



# Low Back Pain

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Common, complicated, all-consuming

Nu Cindy Chai, MD & Patient  
UCSF Pain Medicine

# Agenda

- **Epidemiology**
  - Back pain is common
- **Patient perspective**
  - Back pain is complicated
  - Back pain is all-consuming
- **What are our knowledge gaps**
- **Discussion**

Disclosures

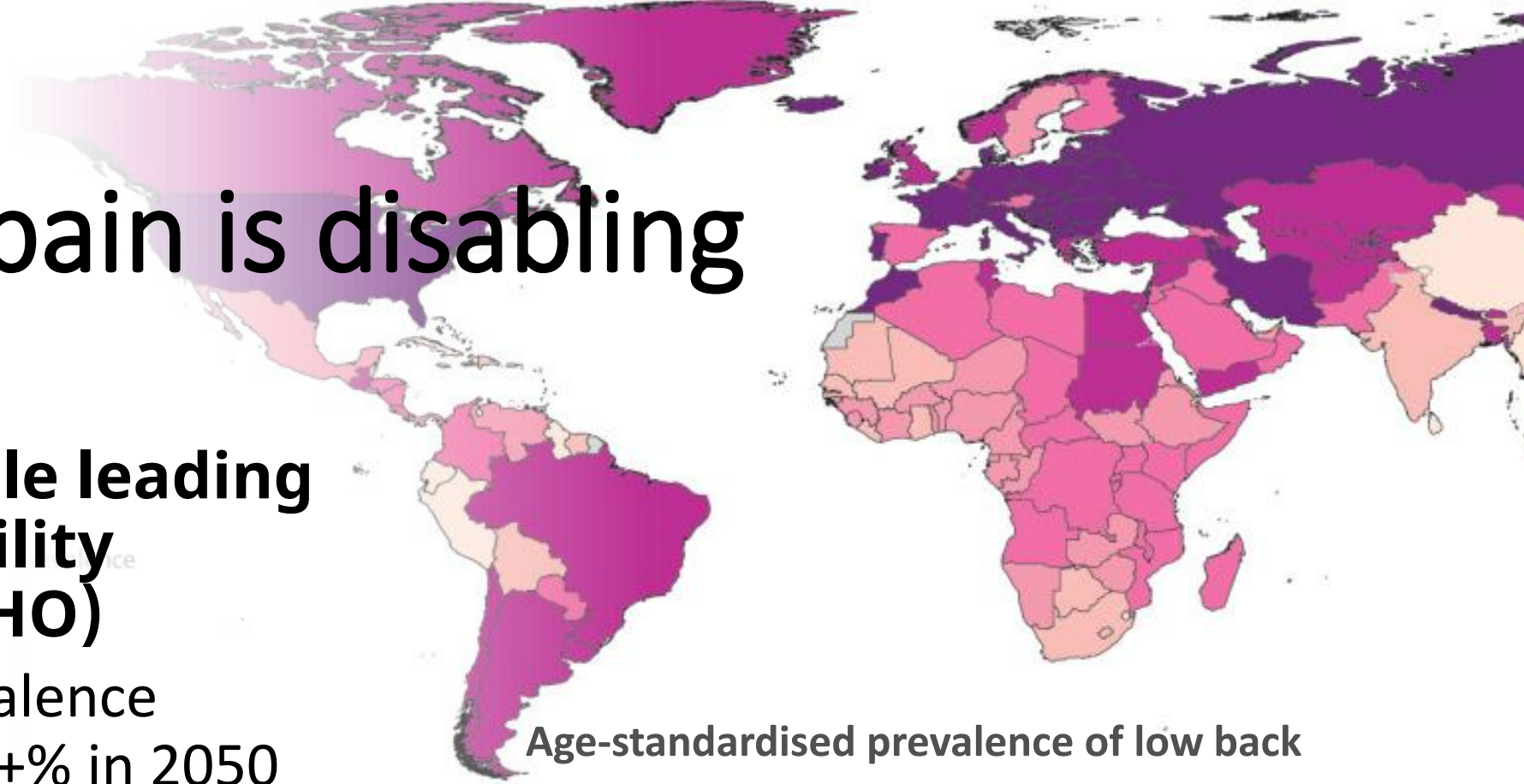
None

## Low back pain is common

- Most people have at least one episode of acute LBP in their lifetime.
- Prevalence increases with age
- More prevalent in women
- 50-60% will continue to have pain or frequent recurrences 1 year or more after onset. (Itz 2013, Mehling, 2012)

# Low back pain is disabling

- **LBP is the single leading cause of disability worldwide (WHO)**
  - Expected prevalence increase by 30+% in 2050 (GBD 2021)



Age-standardised prevalence of low back pain by country in 2020 – Lancet 2023

Latin America



Persian Gulf



Balkan Peninsula



Southeast Asia



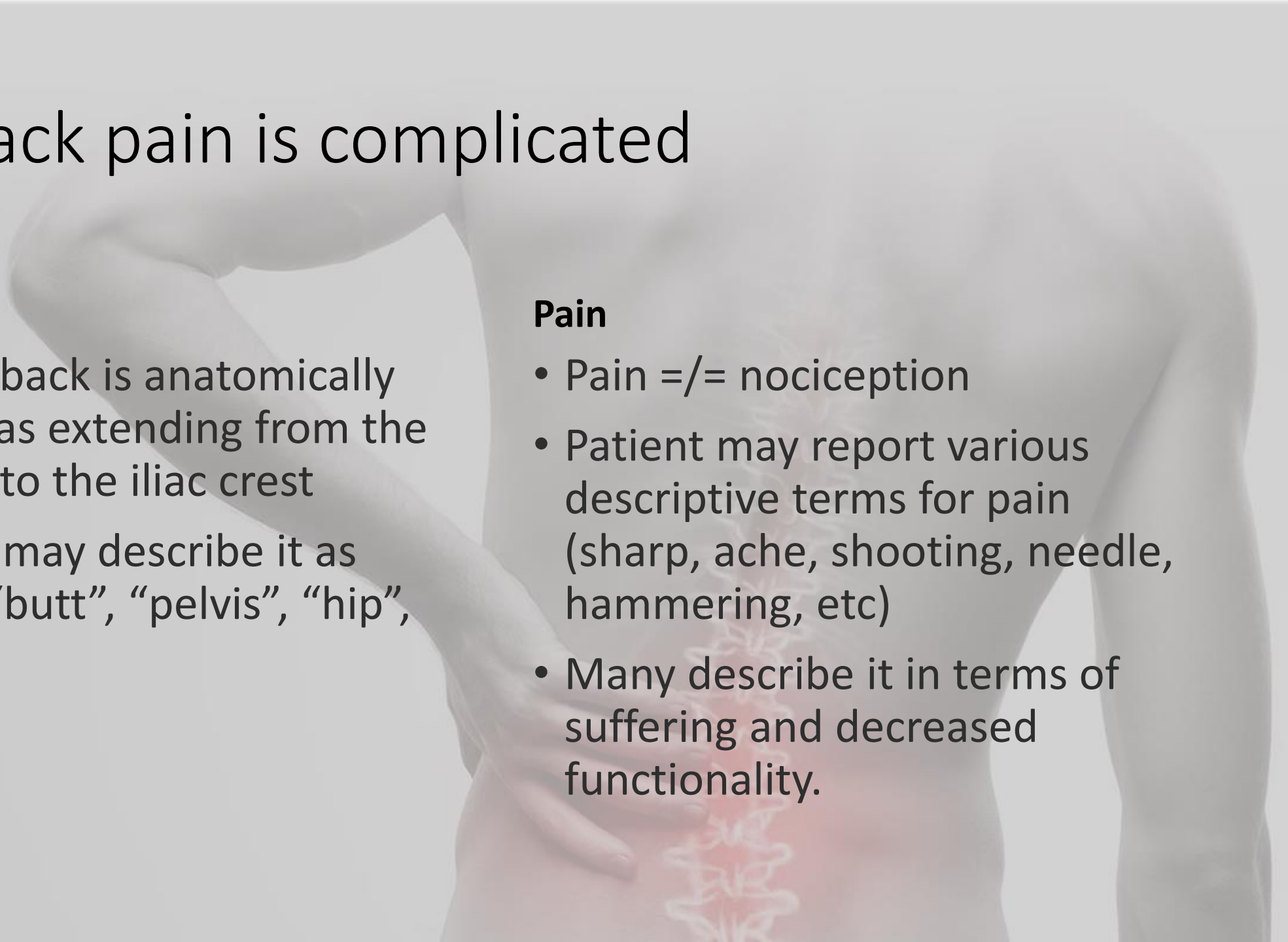
# Low back pain is complicated

## Low back

- The low back is anatomically defined as extending from the 12th rib to the iliac crest
- Patients may describe it as “back”, “butt”, “pelvis”, “hip”, etc

## Pain

- Pain  $\neq$  nociception
- Patient may report various descriptive terms for pain (sharp, ache, shooting, needle, hammering, etc)
- Many describe it in terms of suffering and decreased functionality.



# Patient's Perspective

What does your pain feel like and how does it affect you?

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## Wish List

A better way of communicating pain.

A better way of measuring pain.

Patient: "I wish you can feel what I feel."

Physician: "I wish I can really understand the patient's pain."



# Current Methods

- **Rating scales** - evaluate pain intensity
  - Short-term and longer-term Test-retest stability is good (Eusobhon 2022, Alghadir 2018)
- **Patient's descriptions**
  - Terms used to describe pain are often idiosyncratic and does not correlate with VAS (Kenny 2007)
- **Questionnaires**
  - To identify other pain dimensions, assess functional status, and identify psychological confounders (Jensen 2017, Smeetz 2011)
- **Imaging studies** – MRI, fMRI, EEG, etc (Luo 2022)
- **Anatomic/physiologic measurements** (sweat, pupil size, etc)

# SO WHAT if you can feel patient's pain?

- Establishing rapport
- Follow treatment effect
- Diagnostic?
- Prognostic?





# Wish List

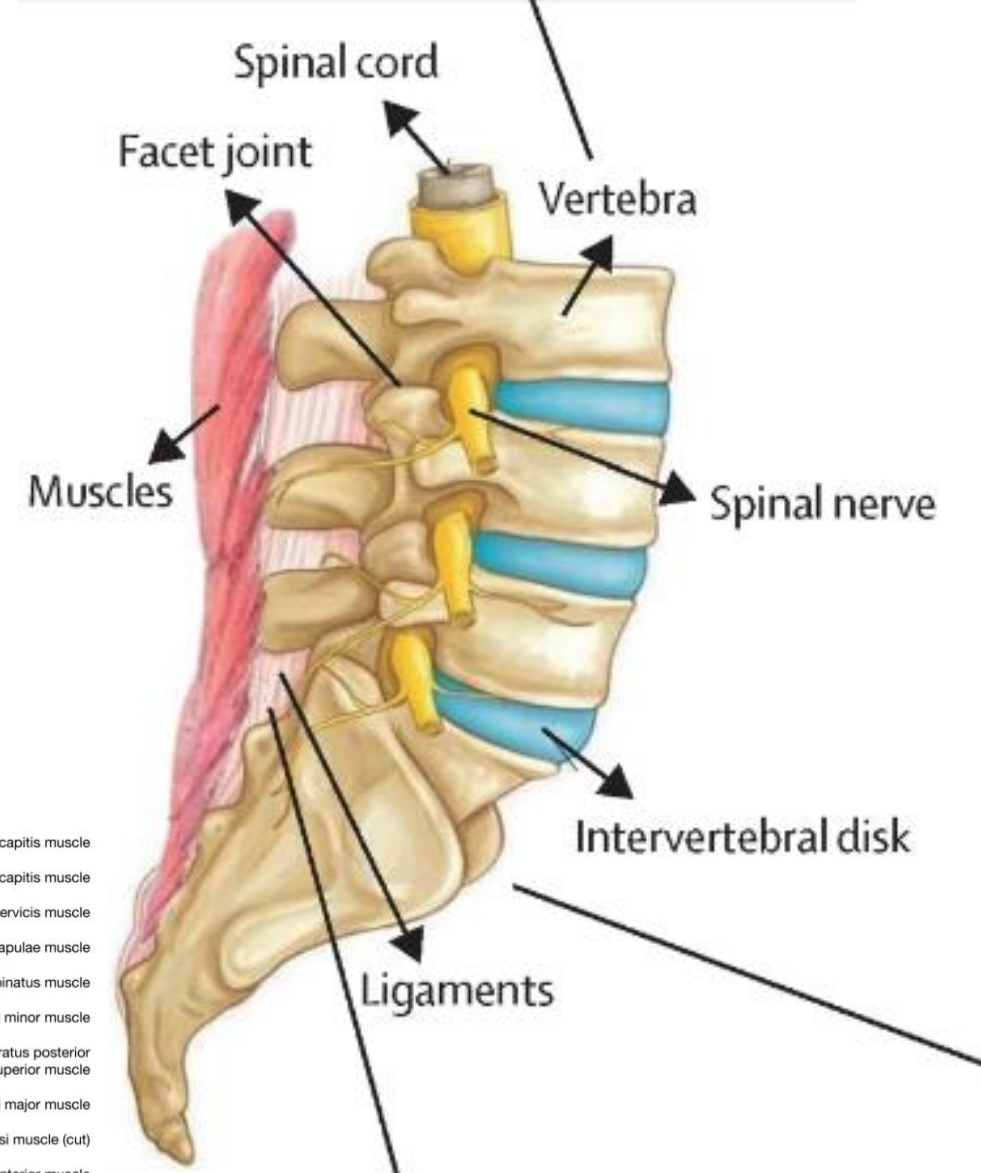
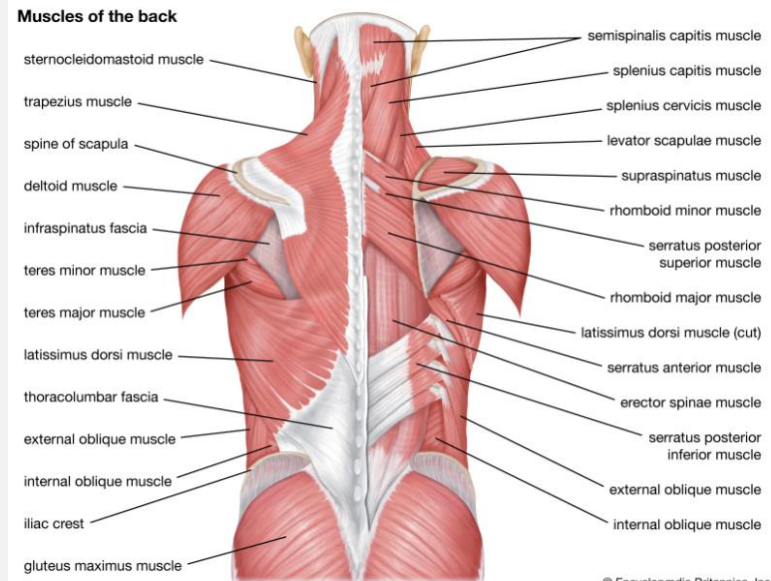
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**A better way of  
communicating  
pain/measuring pain to**

- 1. Improve Diagnosis**
- 2. To aid treatment  
planning and follow  
treatment effect**

# Anatomic Factors

- Muscle, fascia, ligaments, tendon, vertebrae, facet joints, sacroiliac joints, intervertebral discs, and neurovascular structures



# Patient's Perspective

What's the reason for your chronic back pain?

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➤ [Spine J. 2022 Feb;22\(2\):207-213. doi: 10.1016/j.spinee.2021.09.007. Epub 2021 Sep 20.](#)

## **What does the patient with back pain want? A comparison of patient preferences and physician assumptions**

Matthew Smuck<sup>1</sup>, Kevin Barrette<sup>2</sup>, Agnes Martinez-Ith<sup>3</sup>, Geoffrey Sultana<sup>4</sup>,  
Patricia Zheng<sup>2</sup>

1. Explanation of what is causing your problem.
2. Improvement in level of pain
3. Improvement in ability to perform daily tasks

# Diagnostic tools are not perfect

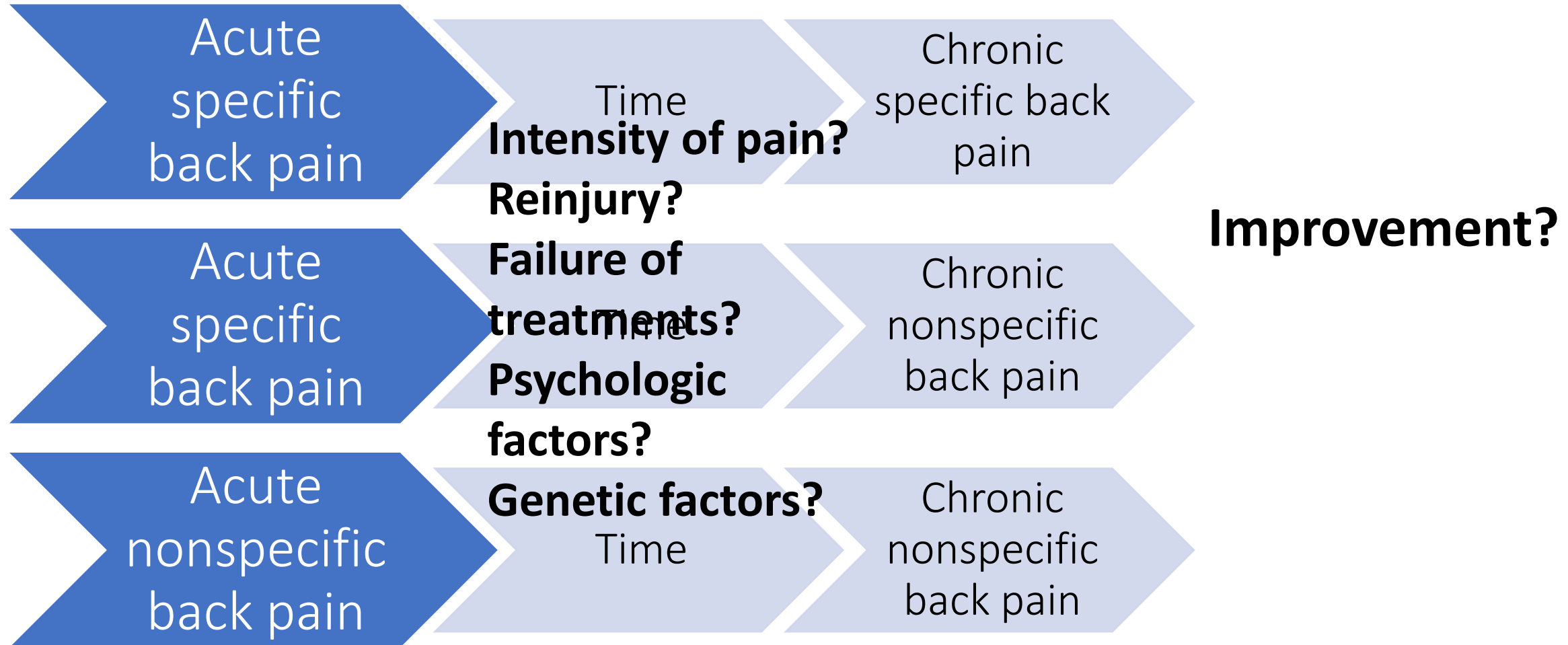
- History & Physical Exam
- Xray/CT/MRI
  - Imaging does not correlate with symptoms. (Jensen 1994, Hall 2021)
  - Conflicting evidence that endplate signal changes were associated with low back pain and activity limitations. (Herlin 2018, Raastad 2015)
- Diagnostic injections
  - Epidural steroid injection
  - Lumbar medial branch blocks/lateral branch blocks/cluneal nerve blocks

# Non-specific back pain/Nociplastic pain

- "Low back pain is nonspecific in about 90% of cases." (WHO)
  - Most cases of low back pain were not associated with a clear-cut cause. (Maher 2017)
- "Nociplastic low back pain is **pain in which a specific pain generator, or generators, has not been identified—not that one does not exist.**" (Knezevic 2021)
  - Principal mechanism is "sensitization of the nervous system".
  - Can co-exist with nociceptive or neuropathic low back pain



# Is chronic back pain just acute back pain that's not adequately treated?



# The Relationship Between Structural and Functional Brain Changes and Altered Emotion and Cognition in Chronic Low Back Pain Brain Changes: A Systematic Review of MRI and fMRI Studies

Sin Ki Ng<sup>1 2</sup>, Donna M Urquhart<sup>2</sup>, Paul B Fitzgerald<sup>1</sup>, Flavia M Cicuttini<sup>2</sup>, Sultana M Hussain<sup>2</sup>, Bernadette M Fitzgibbon<sup>1</sup>

- 10 of 15 studies found decreased gray matter and 7 of 8 studies found white matter changes in CLBP groups compared with controls.
- The brain changes in CLBP groups were mainly observed in areas and networks important in emotion and cognition, rather than those typically associated with nociception.

# Wish List

- **Better diagnostic tool to identify specific back pain etiologies**
- **Understand and find ways to mitigate reasons for nonspecific back pain**
- **Understand and find ways to mitigate chronification of back pain**

# Treatments

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## Non-opioid medications

- Gabapentin
  - No better than placebo for chronic low back pain (Atkinson 2016, O Enke 2018)
- Pregabalin
  - No better than placebo (Mathieson 2017)
- Tricyclic Antidepressants
  - No strong evidence for use in chronic low back pain (Chou 2017)
- Duloxetine
  - Possibly helpful for low back pain when used for ~4 months (Skljarevski 2009, Chou 2017)
- NSAID
  - May be helpful (Anderson 2022)

## Opioid medications

- Most commonly prescribed class of drug for back pain. (Ivanova 2011)
- Randomized controlled trials have high dropout rates, brief duration (four months or less), and highly selected patients.
- Long term efficacy unclear (Chaparro 2014)
- Complications of nausea, constipation, sedation are common
- Tapering may not worsen pain/may improve pain (Murphy 2013, Townsend 2008, Baron 2006)

# Non-pharmacologic Treatments

**Treating the anatomic pathology doesn't mean it will stop pain**

- **Injections**
- **Surgery**

**Interventions that don't target specific pathology can be helpful**

- **Pain psychology**
- **Acupuncture**
- **Physical Therapy**

**Neuromodulation (spinal cord stimulation, peripheral nerve stimulation, brain stimulation, etc)**

# Patient's Perspective

What has been your experience with opioids for your pain?

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# Wish List

## A better pain medication

- Effective
- Durable in efficacy
- Not addictive
- Minimal side effects





# Non- anatomic/nonspecific factors

- Negative expectations predict poor outcomes (Hayden 2019)
- Fear avoidance leads to further disability (Vlaeyen 2012, Martinez-Calderon 2019)
- Cognitive behavior therapy (CBT), pain reprocessing therapy, among other pain psychology techniques, can be helpful for back pain. (Bushey 2022, Ashar 2022, )

“Most treatment options address only single, solitary causes and given the complex nature of low back pain, a **multimodal interdisciplinary approach** is necessary.”  
(Knezevic 2021)

"The advances with the greatest potential are arguably those that **align practice with the evidence, reduce the focus on spinal abnormalities**, and ensure promotion of activity and function, including work participation." (Foster 2017)

# Pain Education

Back School (strengthening, anatomy, concepts, healthy lifestyle) can improve pain. (Hernandez-Lucas 2023)

Pain education sessions can lower pain intensity (Kanaan 2023)

## Summary: Wish List

- Better diagnostic tools for specific back pain etiologies
- Better understanding of factors contributing to nonspecific back pain
- Better understanding of chronification of back pain
- Individualized **prevention and treatment strategies** that consider each patient's unique biological, psychological, and social factors.
  - High-quality trials with longer follow-up periods of individual treatment modalities.
  - Studies to compare treatment modalities
  - Studies that tell us the optimal timing of individual treatment modalities
  - Studies that tell us the optimal treatment combinations

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Thank you!