fog/fatigue – work!

- Critical components of this include a part time, paced return to work
  - Flexible paced working
  - Return to work part time, short days, longer breaks
  - Energy budgeting
  - Working from home where possible
  - Timetabling
  - Less demanding (physically AND cognitively) duties
  - Be prepared to review hours and tasks
  - And again, managing expectations of person AND employer
- Critical to manage energy budgeting to include social, physical, emotional and cognitive energy expenditure

Summary

- Both brain fog and chronic pain are common in people suffering from long COVID
- Aims of recovery should focus on slowly returning to a life worth living despite symptoms, rather than "curing" symptoms
- Work can be good for recovery, if managed appropriately and progressively
- Energy budgeting is a critical component of this
- Identifying barriers to this (health beliefs, health behaviors, and systemic barriers) will improve outcomes
- Social, emotional and physical domains are critical in aiding recovery, and should not be neglected