

# What is neuropathic pain, numbness and tingling?

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Disclosures

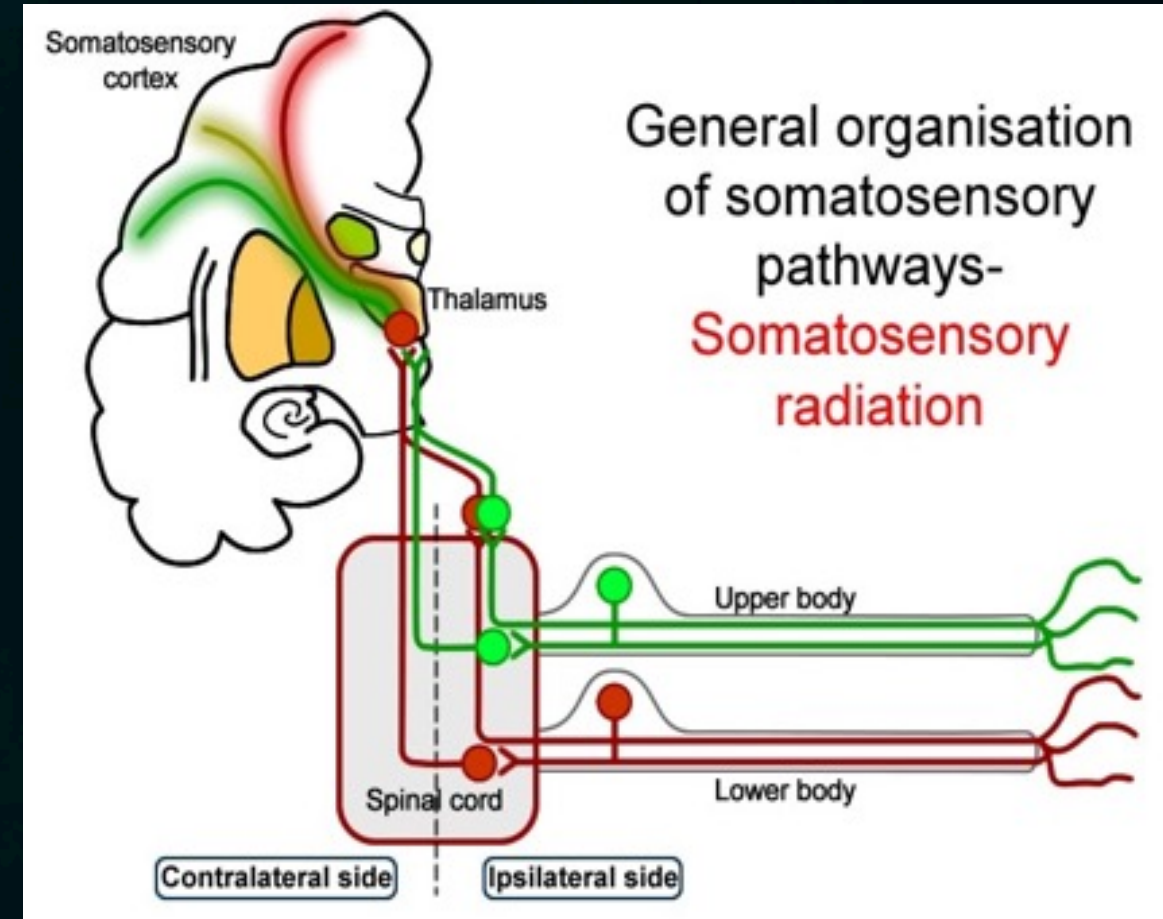
None

# Synopsis

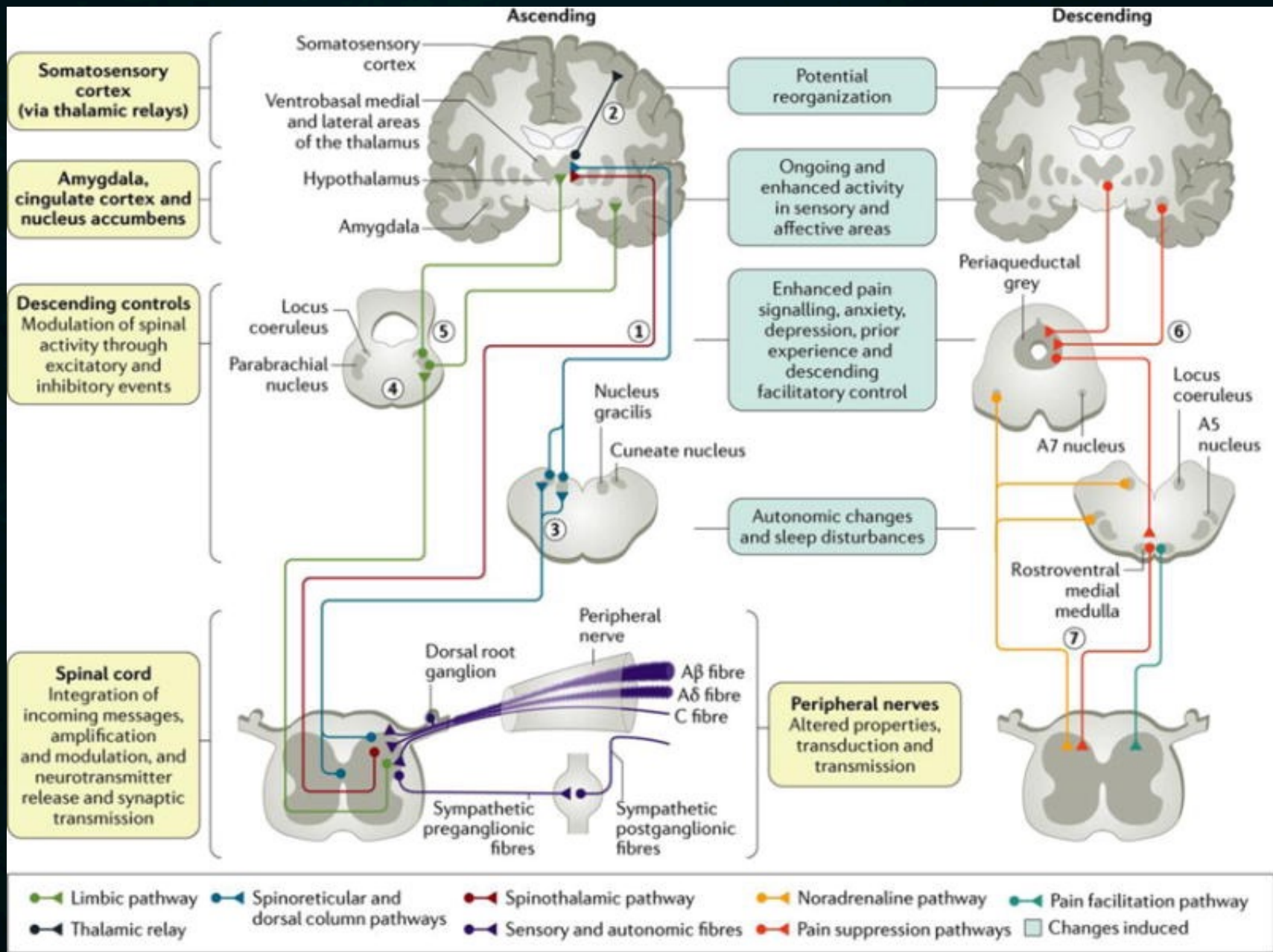
- What is neuropathic pain? How common is it?
- Causes/mechanisms of neuropathic pain?
- Diagnosis of neuropathic pain?
- Management
  - Medication
  - Non-pharmacological measures
  - Emerging therapies
  - Psychotherapy

# What is neuropathic pain?

- Pain caused by disease of the somatosensory pathways – 3 wire system
  - Peripheral pathways – DM neuropathy
  - Central pathways – MS, NMO, stroke
- Different from pain from inflammation
  - RA, visceral pain (appendicitis)
- 10% of all patients with chronic pain have neuropathic characteristics.
  - ~50m adults in the U.S have chronic pain!!





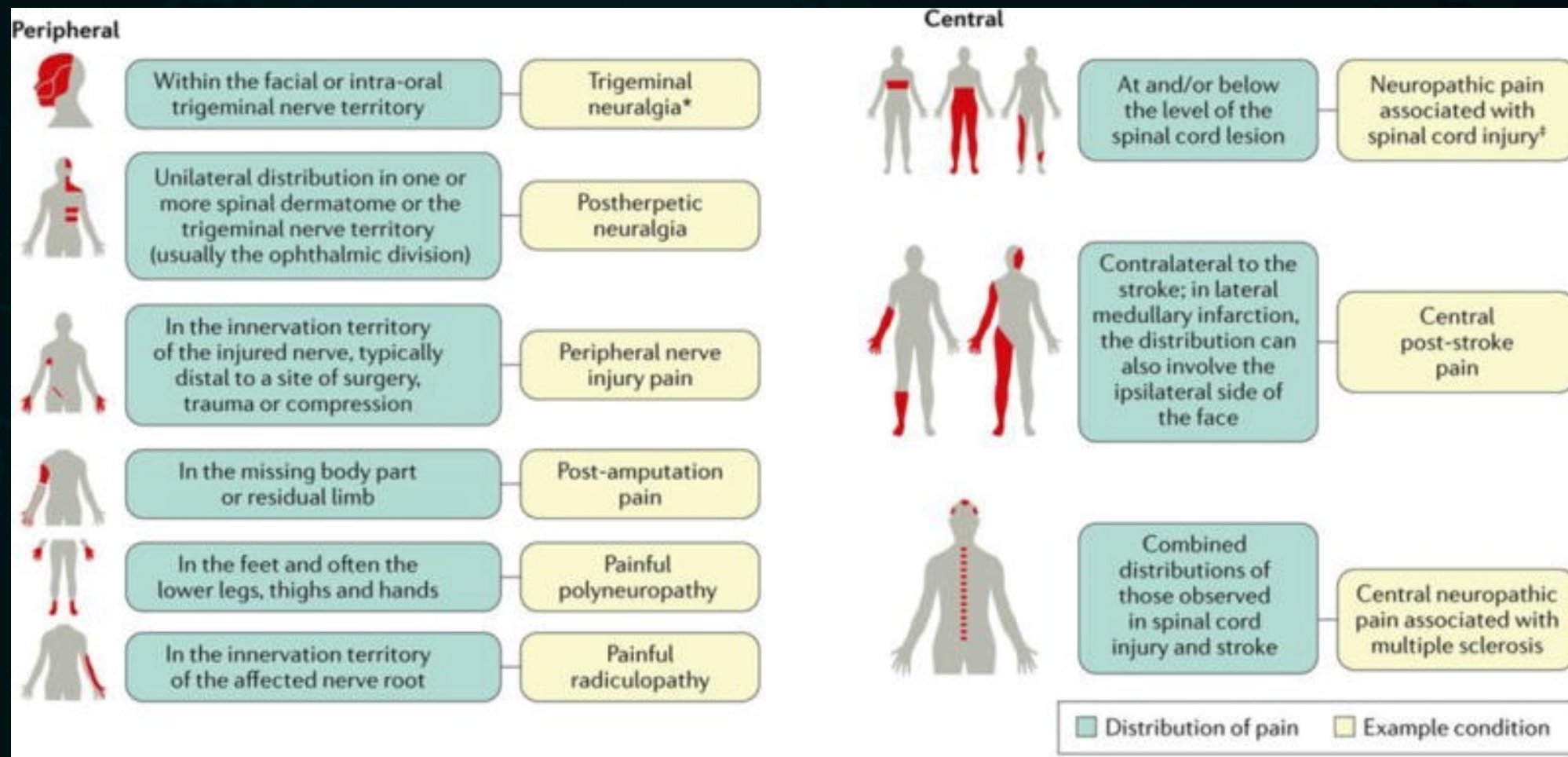


Somatosensory pathways. Nat Rev Dis Primers. 2017 Feb 16; 3: 17002.

# What causes neuropathic pain ?

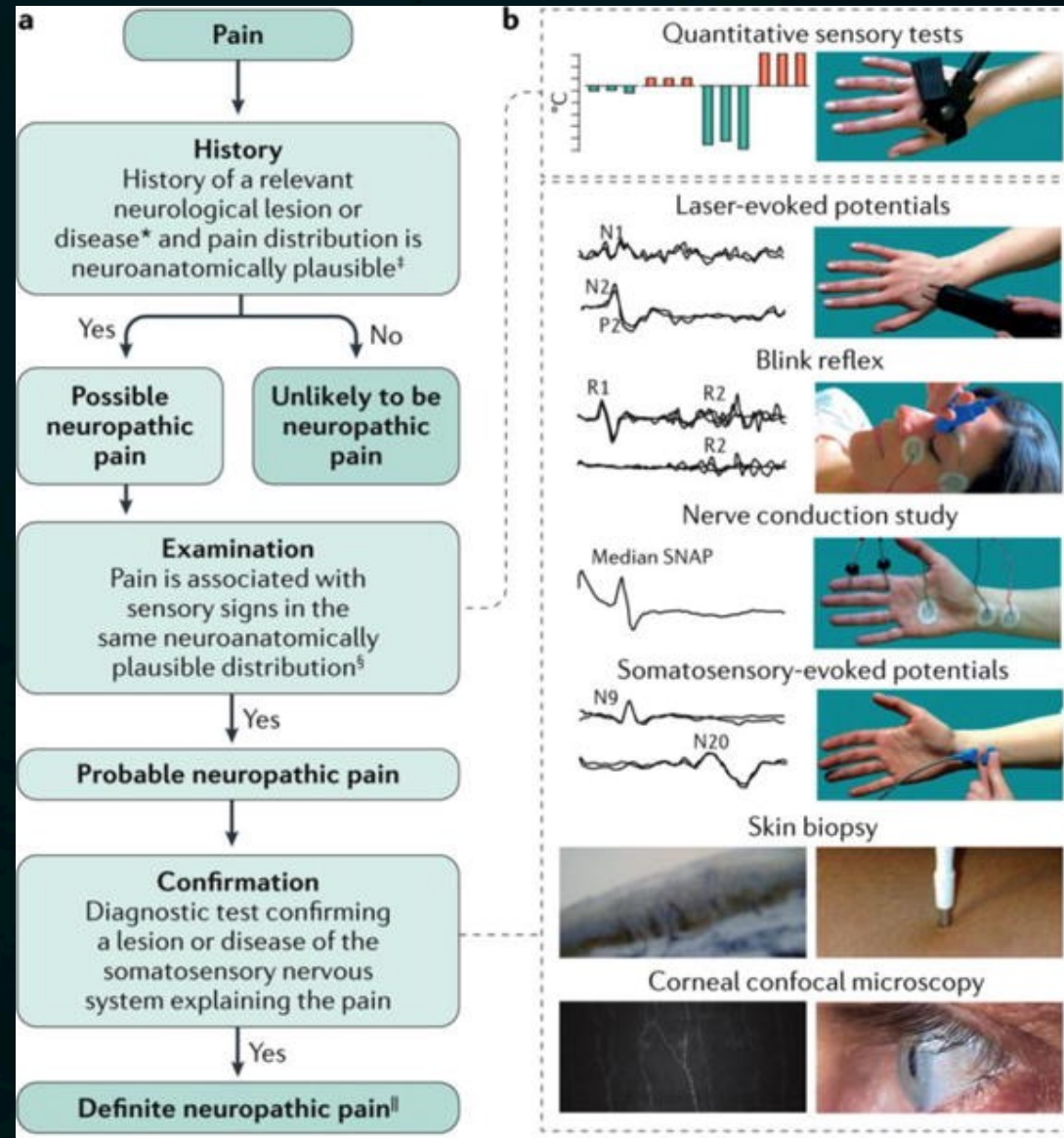
- Pain signaling changes
- Ion channel alterations
- Second-order nociceptive neuron alternations
- Inhibitory modulation changes
- Reduced central pain modulation

# Clinical features of neuropathic pain



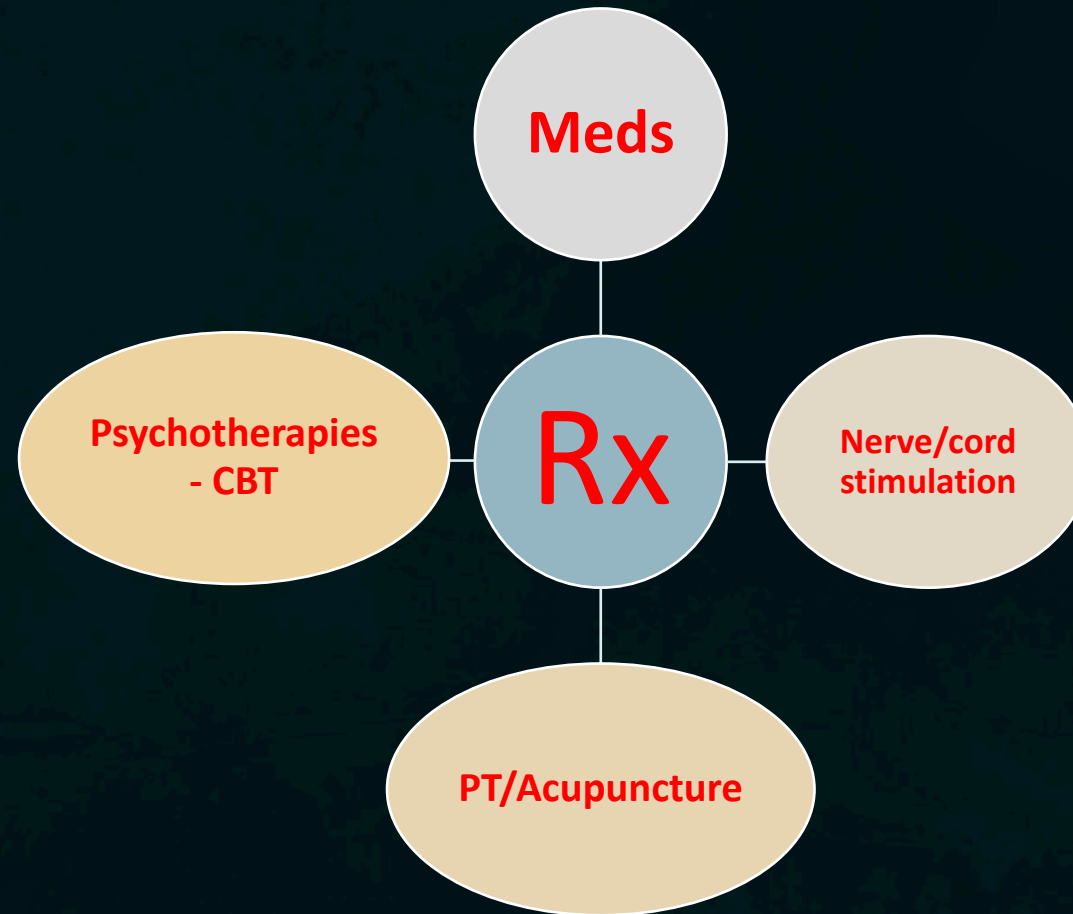


# Diagnosis of neuropathic pain





# Management



# Meds

## First-line therapies

- Antidepressants
- Anti-epileptics

## Second-line therapies

- Topical  
Lidocaine/Capsaicin
- Tramadol

## Third-line therapies

- Botulinum toxin
- Mexelitene/Clonidine
- Cannabinoids
- Low dose naltrexone
- ? Opioids

**Full med list** – amitriptyline, nortriptyline (Pamelor), duloxetine (Cymbalta), milnacipran (Savella), gabapentin, lyrica (pregabalin), valproic acid, carbamazepine (tegretal), oxcarbazepine (trileptal), topiramate.

- Beware of polypharmacy
- Typically do not work immediately, require chemical changes to occur over a few weeks for optimal effect
- Slow titration is key to prevent adverse effects
- Trial and error basis mostly. One size does not fit all!
- NSAIDs and OTC meds have limited utility and risk of adverse effects with long term use.

# Opioids for neuropathic pain

- Short term studies – equivocal results
- Intermediate term studies – higher efficacy of opioids compared to placebo.
  - Unclear results on QOL measures.
- Caution regarding narcotic overuse/dependence issues!
- Worsening adverse effects in this patient population
  - Cognitive, bladder, etc.

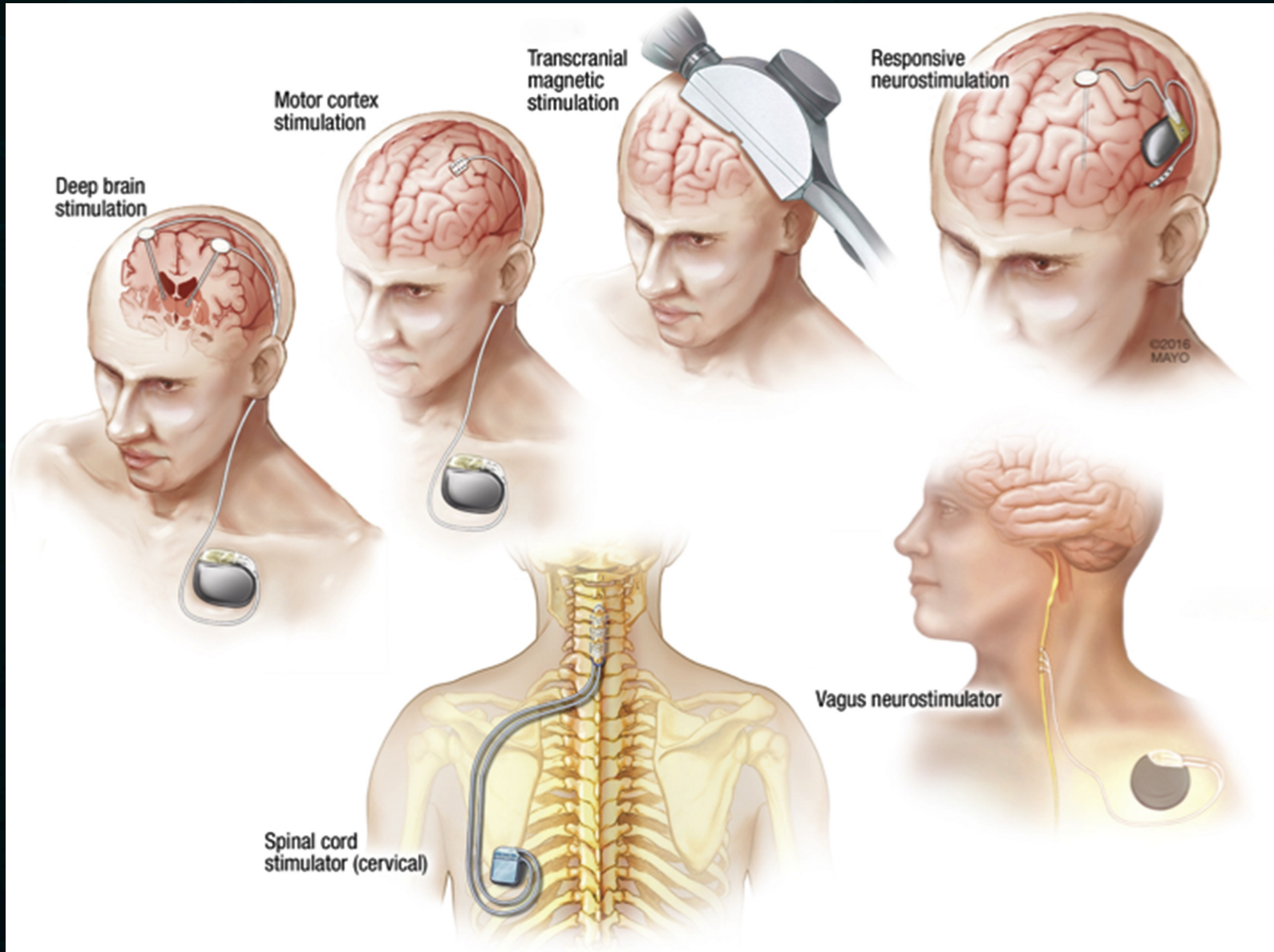


# Cannabinoids

- THC – psychoactive and CBD – ?anxiolytic, ?anti-inflammatory, ?neuroprotective
  - Mixed outcomes from studies.
    - Cochrane analysis of 16 studies, 1750 people → The benefits of cannabis-based medicine (herbal cannabis, plant-derived or synthetic THC, THC/CBD oromucosal spray) in chronic neuropathic pain might be outweighed by their **potential harms**.
  - Caution on interpreting studies
    - Non-neuropathic pain types exist in neurological conditions like NMO, MS, TM
    - Statistical vs Clinical significance
    - Safety and duration
  - Personal experience – CBD may indeed have a role for anxiety/depression and spasticity when coexisting with neuropathic pain in select patients.
- <https://www.frontiersin.org/articles/10.3389/fphar.2019.01239/full>



# Devices





# Scrambler therapy for neuropathic pain



**Mealy MA, Kozachik SL, Cook LJ, Totonis L, Salazar RA, Allen JK, Nolan MT, Smith TJ, Levy M.** Scrambler therapy improves pain in neuromyelitis optica: A randomized controlled trial. *Neurology*. May 2020



## THOUGHTS

What we **think** affects  
how we feel and act

# CBT

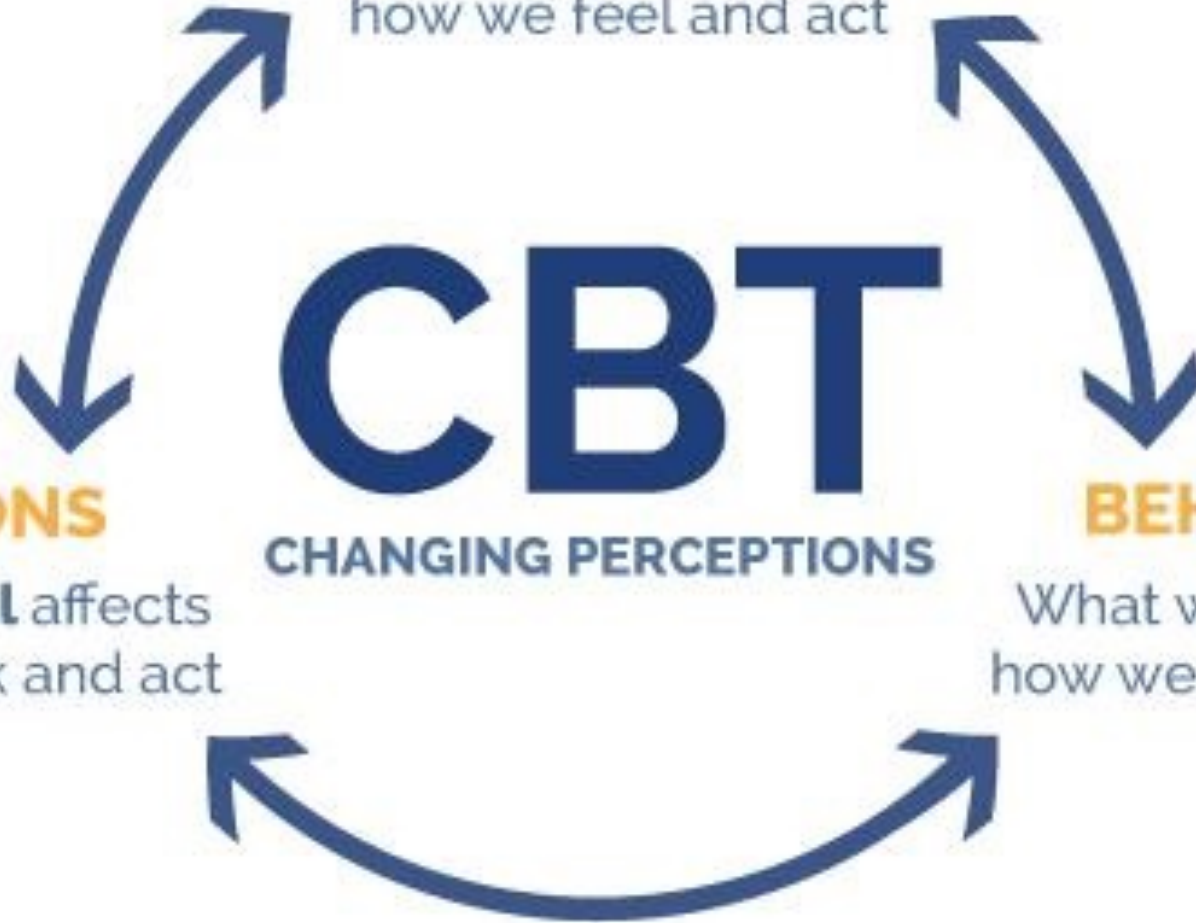
CHANGING PERCEPTIONS

## BEHAVIORS

What we **do** affects  
how we think and feel

## EMOTIONS

What we **feel** affects  
how we think and act

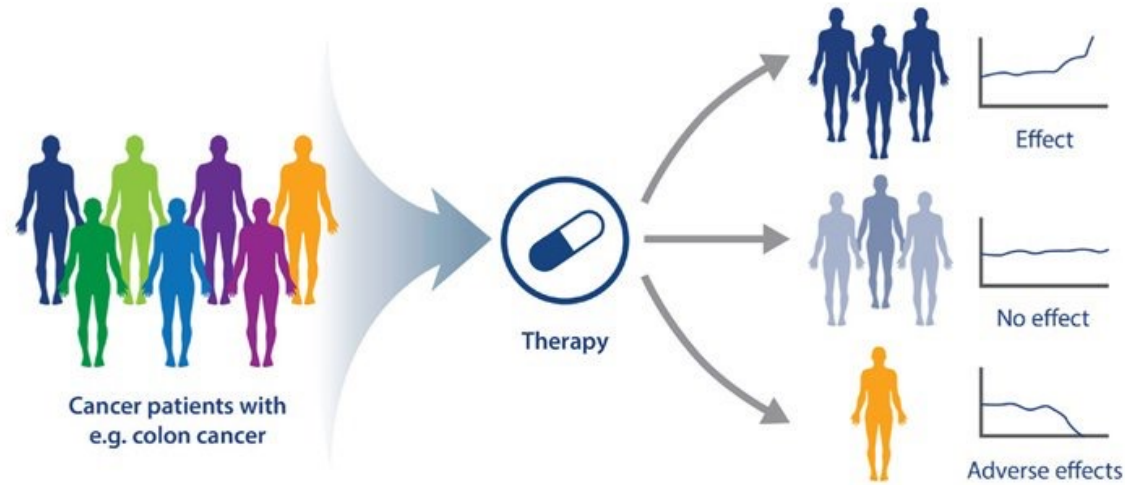


# Current Medicine

One Treatment Fits All

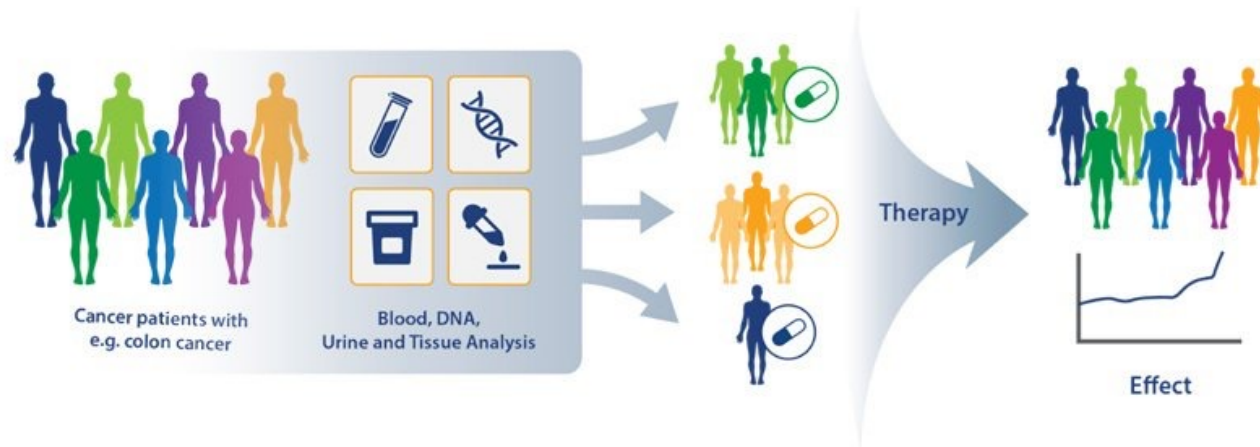


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# Future Medicine

More Personalized Diagnostics



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