Best Practices in Lower Back Treatment

Chairperson:

Chadi Tannoury, MD, FAOA

Tuesday, March 29th, 2022

9:45-10:50am

Latest Technology in Spinal Cord Stimulation

Eduard Vaynberg MD

Director of Pain Management

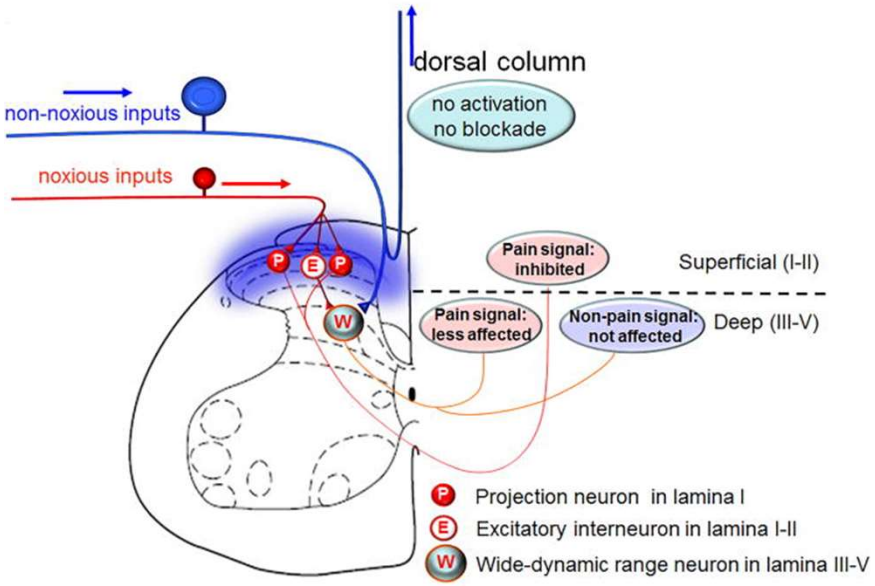
Boston Medical Center

Disclosure: member of Medtronic Speaker Bureau

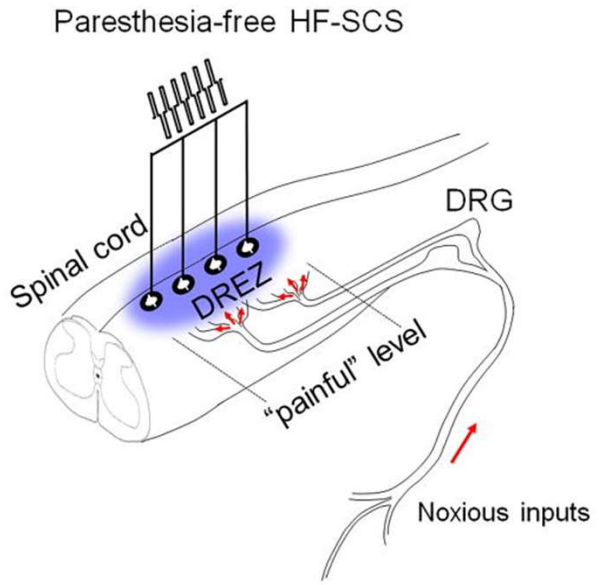
Mechanism of Action

- Direct application of an elegant scientific theory to medical practice
- Gate control pain transmission theory by Melzack and Wall 1965
- Input of peripheral pain fibers could be manipulated by external electric field (stimulation) applied to the spinal cord to “close the gate” of the pain transmission
- First stimulator implanted in 1967

Traditional low frequency stimulation



High Frequency Stimulation



Technique of Implantation

percutaneous fluoroscopically guided outpatient procedure performed under conscious sedation

- Placement of an electrode array (leads) in the epidural space on top of the carefully selected segment of the spinal cord
- Tunneling of the wires
- Connecting wires to the computer/pulse generator

Indications for Spinal Cord Stimulation

- Continuing severe pain and functional dysfunction despite maximized medications, failed injection therapies and failed surgeries
- Pain in the location amenable to stimulation: extremities, lower back, failed back surgery syndrome and complex regional pain syndrome I and II (RSD)
- No untreated psychopathology
- No coagulopathies or epidural lesions

Patient Selection Process

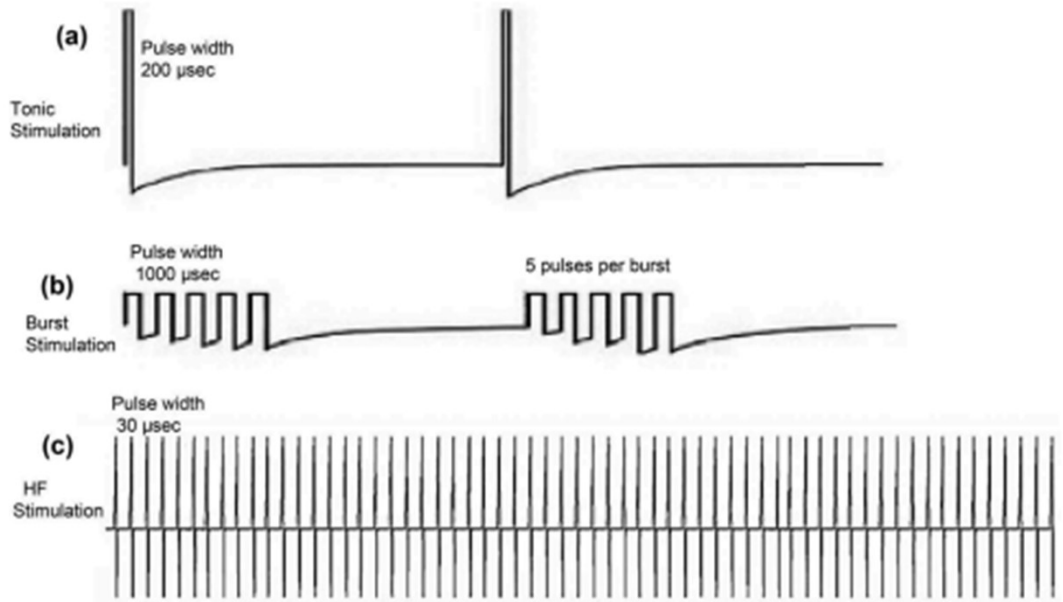
- Initial evaluation discussing pros and cons of therapy
- Psychiatric clearance
- Appropriate imaging: upper extremity and neck pain: cervical and thoracic MRIs, lower extremity pain and lower back pain: lumbar and thoracic MRIs. MRIs are needed to evaluate patency of the epidural space for the lead implantation (r/o spinal stenosis, tumors, etc)
- Reevaluation of the patient with MRI results
- Trial
- Implantation

Trial and Implantation

- Percutaneous trial is a day procedure done under fluoroscopy
- Patient uses external device for 3-7 days
- Removal of the percutaneous lead takes 5 minutes
- If adequate pain control achieved: proceed to full implant, usually brief surgery, overnight stay at the hospital

New Paradigms in Stimulation

- Combination therapies availability: multiple options available at the same time with one device
- Treating electrical current as medication: ability to vary dose, frequency, and speed of administration
- New stimulation algorithms without paresthesia: targeting dorsal horns and ganglions
- Automation of waveforms: variety of algorithms mentioned above are automatically rotated in a preprogrammed sequenced optimized for a particular patient
- Program usage and activity reports availability
- Full MRI compatibility


(a)
Pulse width
200 µsec
Tonic
Stimulation
Pulse width
1000 µsec
5 pulses per burst
(b)
Burst
Stimulation
Pulse width
30 µsec
(c)
HF
Stimulation

2022

Work Related Injuries Workshop

Why do Work Comp Patients Have a Bad Rap?

Manijeh Berenji MD MPH FACOEM

29 March 2022

Disclosures

- No pertaining to this talk

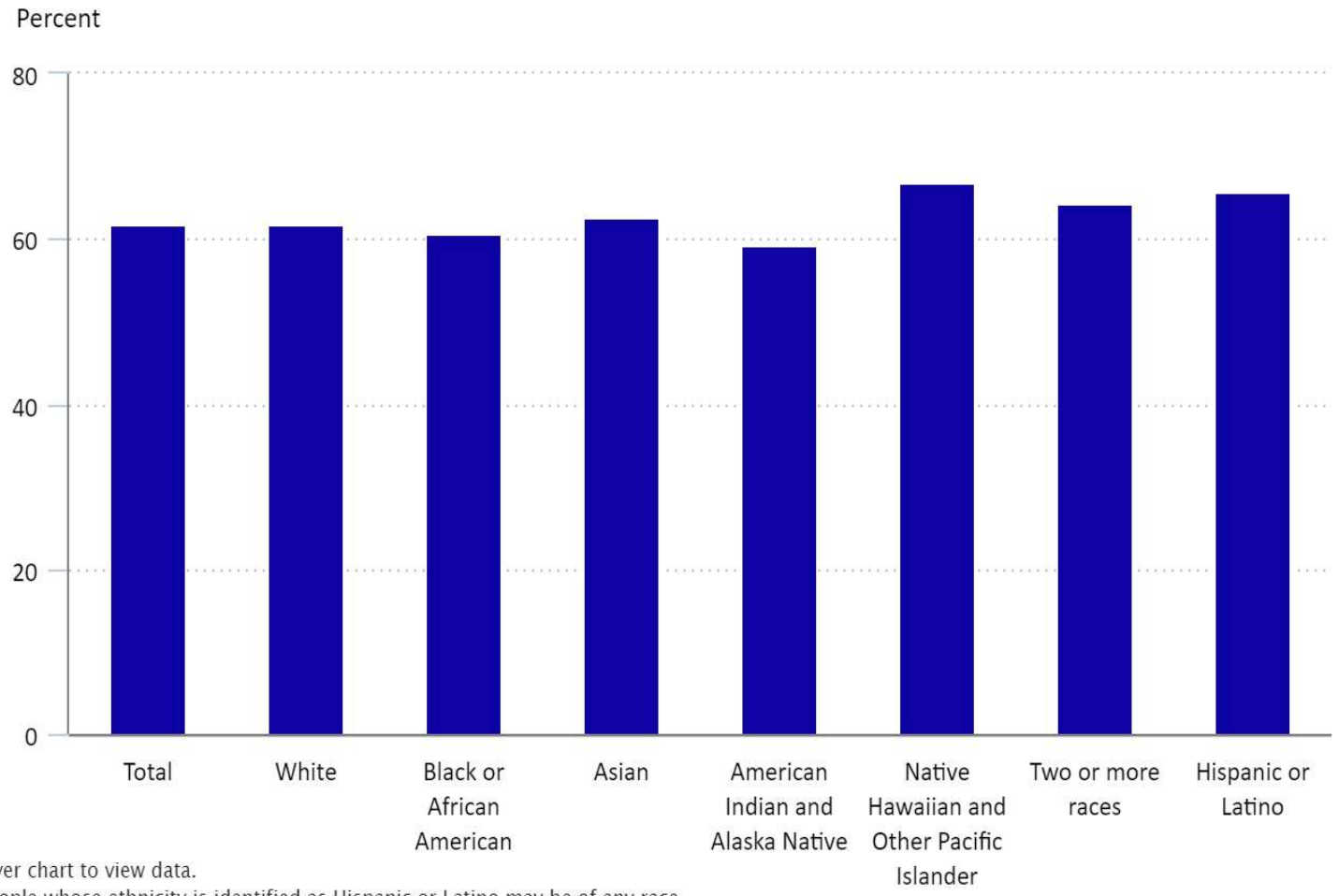
US Workforce Overview

2022

Work Related Injuries Workshop

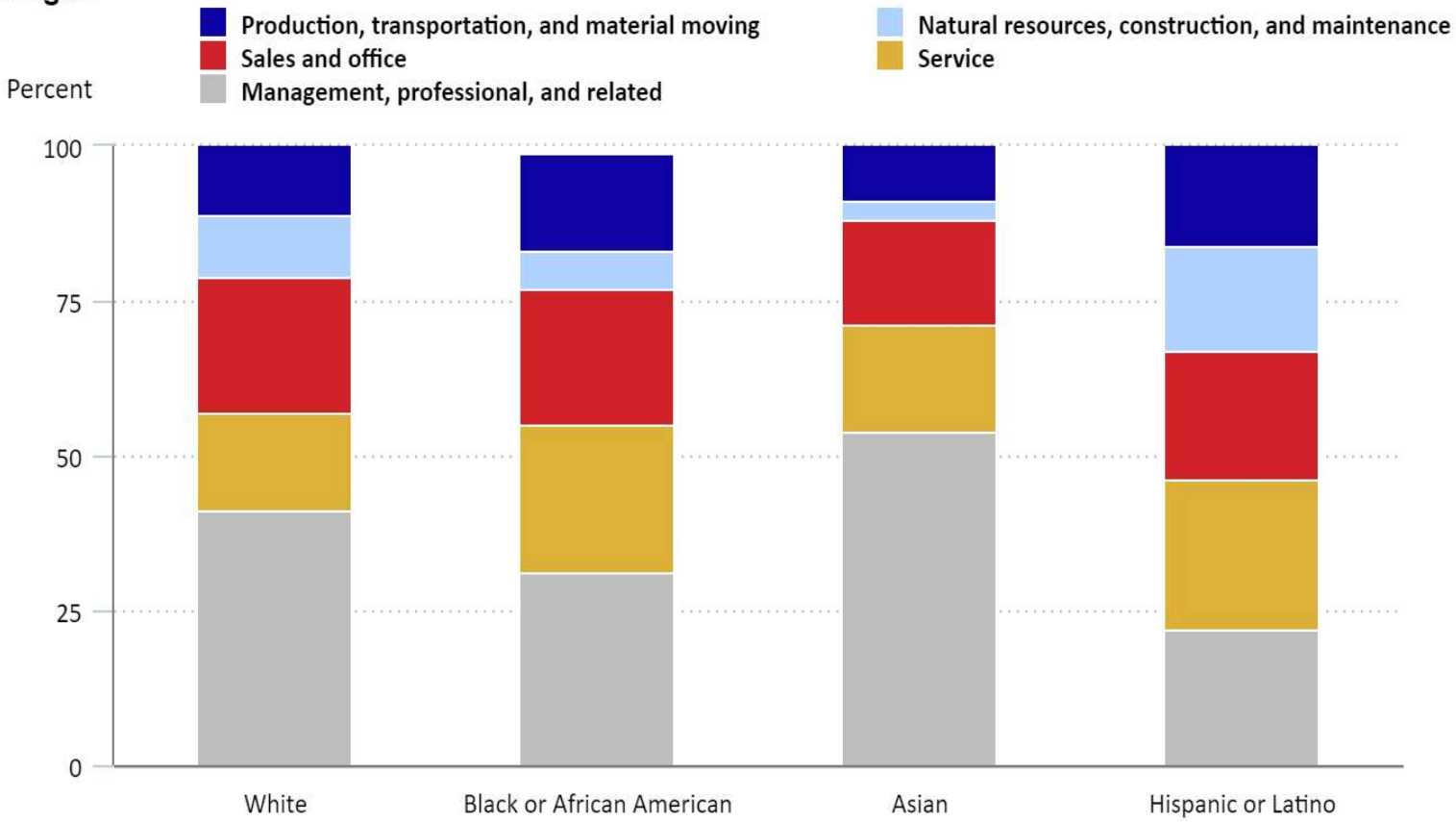
https://pxhere.com/en/photos?q=workers+&search=workers+diversity+african+american

Chart 1. Labor force participation rates by race and Hispanic or Latino ethnicity, 2020 annual averages



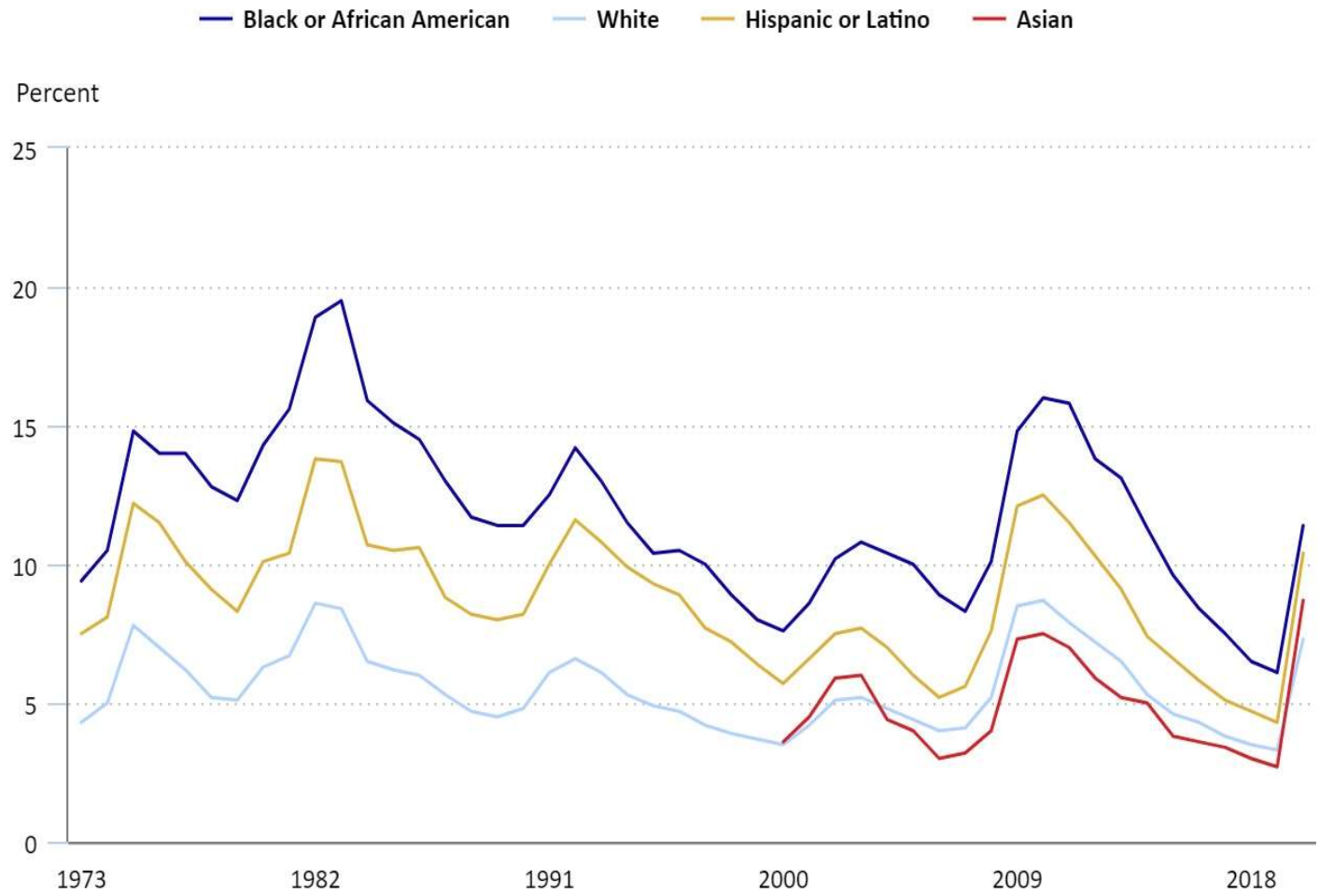
Hover over chart to view data.
Note: People whose ethnicity is identified as Hispanic or Latino may be of any race
Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS).

Chart 3. Employed people by occupation, race, and Hispanic or Latino ethnicity, 2018 annual averages



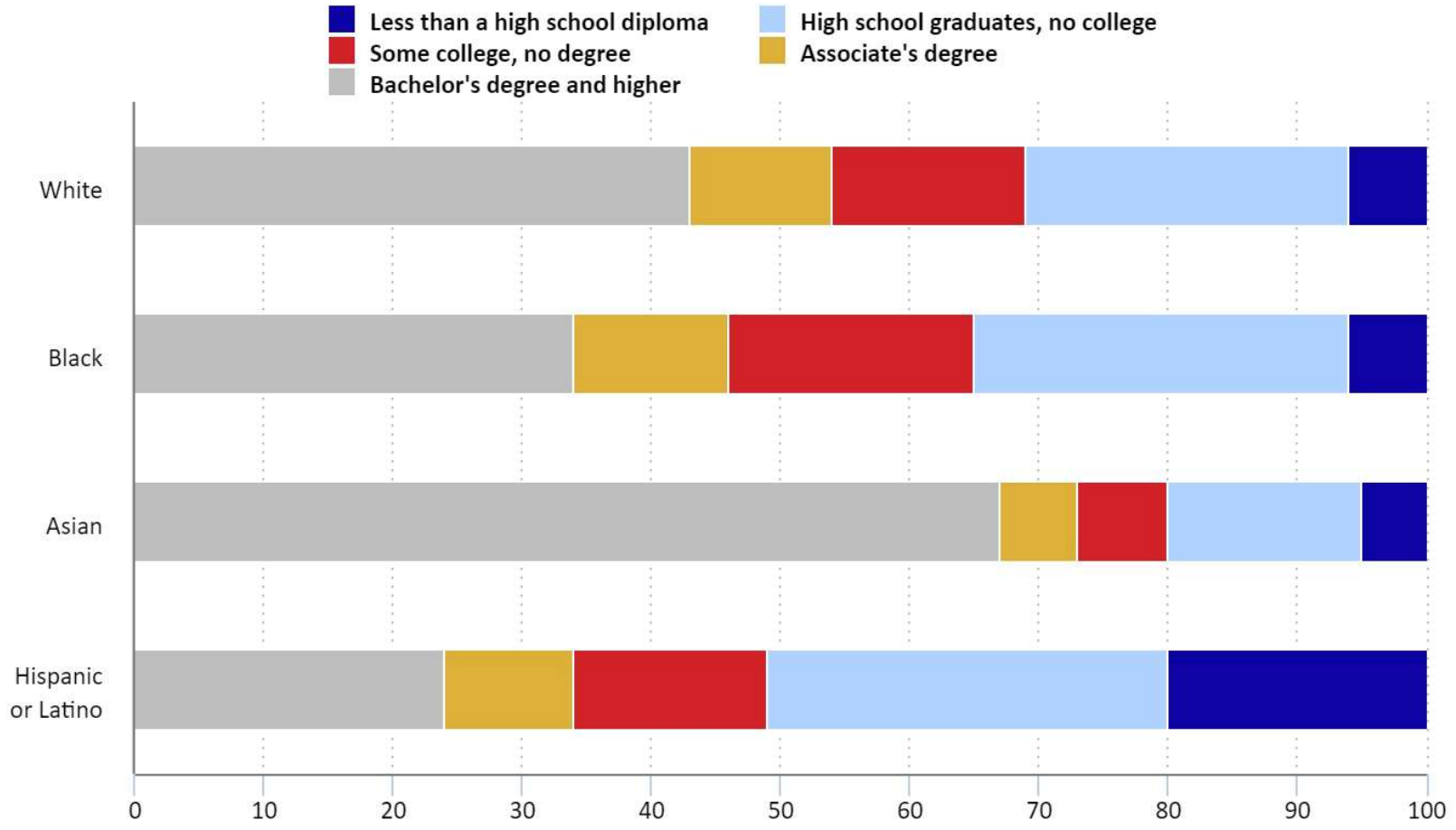
Click legend items to change data display. Hover over chart to view data.
Note: People whose ethnicity is identified as Hispanic or Latino may be of any race.
Data may not sum to 100 percent because of rounding.
Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS).

Chart 5. Unemployment rates by race and Hispanic or Latino ethnicity, 1973–2020 annual averages



Click legend items to change data display. Hover over chart to view data.
Note: People whose ethnicity is identified as Hispanic or Latino may be of any race.
Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS).

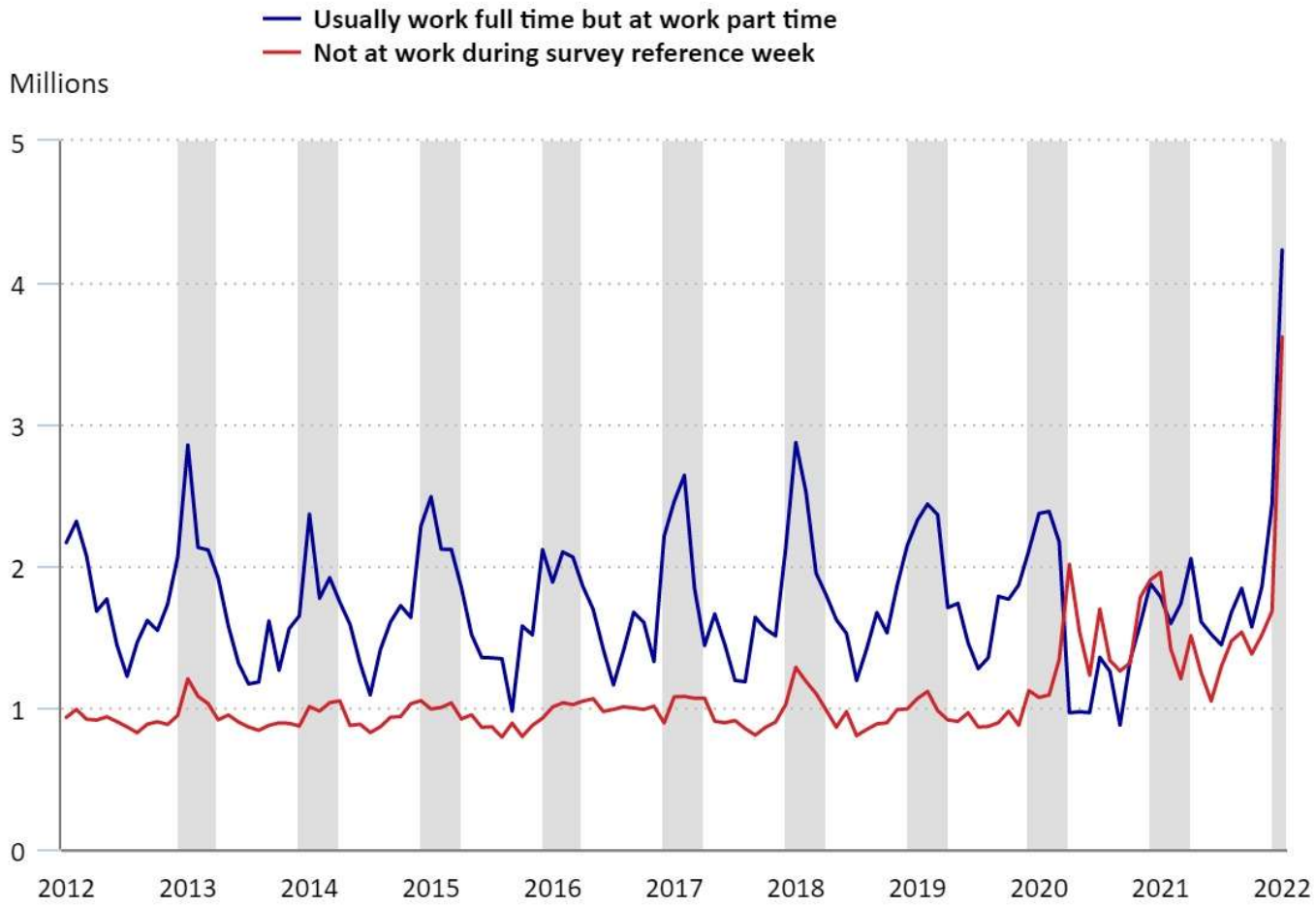
Chart 2. Educational attainment of the labor force age 25 and older by race and Hispanic or Latino ethnicity, 2020 annual averages



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS).

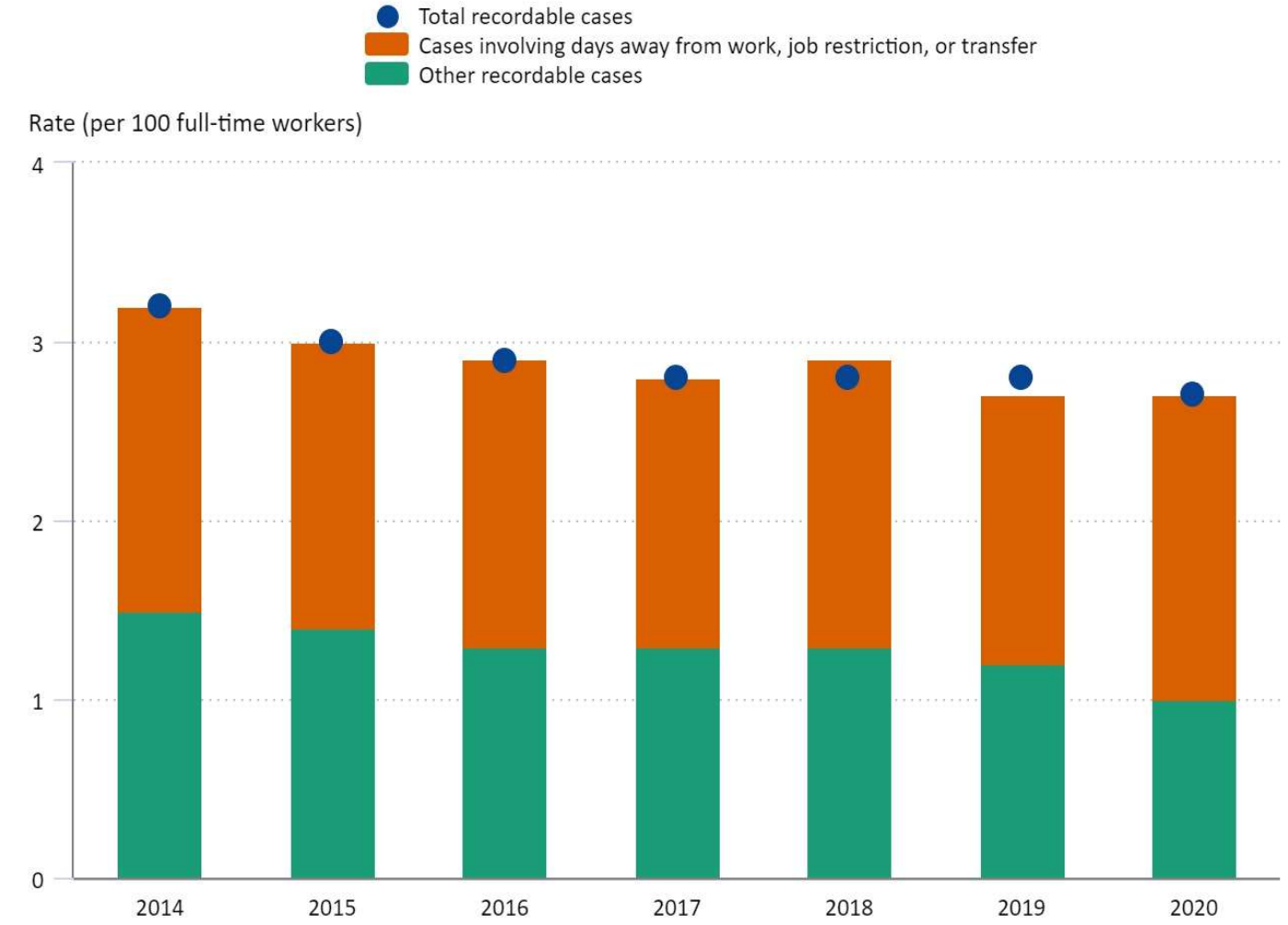
Work Injury Stats

Employed people who missed work because they had an illness, injury, or medical problem or appointment, January 2012–January 2022



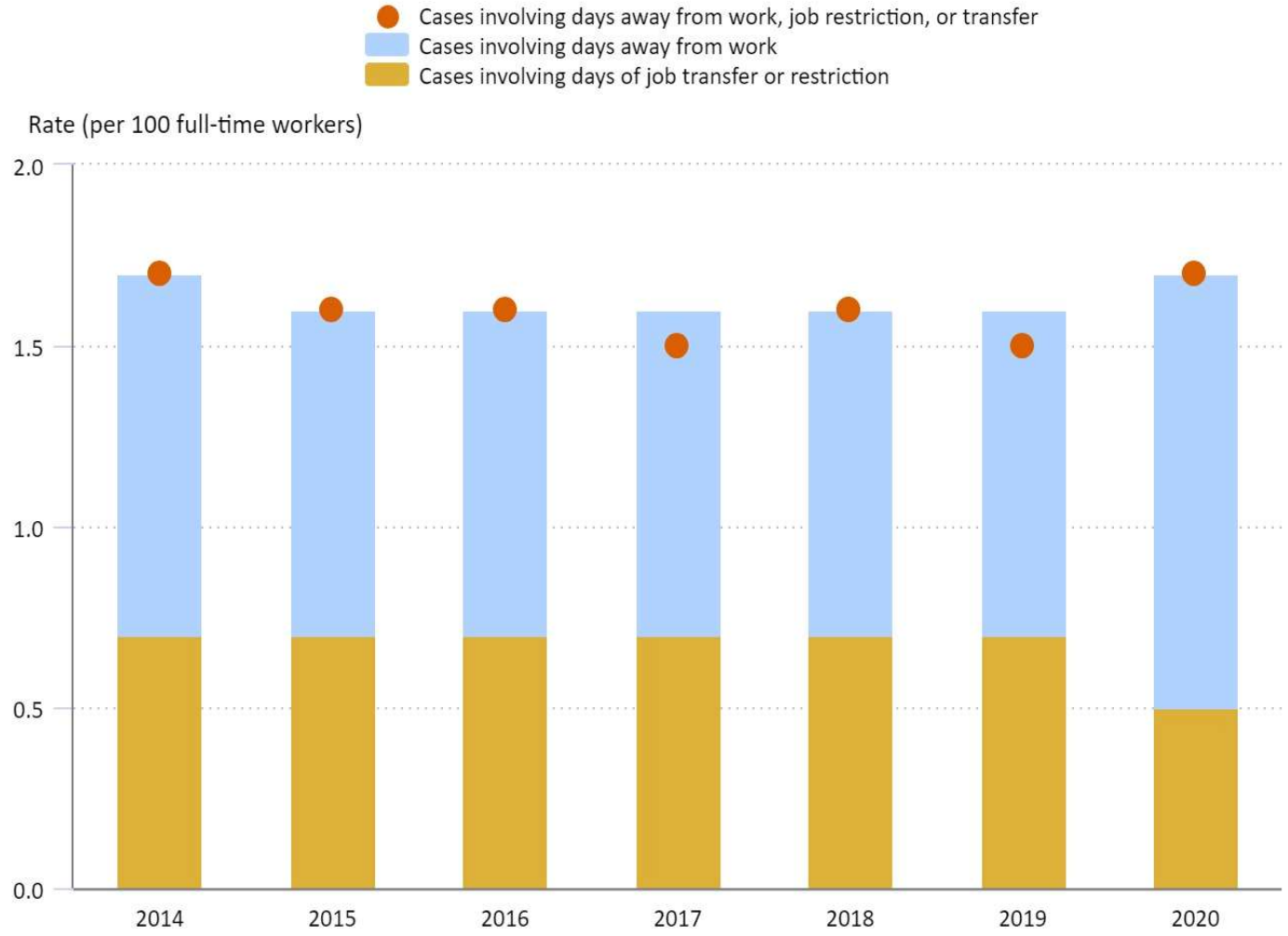
Click legend items to change data display. Hover over chart to view data.
Shaded areas represent the peak cold and flu seasons.
Source: U.S. Bureau of Labor Statistics.

Total nonfatal work injuries and illnesses, by year, private industry



Hover over chart to view data. Click legend items to change data display.
Source: U.S. Bureau of Labor Statistics.

Nonfatal work injuries and illnesses rates, by year and case type, private industry

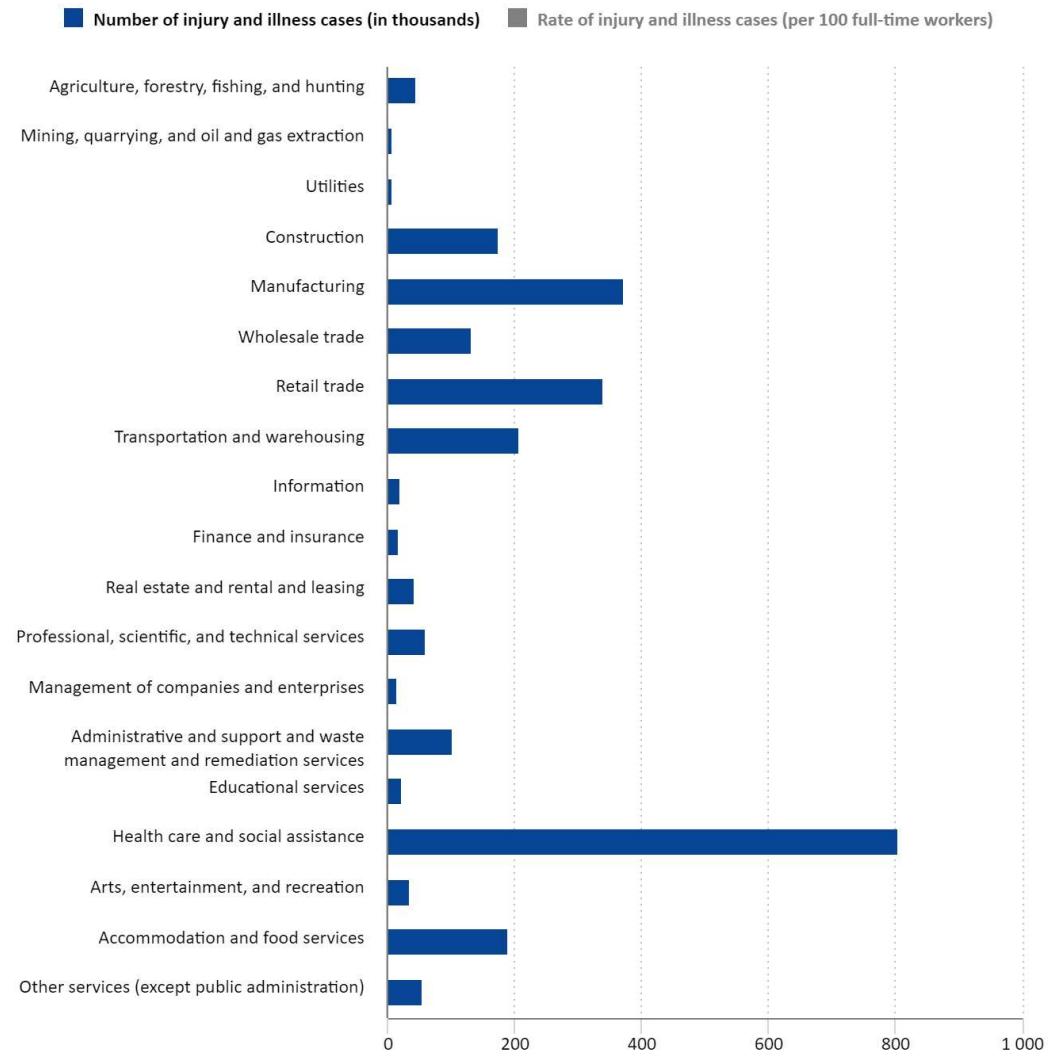


Hover over chart to view data. Click legend items to change data display.
Source: U.S. Bureau of Labor Statistics.

2022

Work Related Injuries Workshop

Number and rate of nonfatal work injuries and illnesses in private industries, 2020



Hover over chart to view data. Click legend items to change data display.
Source: U.S. Bureau of Labor Statistics.

Myths about Work Comp Patients

Workers' Comp: The Myth of the Bad Employee

By Frank Pennachio
May 19, 2008

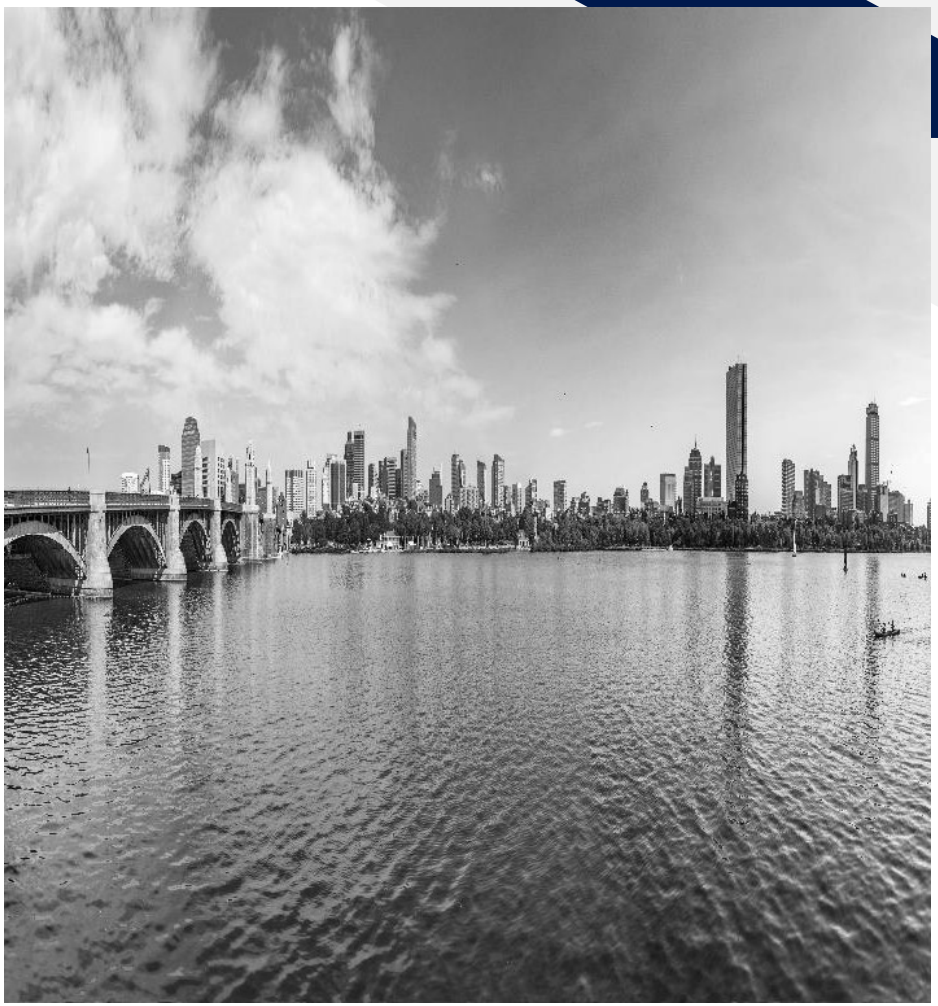
Many employers believe that "bad" or fraudulent employees drive up workers' compensation costs. When an employee is off on workers' comp for an extended period of time, it's not uncommon for an employer to say, "Tom was a model employee for many years. I can't believe he's milking the system. He should have been back to work weeks ago."

While the notion of abuse is widespread, particularly for such "invisible" injuries as strains and sprains, good employees can be vilified unjustly. However, it's often the system that induces needless disability leave and high costs.

Fraudulent claims are those filed by employees who were never hurt but say they were, or who were hurt outside of work and claim the injury is work-related. They make for memorable anecdotes—the employee with the injured back who is seen on video salsa dancing. But the far bigger problem is workers who don't get well as expected, not because of intentional malingering but as a result of delayed recovery. In other words, disability duration is out of proportion to the severity of the injury or illness.

Workers' Comp: The Myth of the Bad Employee (shrm.org)

The Truth about Work Comp Patients



How Can Workers' Compensation Systems Promote Occupational Safety and Health?

Stakeholders Views on Policy and Research Priorities

Michael Dworsky, Nicholas Broten

How Can Workers' Compensation Systems Promote Occupational Safety and Health? Stakeholder Views on Policy and Research Priorities (rand.org)

RAND's review of published perspectives on workers' compensation policy identified several major themes:

- **Coverage remains less than universal, and benefit adequacy is insufficient**. Many state policy changes have had the effect of making it more difficult for workers to access benefits and needed care, while the rise of alternative work arrangements has left a growing class of workers outside the workers' compensation system altogether. Meanwhile, disability benefits are often inadequate to protect workers from the earnings losses they actually experience after injury or illness. When workers are inadequately compensated for their injuries within the workers' compensation system, earnings losses and medical costs may be borne by workers and their families or may be borne by health insurers or public social insurance programs in the form of cost spillovers.
- **Significant problems remain in disability determination and medical treatment**. States differ widely in their approaches to determining permanent disability; widely used approaches are not evidence-based and may be conceptually inappropriate. In addition, medical care provided to injured workers is often of low quality despite increasing levels of spending, leading to avoidable disability and loss of function (at best) or severe iatrogenic harms, such as opioid addiction and death (at worst).

How Can Workers' Compensation Systems Promote Occupational Safety and Health? Stakeholder Views on Policy and Research Priorities (rand.org)

- **Challenges remain in vocational rehabilitation and return to work**. Return-to-work outcomes for many types of workers and at many employers remain poor, exacerbating the economic impact of injury on workers and their families.
- **Safety promotion practices have been somewhat successful but create complex claiming incentives**. Existing injury surveillance systems and incentives for safety provided by employers or by workers' compensation premium setting can lead to perverse incentives for the suppression of injury reporting.
- **System complexity is a drag on performance**. Complexity, delays, and excessive disputes within workers' compensation systems have been widely criticized as a factor that raises system costs and that can harm injured workers by creating an adversarial relationship with employers or preventing timely receipt of needed medical care and rehabilitation services.

How Can Workers' Compensation Systems Promote Occupational Safety and Health? Stakeholder Views on Policy and Research Priorities (rand.org)

DOES THE WORKERS' COMPENSATION SYSTEM FULFILL ITS OBLIGATIONS TO INJURED WORKERS?

Does The Workers' Compensation System Fulfill Its Obligations To Injured Workers? (dol.gov)

Despite the sizable cost of workers' compensation, only a small portion of the overall costs of occupational injury and illness is borne by employers. Costs are instead shifted away from employers, often to workers, their families and communities. Other social benefit systems – including Social Security retirement benefits, Social Security Disability Insurance (SSDI), Medicare, and, most recently, health care provided under the Affordable Care Act – have expanded our social safety net, while the workers' compensation safety net has been shrinking. There is growing evidence that costs of workplace-related disability are being transferred to other benefit programs, placing additional strains on these programs at a time when they are already under considerable stress.

"If you work hard in America, you have the right to a safe workplace. And if you get hurt on the job, or become disabled or unemployed, you should still be able to keep food on the table."

–President Barack Obama

Does The Workers' Compensation System Fulfill Its Obligations To Injured Workers? (dol.gov)

IASP
INTERNATIONAL ASSOCIATION FOR THE STUDY OF PAIN

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FACT SHEETS

Disparities in Back Pain

2021 About Back Pain

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Disparities in Back Pain - International Association for the Study of Pain (IASP) (iasp-pain.org)

A recent systematic review of social determinants of health in low back pain showed important associations between gender, race, ethnicity, education, occupation, and socioeconomic status and important facets of low back pain.

- **Health Disparity and Health Equity**

Health disparity is defined as "*a particular type of health difference that is closely linked with economic, social, or environmental disadvantage*" [40]. Health equity is consequently "*the absence of unfair and avoidable or remediable differences in health among population groups defined socially, economically, demographically or geographically*" [38]. Disparities in health outcomes have been documented both within and between countries [14; 25] and are stronger determinants of health outcomes than the quality and availability of medical care [5].

- **Disparities in back pain have been documented worldwide.**

A recent systematic review of social determinants of health in low back pain across 17 countries showed important associations between gender, race, ethnicity, education, occupation and socioeconomic status and important facets of low back pain (e.g., prevalence, intensity and level of disability) [14]. Differences in health because of where you live or your race or gender, have important societal and economic costs[20; 24; 32; 37].

Disparities in Back Pain - International Association for the Study of Pain (IASP) (iasp-pain.org)

- **Race and ethnicity are not synonymous.**

Race is defined as *"physical differences that groups and cultures consider socially significant"* while *Ethnicity* refers to the *"shared cultural characteristics such as language, ancestry, practices, and beliefs"* [1]. Race and ethnicity when used interchangeably fail to capture the distinction that an individual may be of one race but can be multi-ethnic through language, culture, and religion. In the presence of inequitable race relations in a society, it becomes very difficult to disentangle ethnicity from race in a meaningful way; in such cases the terms race/ethnicity are used jointly [17].

- **Racial and ethnic disparities lead to under-treatment of back pain.**

Racial and ethnic disparities in health care [36] persist even after adjusting for differences in access-related factors, needs, preferences, and appropriateness of the intervention. Specific to back pain, racial and ethnic disparities in opioid prescribing have been documented extensively in emergency departments and outpatient settings [16; 23; 26; 27]. Despite racial/ethnic minorities reporting severe back pain and disability levels, health care providers were more likely to associate less severe pain to them, less likely to refer them for imaging [4] and more likely to recommend non-opioid therapy [23].

- **Racial and ethnic disparities are undermining measurement and understanding of pain experiences in various populations.**

Without culturally adapted pain-related constructs, measurement, and interpretation frameworks, racial and ethnic disparities in back pain will persist. For example, application of measures not adapted for use in Indigenous communities in Australia has prevented fully capturing their pain experience [28] and consequently impacted on their pain assessment

Disparities in Back Pain - International Association for the Study of Pain (IASP) (iasp-pain.org)

Systematic Review and Meta-Analysis

PAIN

Low back pain and the social determinants of health: a systematic review and narrative synthesis

Emma L. Karran*, Ashley R. Grant, G. Lorimer Moseley

Abstract

The social determinants of health (SDH) are known to differentially impact outcomes from many noncommunicable diseases; however, their potential role in low back pain (LBP) is poorly defined. This review endeavours to comprehensively inform the field of their relevance. Our research question was: "How do the broad range of SDH and chronic LBP (CLBP) relate?" The primary aim of this review was to synthesise evidence of relationships between SDH and the frequency or severity of CLBP. Secondary aims were to identify relationships between SDH and LBP-related disability, work absenteeism, and opioid prescription. We included studies involving adult participants that evaluated relationships between one or more of the SDH and CLBP frequency or LBP outcomes (beyond 3 months). Two reviewers screened studies, extracted data, and assessed risk of bias. We synthesized the results narratively and applied PROGRESS to organise our findings. Database searches identified 7018 records. Forty-one studies were included, containing data from 2,161,617 adults from 17 countries. Twenty-four percent and 19% of the relationships included were classified as having a high risk of bias due to confounding and missing data, respectively. We reported 166 relationships representing the majority of the PROGRESS domains. An array of independent and interdependent relationships between the SDH and CLBP were identified with the strongest evidence for associations related to educational attainment and socioeconomic status. Our findings suggest that greater recognition of the contribution of SDH to disparities in LBP outcomes is warranted and this has the potential to usefully inform strategies to impact burden.

Keywords: low back pain, social determinants of health, public health, musculoskeletal conditions

1. Introduction

Low back pain (LBP) is the leading cause of disability worldwide[82] and incurs a burden that is increasing in association with a rising and aging population. LBP impacts all age groups.[40,41] It is a major contributor to lost work productivity[70] and has extensive financial impact across healthcare[74] and social support[71] systems. A systematic review of the global prevalence of LBP provided prevalence estimates of 11.9 ± 2.0% and 23.2 ± 2.9% for point prevalence and one-month prevalence, respectively.[41] The majority of this burden is exerted by chronic LBP (CLBP), typically defined as LBP that has persisted for at least 3 months. The prevalence of CLBP has been less clearly defined than the prevalence of LBP—a review of population-based cohort studies reported prevalence rates ranging between 3.9% and 20.3% for cohorts over 18 years, with higher CLBP prevalence rates (up to 25.4%) revealed for older populations.[55]

Two lines of thought have led to the current review. First, there is building evidence that, in general, health outcomes are explained less by the quality and availability of medical care than they are by the context and circumstances of people's lives.[21] Calls to "burst the biomedical bubble"[49] by considering and addressing the range of nonmedical determinants of non-communicable disease (NCD) health outcomes, including using broad public health strategies, would seem highly pertinent to the management of this most burdensome condition.[9,67] Historically, however, pain conditions have not tended to draw such a public health focus.[9] It is only very recently that musculoskeletal conditions have gained attention in the World Health Organization action plan for the prevention and control of NCDs.[18] In 2011, Goldberg and McGee called for chronic pain to be regarded as a "global public health priority"[32] (p.3)—positing this as an ethically driven imperative that requires understanding of its social,

Karran, Emma & Grant, Ashley & Moseley, Lorimer. (2020). Low back pain and the social determinants of health: a systematic review and narrative synthesis. Pain. 161.

Summary

Thank you!

Contact Info:
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Lumbar Case Presentation

Chadi Tannoury, MD

Medical Director, Orthopedics

Director, Spine Research

Associate Professor, Orthopedic Spine Surgery

Boston University Medical Center

Panel

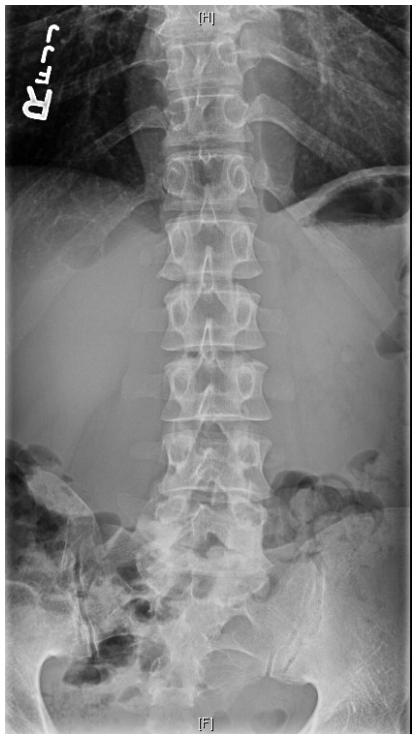
1. Tony Tannoury, MD
2. Eduard Vaynberg, MD
3. Mani Berenji, MD
4. Shauna Lattuca, PT
5. Michael Kelley,Director WC Claim - HUB
6. Buzz Schneider, Attorney

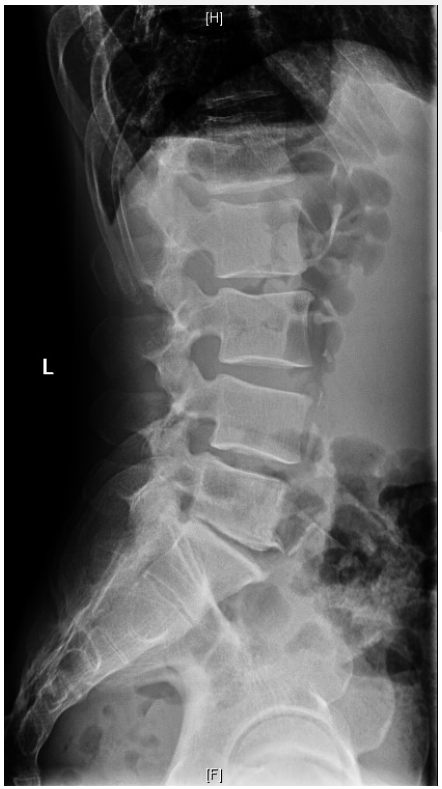
Case Scenario

- 45 y male
- Laborer
- Progressive back pain, Right leg sciatica (2 years)
- Injury? No specific trauma - Heavy lifting, repetitive bending
- PMH:
  - Anxiety - Depression
  - Tobacco intake (Chronic smoker)
- Family History:
  - Father & brother: with multiple ”Back surgeries”

Clinical Presentation

- P/E:
  - Bent over - stooped posture
  - Limited ROM
  - SLR +++
  - 3-4/5 weakness secondary to pain

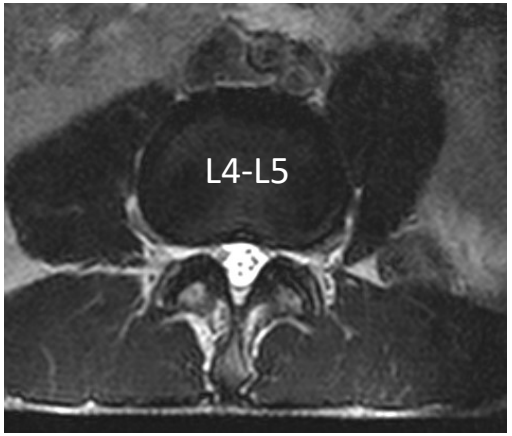


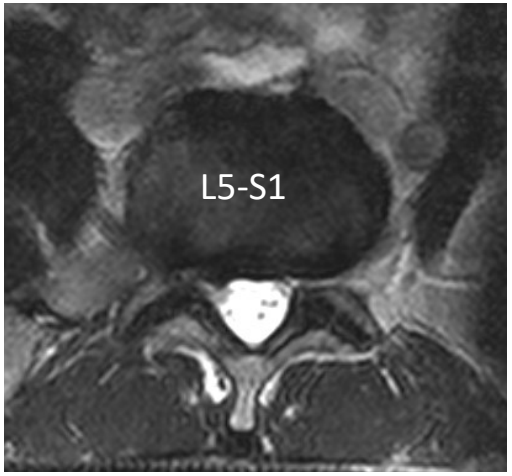


Next Step?

- Mani Berenji
- Shauna Lattuca

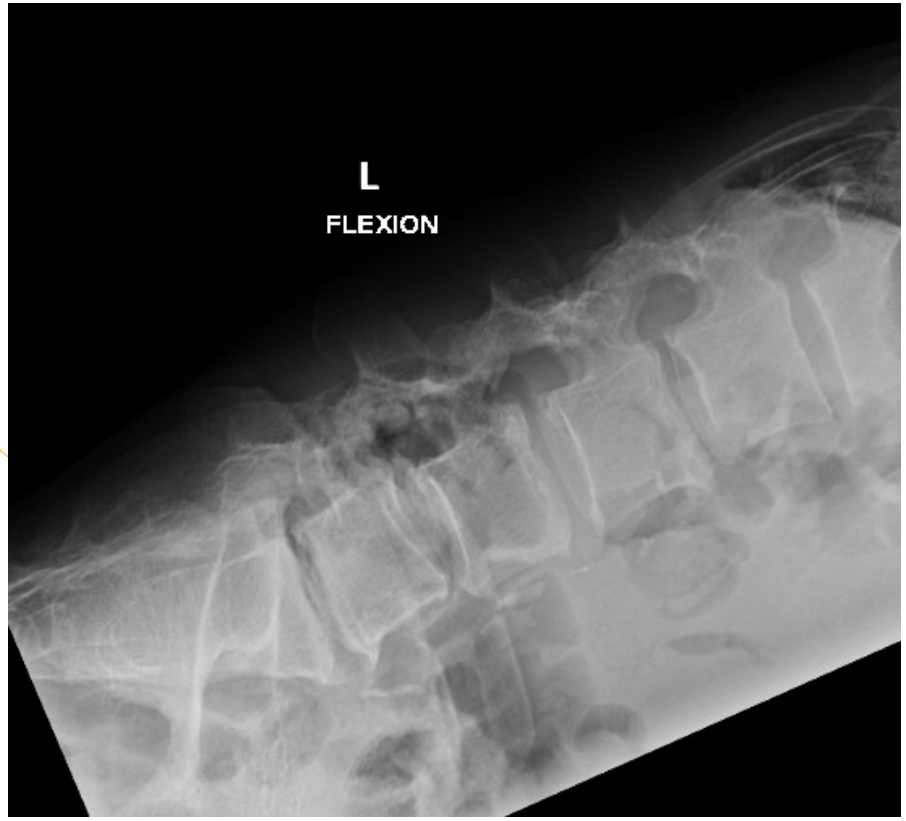
MRI





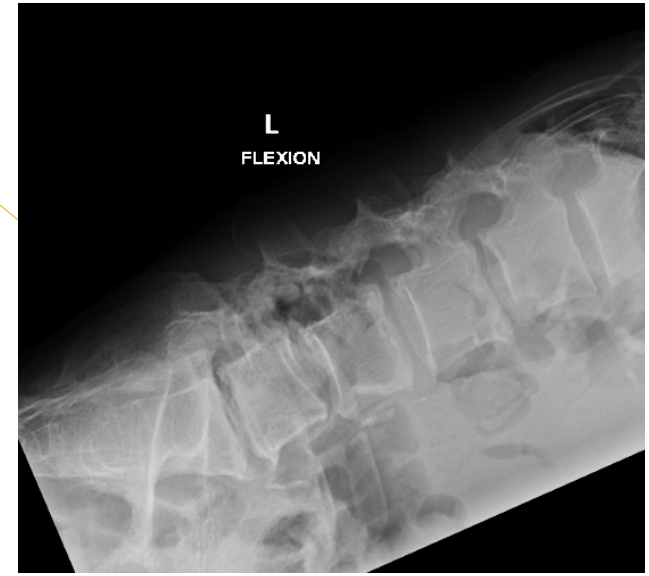
Tony:
Additional imaging?

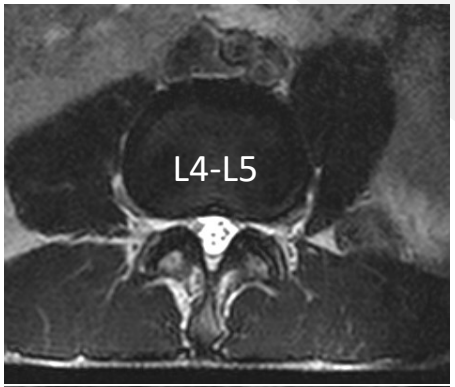
Flex - Ext



Diagnosis?

- EV
- TT





Unable to return to work!

- 1st Opinion MD:
  - Lumbar Stenosis L4-L5: recommend Laminectomy L4-L5
- 2nd Opinion MD:
  - Lumbar Spondylolisthesis L4-L5: recommend Fusion L4-L5
- 3rd Opinion MD:
  - DDD + Smoker + Family History → No surgery!!

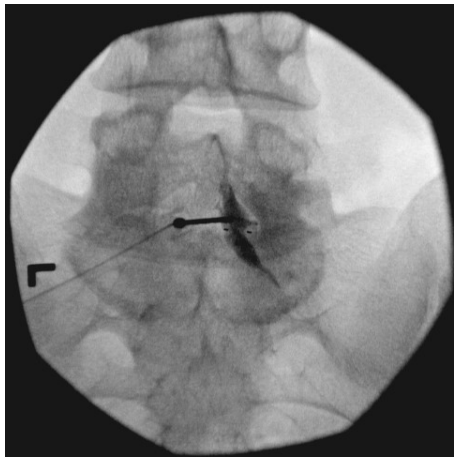
- 4th Opinion MD:
  - Mani Berenji - Ed Vaynberg – Shauna Lattuca: Any role for conservative Rx?

Treatment?

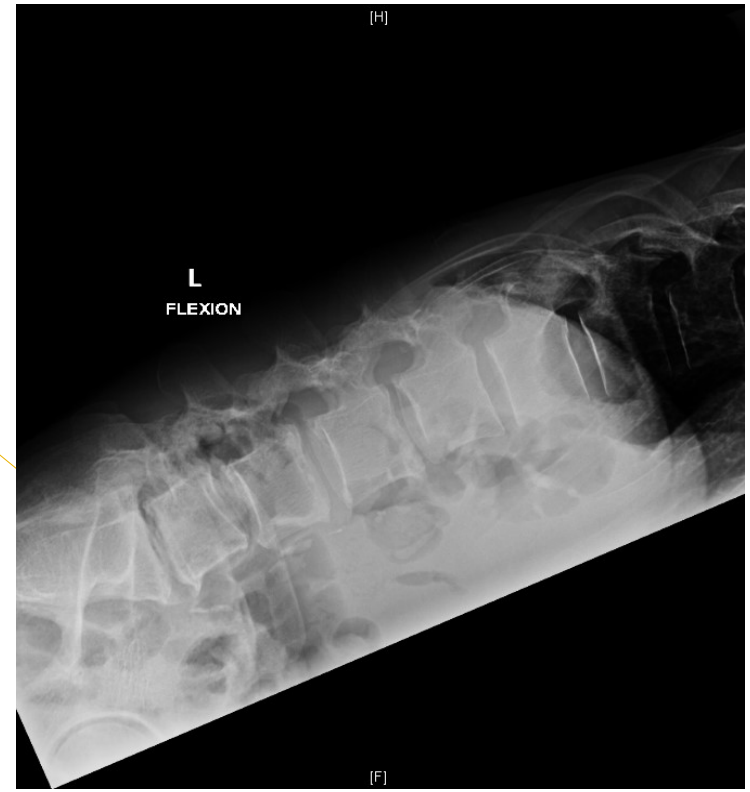
- PT / NSAIDs

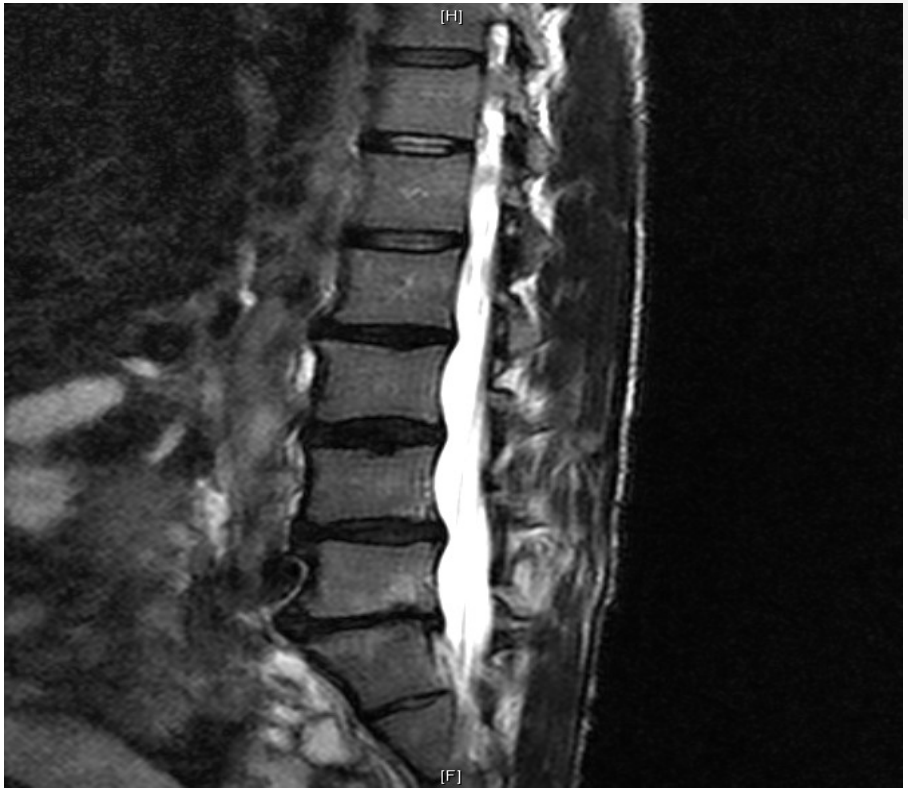
- Failed Conservative Mgt
- WC Case?
  Mike Kelley

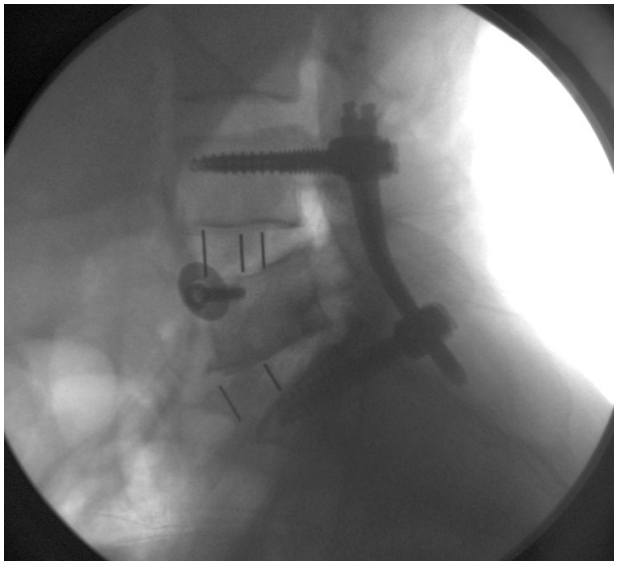
- ESI – Nerve blocks
- Facet blocks

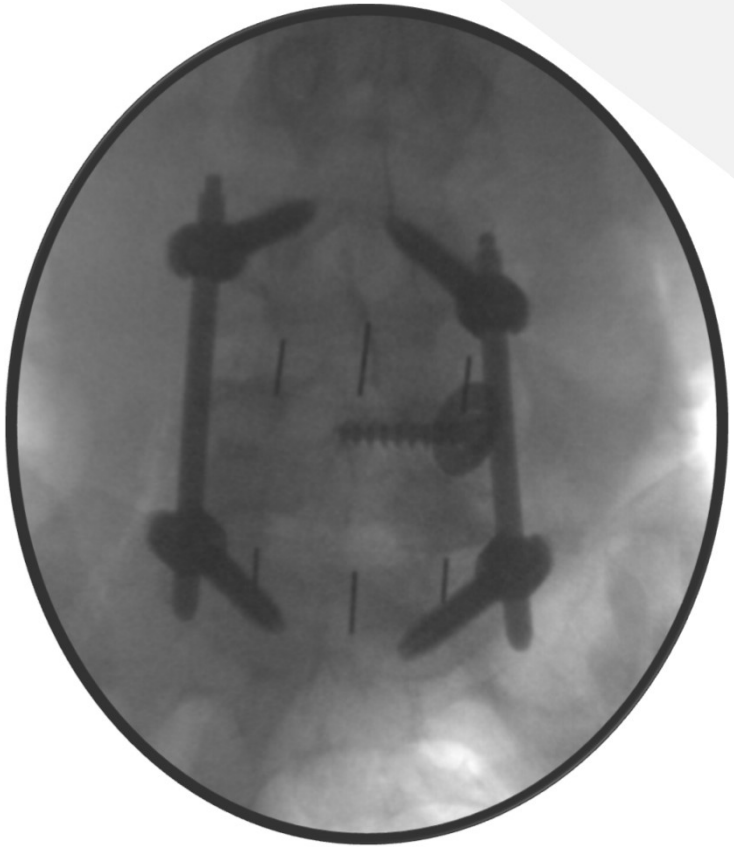


TT: Rx algorithm?!



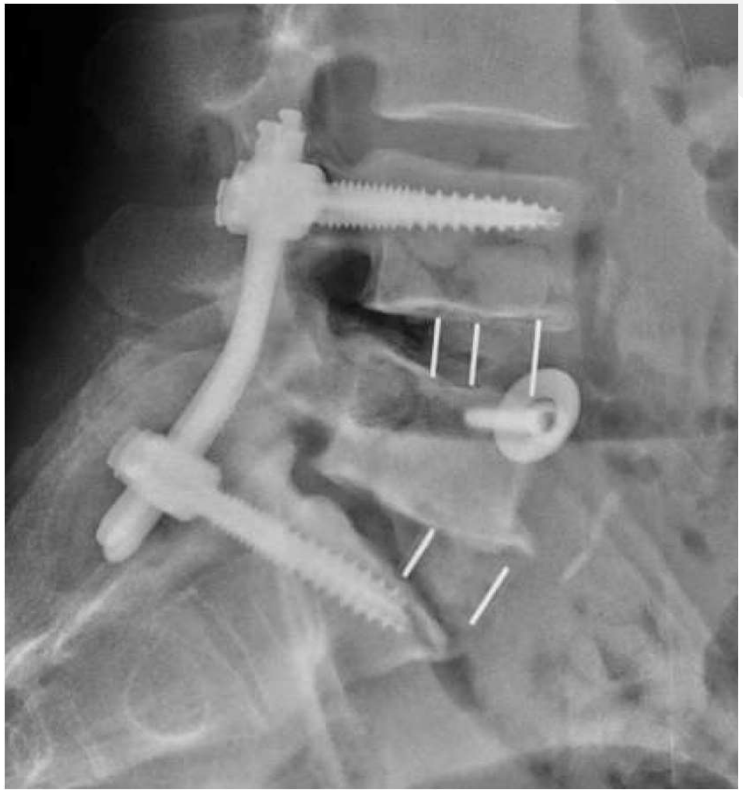






Post Operative Progress

- Extensive PT, Work Condit'/Hardening
- 6 months: RTW – light duty
- 10 months: Near Full duty
- 12 months: Re-injury while bending at work → R Leg Pain
  - Can't work!!



Unable to return to work!

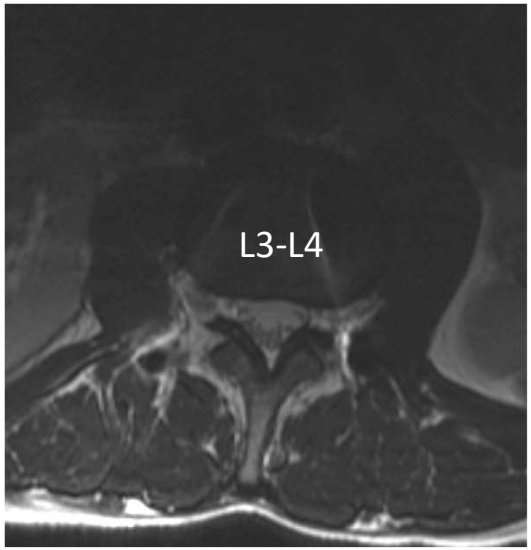
Fear of Re-injury

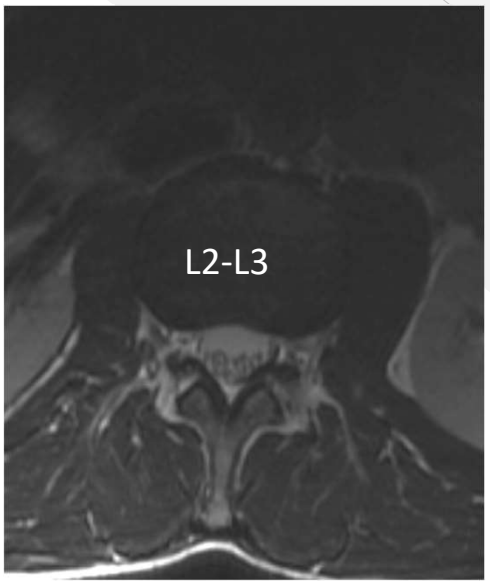
- BUZZ?
- Mike Kelley?

Unable to return to work!

- TT

Additional Imaging





Additional Imaging