Evaluation and Treatment of Back, Neck and Hip Pain

Physiatric Perspective

Andrew Friedman MD

April 27, 2024

Tri-Cities Pain Conference

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It is much more important to know what sort of a patient has a disease than what sort of a disease a patient has—William Osler

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Disclosures

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What is a physiatric perspective?

Physiatry is a branch of medicine that aims to enhance and restore functional ability and quality of life to people with physical impairments or disabilities.

The major goal of physical medicine and rehabilitation treatment is to help a person function optimally within the limitations placed upon them by a disabling impairment or disease process for which there is no known cure.

--wikipedia

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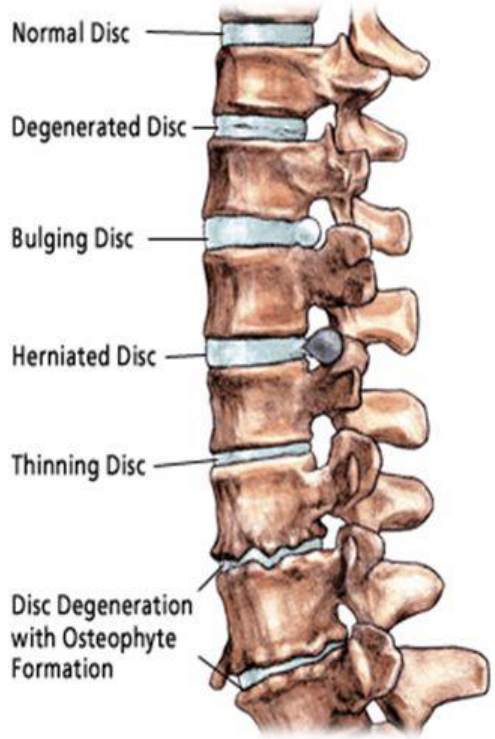
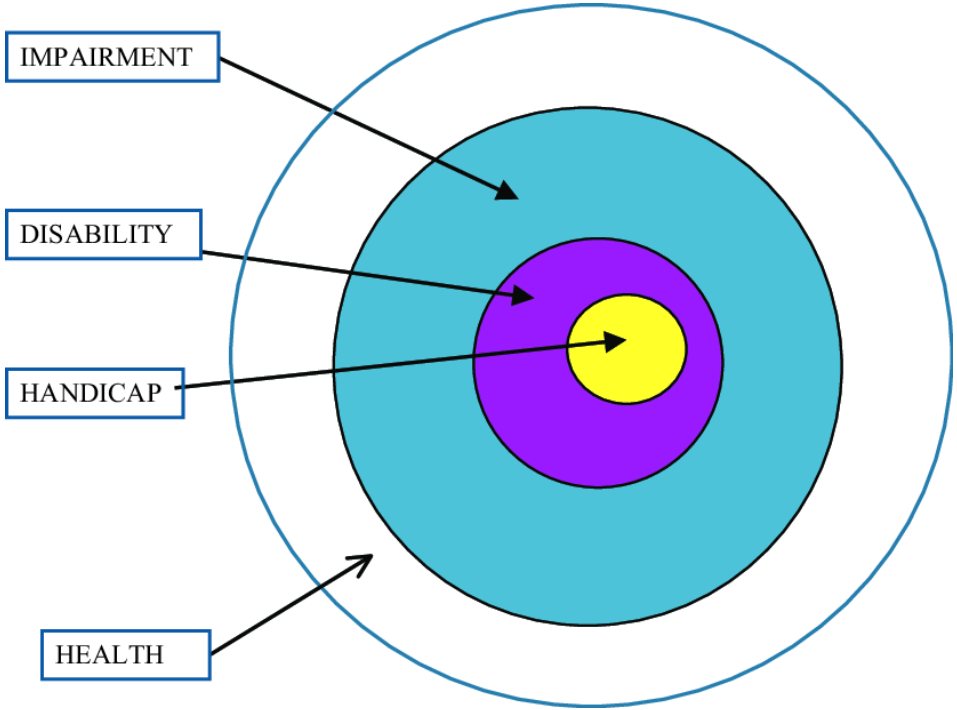
Degenerative Cascade

- Loss of Disc Height
- Loss of Motion
- Change in Spinal Balance
- Formation of Osteophytes
- Increased Load on the Facets/Ligaments
- Impingement on Spinal Cord or Nerves



World Health Organization

Definitions



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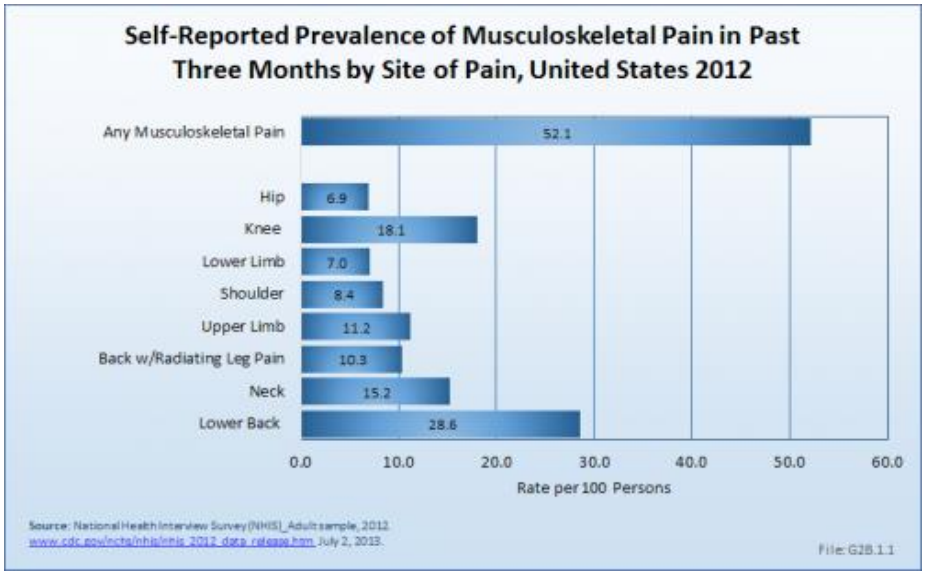
Epidemiology

Three Month Prevalence of MSK Pain



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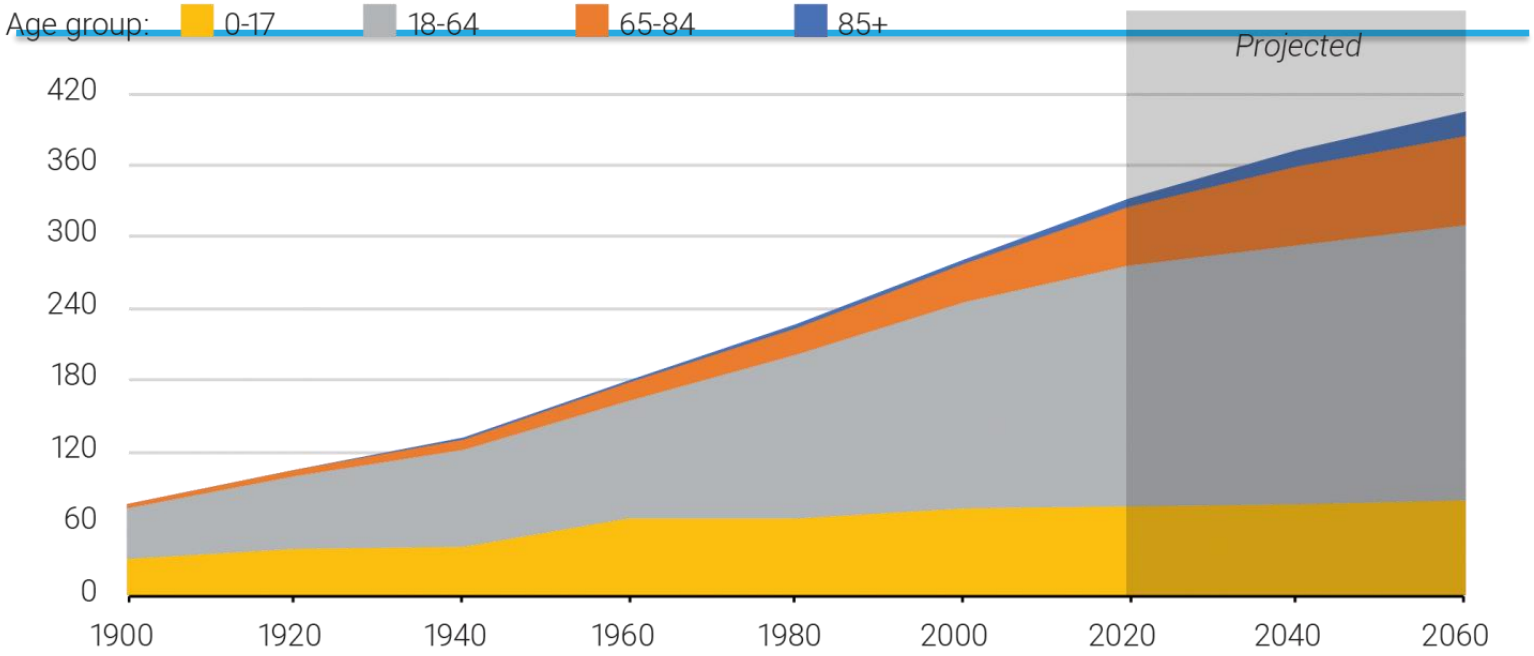
Prevalence Increasing as Population Ages



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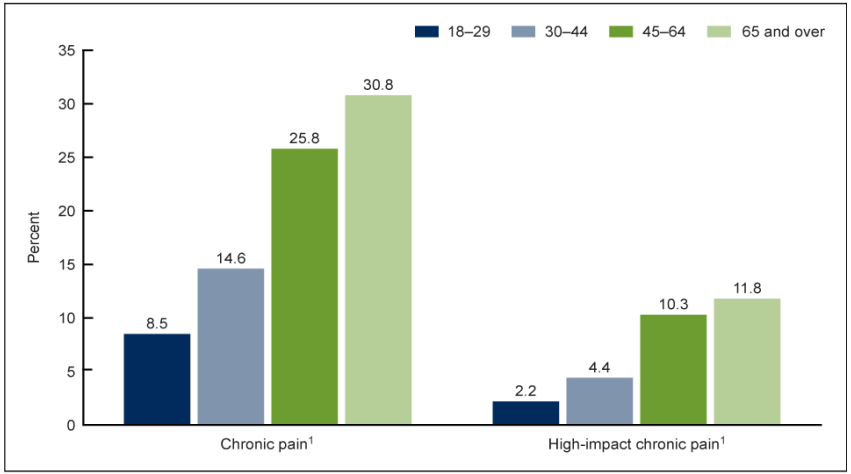
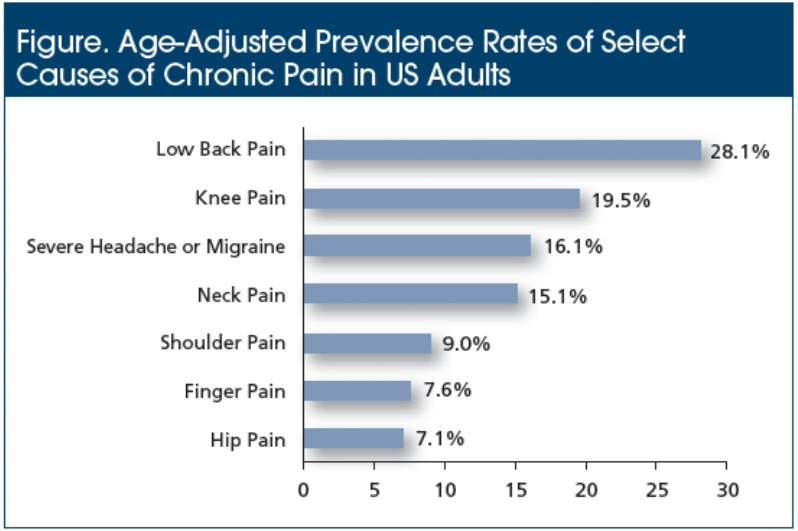
Most Chronic Pain is Musculoskeletal

Figure 2. Percentage of adults aged 18 and over with chronic pain and high-impact chronic pain in the past 3 months, by age group: United States, 2019



[1]Significant quadratic trend by age group ($p < 0.05$).
NOTES: Chronic pain is based on responses of "most days" or "every day" to the survey question, "In the past 3 months, how often did you have pain? Would you say never, some days, most days, or every day?" High-impact chronic pain is defined as adults who have chronic pain and who responded "most days" or "every day" to the survey question, "Over the past 3 months, how often did your pain limit your life or work activities? Would you say never, some days, most days, or every day?" Estimates are based on household interviews of a sample of the civilian noninstitutionalized population. Access data table for Figure 2 at: https://www.cdc.gov/nchs/data/databriefs/db390-tables-508.pdf#2.
SOURCE: National Center for Health Statistics, National Health Interview Survey, 2019.



Source: Institute of Medicine. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research*. Washington, DC: The National Academies Press; 2011.

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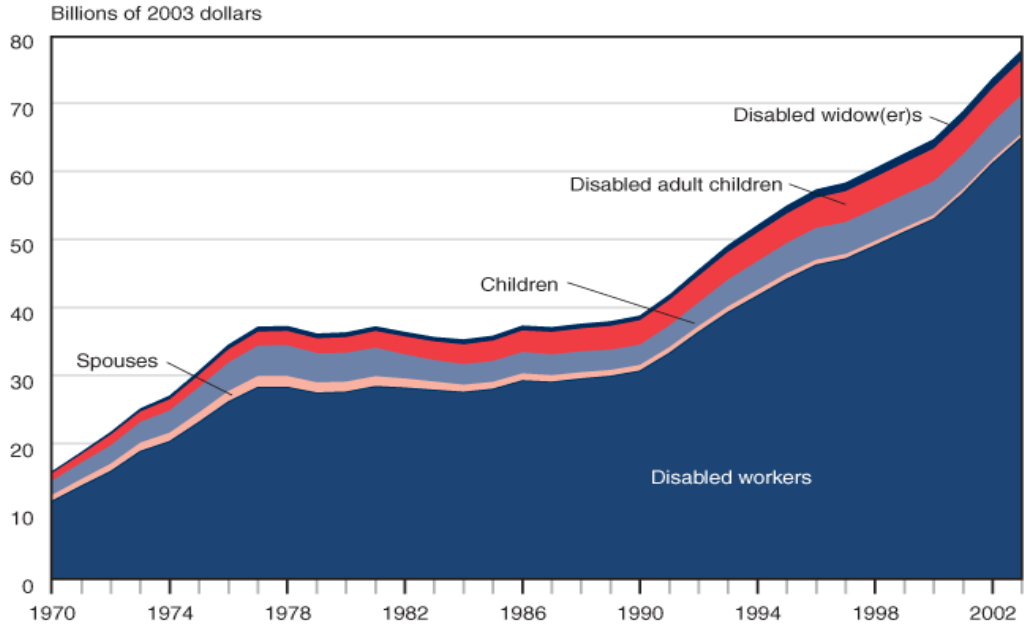
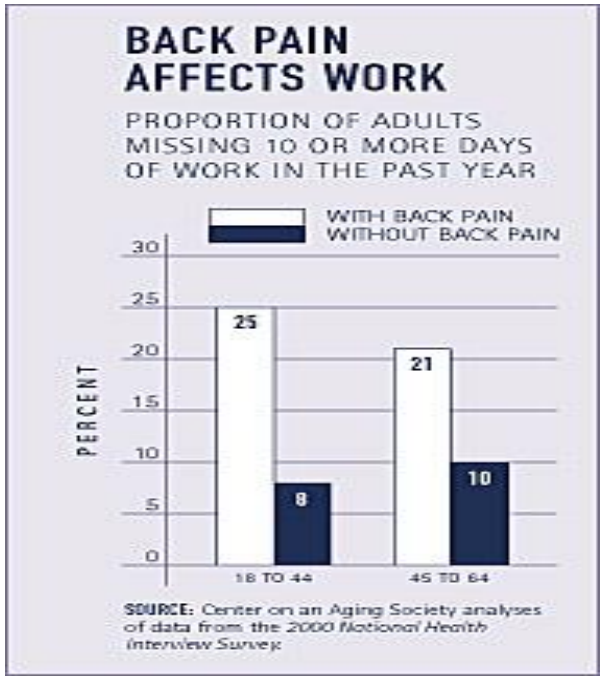
Musculoskeletal Disability





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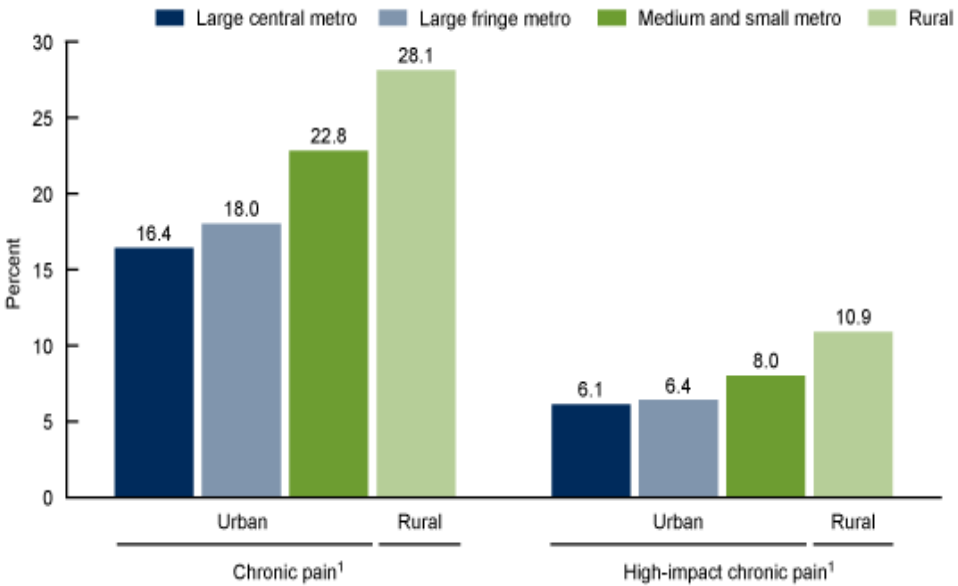

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Low Back Pain

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The Basics

Low back pain is a symptom—both radicular and non-radicular lbp

High prevalence—10-30% of individuals in a given year. Half with significant limitations

Most self-limiting but 15% with persistent sx at one year and tends to relapse and recur

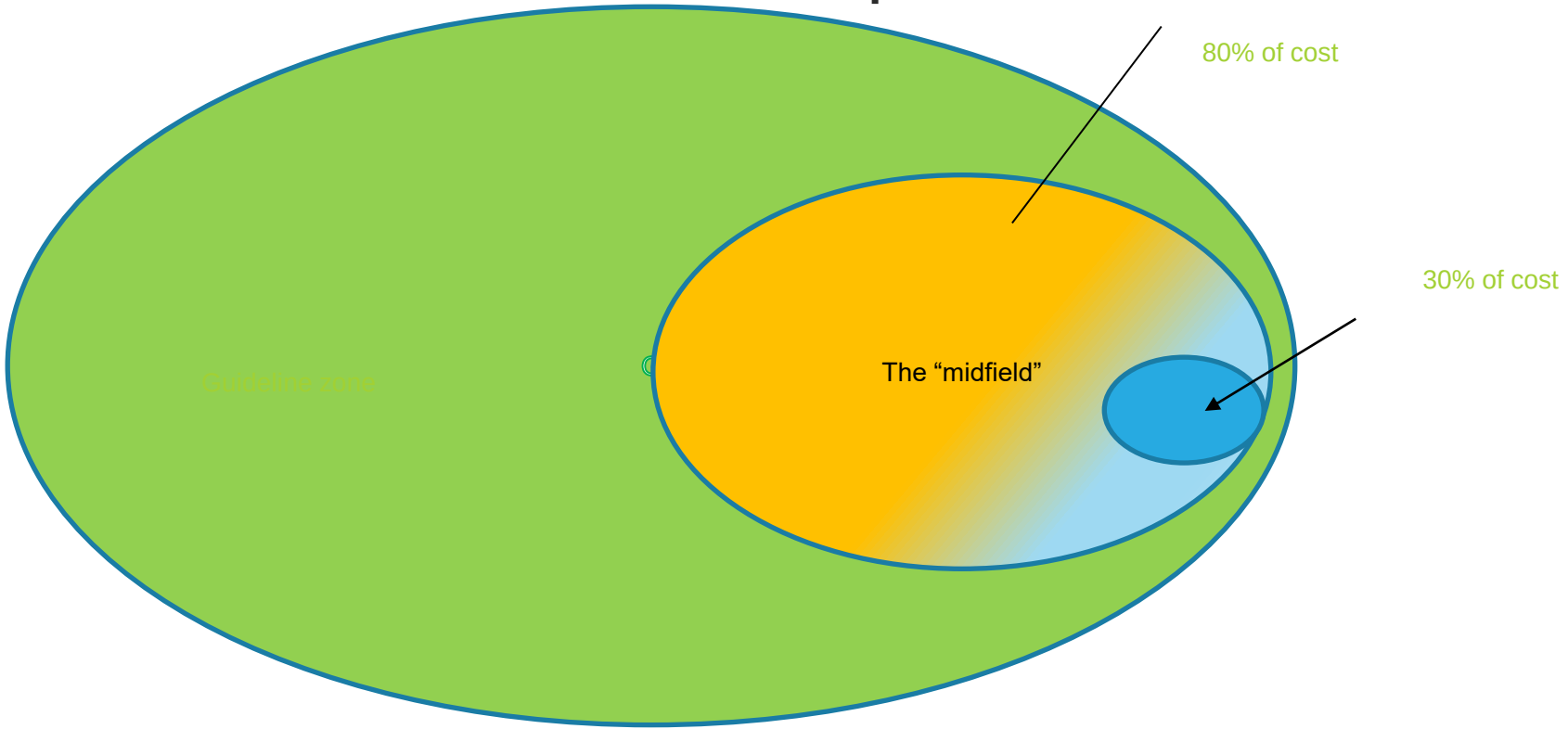
1% of presentations in general medical clinic represent serious medical disease

Annual medical costs (US) $135 Billion in direct costs in 2015

1.2% go on to surgery—accounting for 30% of medical costs

10-20% of cases contribute 90% of direct cost. Chronic LBP with majority of cost.

Low Back Pain Population



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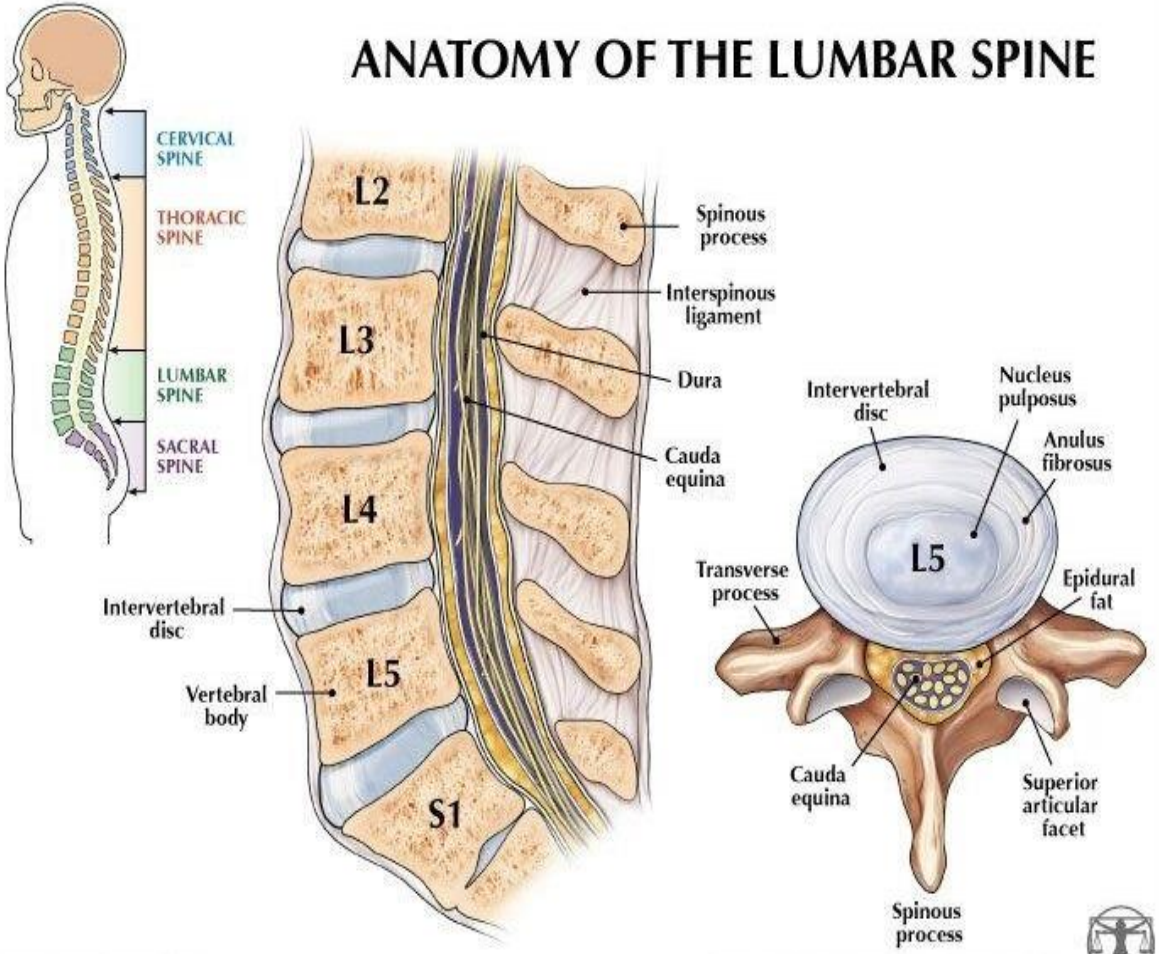
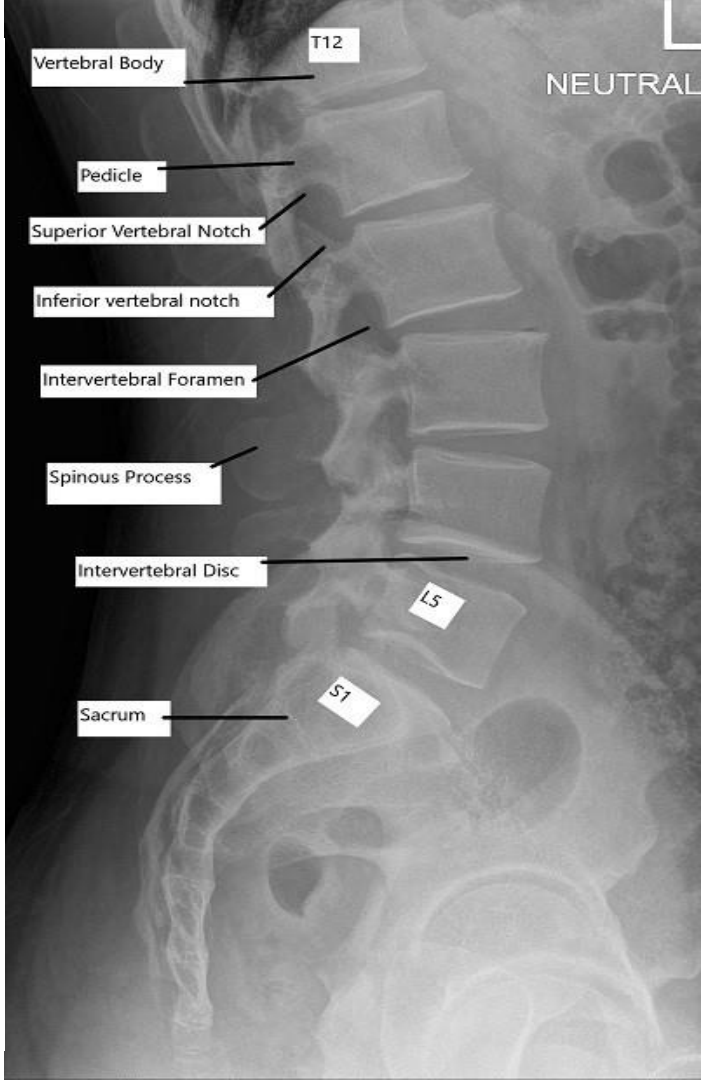
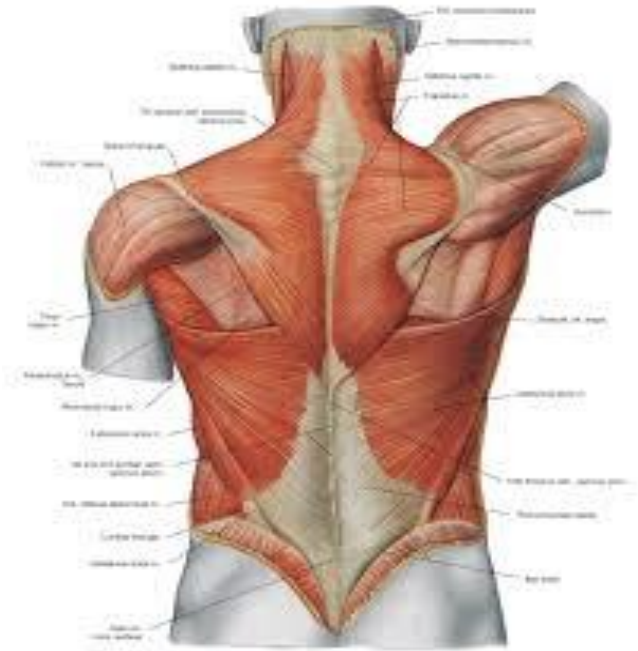
Patient priorities LBP

1. Assurance that back pain is not medically serious
2. Pain relief especially non-pharmacological strategies
3. Rapid return to normal function

ANATOMY OF THE LUMBAR SPINE







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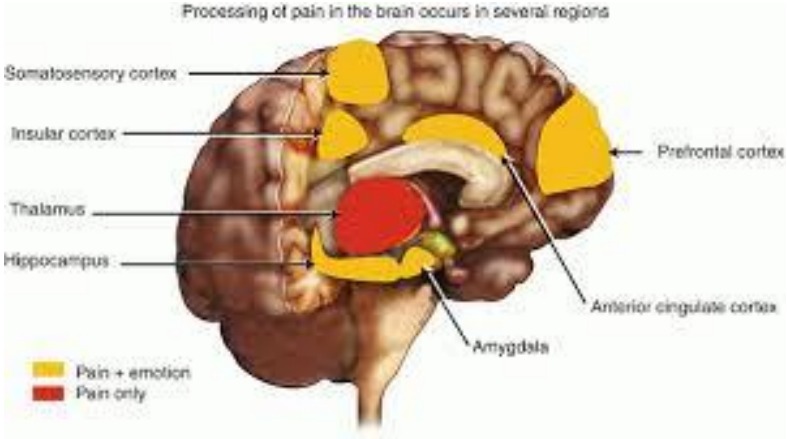
Back pain Experience is highly Individual



BMI

Smoking status, opioid use

Abuse history

PTSD, Anxiety, Depression

Self-efficacy score

Occupation, Education

Social support, culture

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LBP Evaluation

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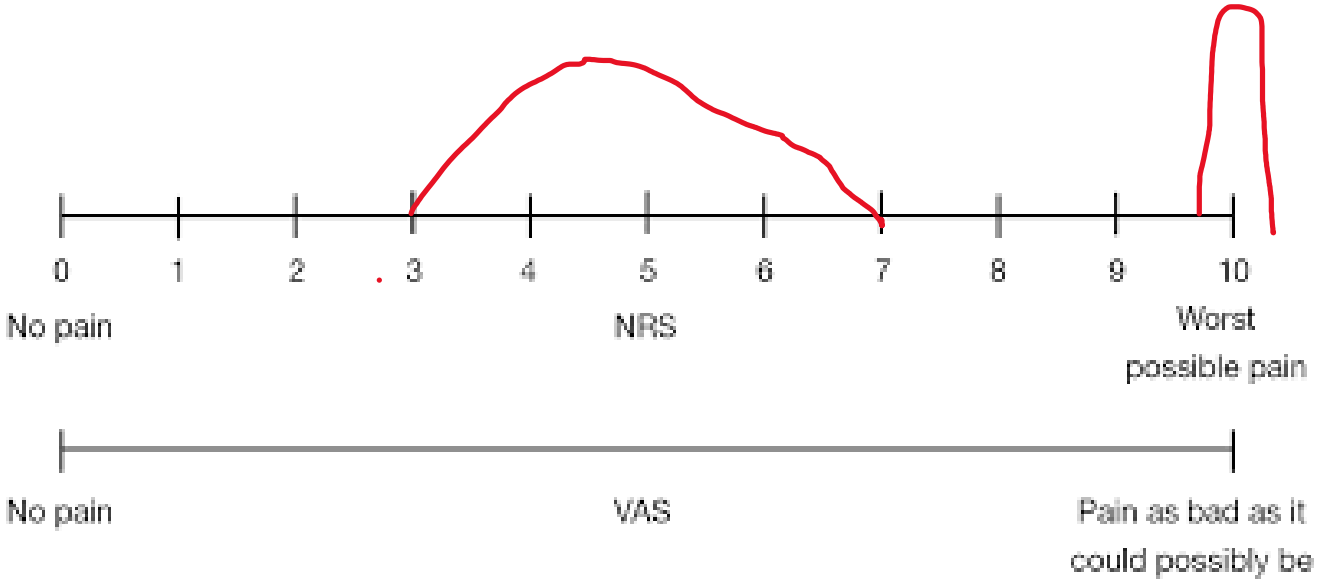
Measuring Pain



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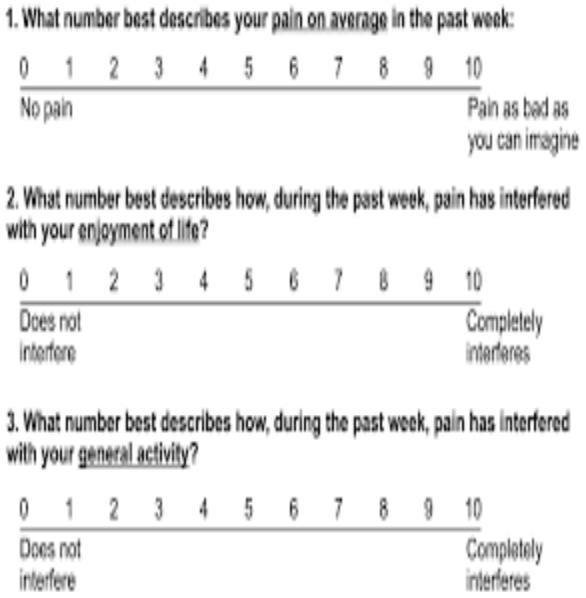
Measuring Function



1. What number best describes your pain on average in the past week:

0 1 2 3 4 5 6 7 8 9 10

No pain — Pain as bad as you can imagine

2. What number best describes how, during the past week, pain has interfered with your enjoyment of life?

0 1 2 3 4 5 6 7 8 9 10

Does not interfere — Completely interferes

3. What number best describes how, during the past week, pain has interfered with your general activity?

0 1 2 3 4 5 6 7 8 9 10

Does not interfere — Completely interferes

PEG

ODI

PHQ

GAD

PROMIS

Social History

RED FLAGS

Trauma
Fever
Unintentional Weight Loss
Night Pain or rest pain
Severe or Progressive Neurological def.
Immunosuppression
Severe or progressive pain
H/o Cancer
H/O IVDA

Cancer
Infection
Inflammatory disorders
Unstable fracture
Progressive Neurological injury

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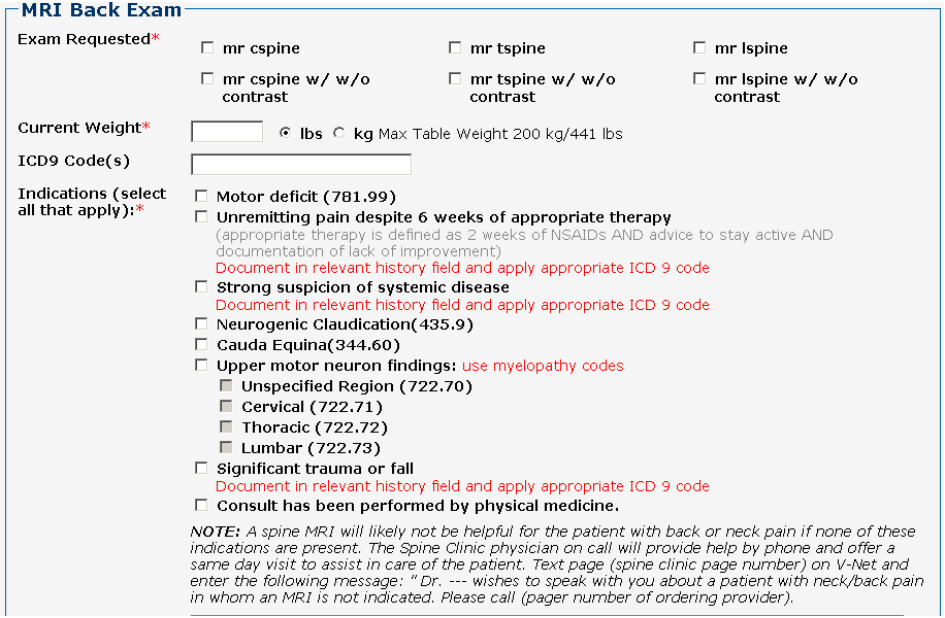
Yellow Flags

Psychological or social barriers to recovery*

*Includes access to care

When to image?



MRI Back Exam

Exam Requested*

- ☐ mr cspine
- ☐ mr tspine
- ☐ mr lspine
- ☐ mr cspine w/ w/o contrast
- ☐ mr tspine w/ w/o contrast
- ☐ mr lspine w/ w/o contrast

Current Weight* ◉ lbs ○ kg Max Table Weight 200 kg/441 lbs

ICD9 Code(s)

Indications (select all that apply):*

- ☐ Motor deficit (781.99)
- ☐ Unremitting pain despite 6 weeks of appropriate therapy
  (appropriate therapy is defined as 2 weeks of NSAIDs AND advice to stay active AND documentation of lack of improvement)
  Document in relevant history field and apply appropriate ICD 9 code
- ☐ Strong suspicion of systemic disease
  Document in relevant history field and apply appropriate ICD 9 code
- ☐ Neurogenic Claudication(435.9)
- ☐ Cauda Equina(344.60)
- ☐ Upper motor neuron findings: use myelopathy codes
  - ☐ Unspecified Region (722.70)
  - ☐ Cervical (722.71)
  - ☐ Thoracic (722.72)
  - ☐ Lumbar (722.73)
- ☐ Significant trauma or fall
  Document in relevant history field and apply appropriate ICD 9 code
- ☐ Consult has been performed by physical medicine.

NOTE: A spine MRI will likely not be helpful for the patient with back or neck pain if none of these indications are present. The Spine Clinic physician on call will provide help by phone and offer a same day visit to assist in care of the patient. Text page (spine clinic page number) on V-Net and enter the following message: " Dr. --- wishes to speak with you about a patient with neck/back pain in whom an MRI is not indicated. Please call (pager number of ordering provider).

Plain Films:

- Red flags
- Adolescent athlete
- Age >50 ?

MRI

CT, Bone Scan, dynamic imaging

EMG?

Treatment of LBP

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Guidelines Low Back Pain

ACP Guidelines for the Evaluation and Treatment of Low Back Pain

- 2008 http://www.annals.org/cgi/content/full/147/7/478

University of Michigan

- 2010 https://www.med.umich.edu>FHP>Guidelines

Bree Collaborative—State of WA

- Guideline 2013 www.hta.hca.wa.gov/bree.html
- Lumbar fusion bundle

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Guidelines—Acute LBP

1. Perform a history and physical examination and screen for red flags
2. Identify persons at risk for chronic disability and intervene early
3. Pursue conservative treatment for 4-6 weeks
    - Self-care, advice to remain active, simple analgesics, avoid opioids, PT, manipulation
4. Avoidance of early imaging. Perform imaging when LBP severe, progressive neurological deficits or suspicion of systemic disease—or when pain is persistent with radicular or claudicatory pain

Medications: Acute Low Back Pain

NSAIDs
Skeletal Muscle Relaxants
Opioids

All had small effects on pain e.g VAS change of 2 points. SMR and Opioids were associated with significant sedation

Systemic steroids were not associated with benefit for back or radicular pain

--*Chou etc. al ACP guideline Annals of IM 2017*

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RESEARCH ARTICLE | PAIN

Acute inflammatory response via neutrophil activation protects against the development of chronic pain

MARC PARISIEN, LUCAS V. LIMA, CONCETTA DAGOSTINO, NEHME EL-HACHEM, GILLIAN L. DRURY, AUDREY V. GRANT, JONATHAN HUISING, VIVEK VERMA, CAROLINA B. MELOTO, [...] LUDA DIATCHENKO

+11 authors

Authors Info & Affiliations

SCIENCE TRANSLATIONAL MEDICINE • 11 May 2022 • Vol 14,Issue 644 • DOI: 10.1126/scitranslmed.abj9954

Beneficial inflammation

Chronic pain can develop from an acute pain state. The mechanisms mediating the transition from acute to chronic pain remain to be elucidated. Here, Parisien *et al.* focused on the immune system using samples from patients and animal models.

CURRENT ISSUE

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Findings:

1. Normal healing characterized by intense, short-lived inflammation
2. Neutrophil activation-dependent gene products upregulated after pain resolution
3. Patients progressing to chronic pain lacked this upregulation
4. Rodent models demonstrated prolonged pain after NSAIDs or steroids which resolved with infusion of neutrophils
5. Clinical trials showed NSAID use conferred increased risk of chronic pain

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Medications: Chronic LBP

Nonsteroidal anti-inflammatory drugs, opioids, and topiramate (Topamax) are more effective than placebo in the short-term treatment of nonspecific chronic low back pain.	**A**	12, 13, 15, 16
Acetaminophen, antidepressants (except duloxetine [Cymbalta]), lidocaine patches, and transcutaneous electrical nerve stimulation are not consistently more effective than placebo in the treatment of chronic low back pain.	**B**	12, 18, 20, 22, 33

Will et. Al, American Family Physician Oct 2018

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SNRIs

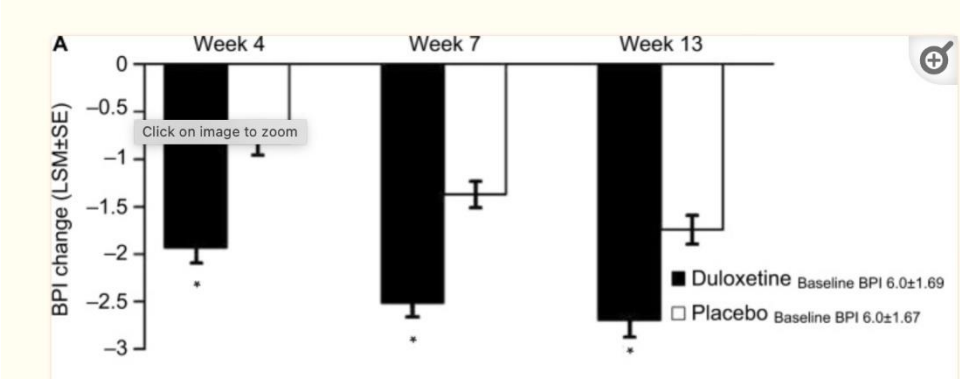
Duloxetine

Venlafaxine

Desvenlafaxine

Milnacipran

Levomilnacipran



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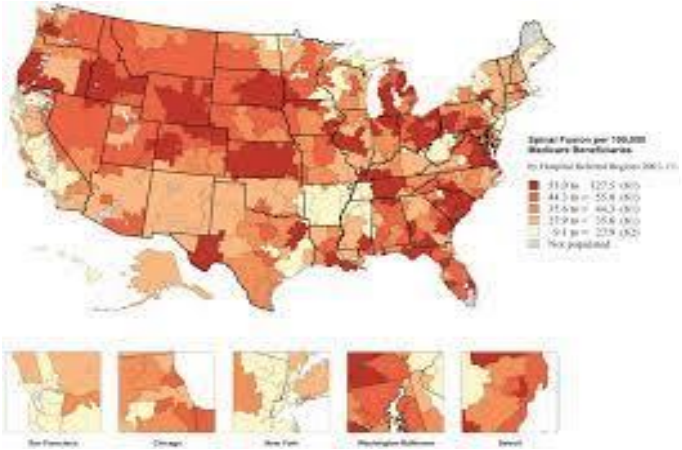
Surgical Indications—SPORT STUDY*



Spinal stenosis and spondylolisthesis with leg involvement—favors surgery

Lumbar stenosis—favors surgery

Lumbar disc herniation—inconclusive due to crossover

Low back pain—favors conservative care (Not addressed in SPORT)

*Spinal Outcomes Research Trial *Weinstein, J. et. al*

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Non-Surgical Management not inferior for most conditions

Meta analyses and limited RCTs

STRUCTURED conservative care interventions designed for the individual

May include medication management, PT, manipulative tx, acupuncture, movement therapies, education, injection

Similar outcomes, lower cost and much lower risk for conservative care

Innovations in Care

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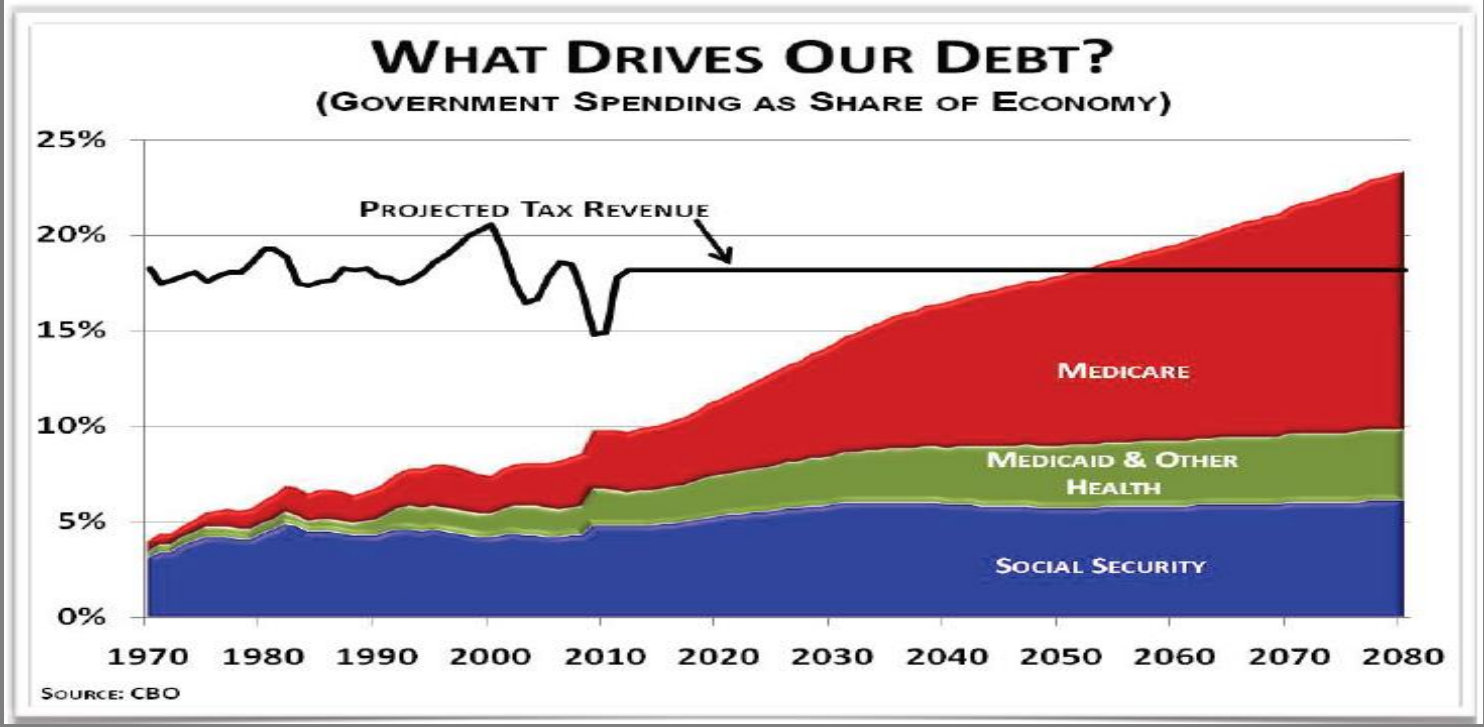

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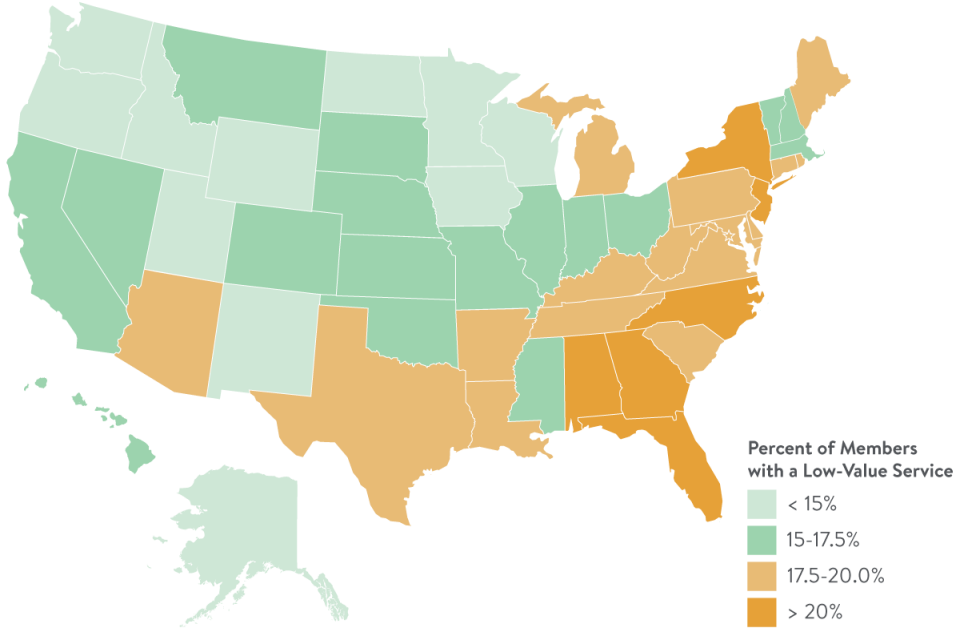
Value

Outcomes +Service*

COST



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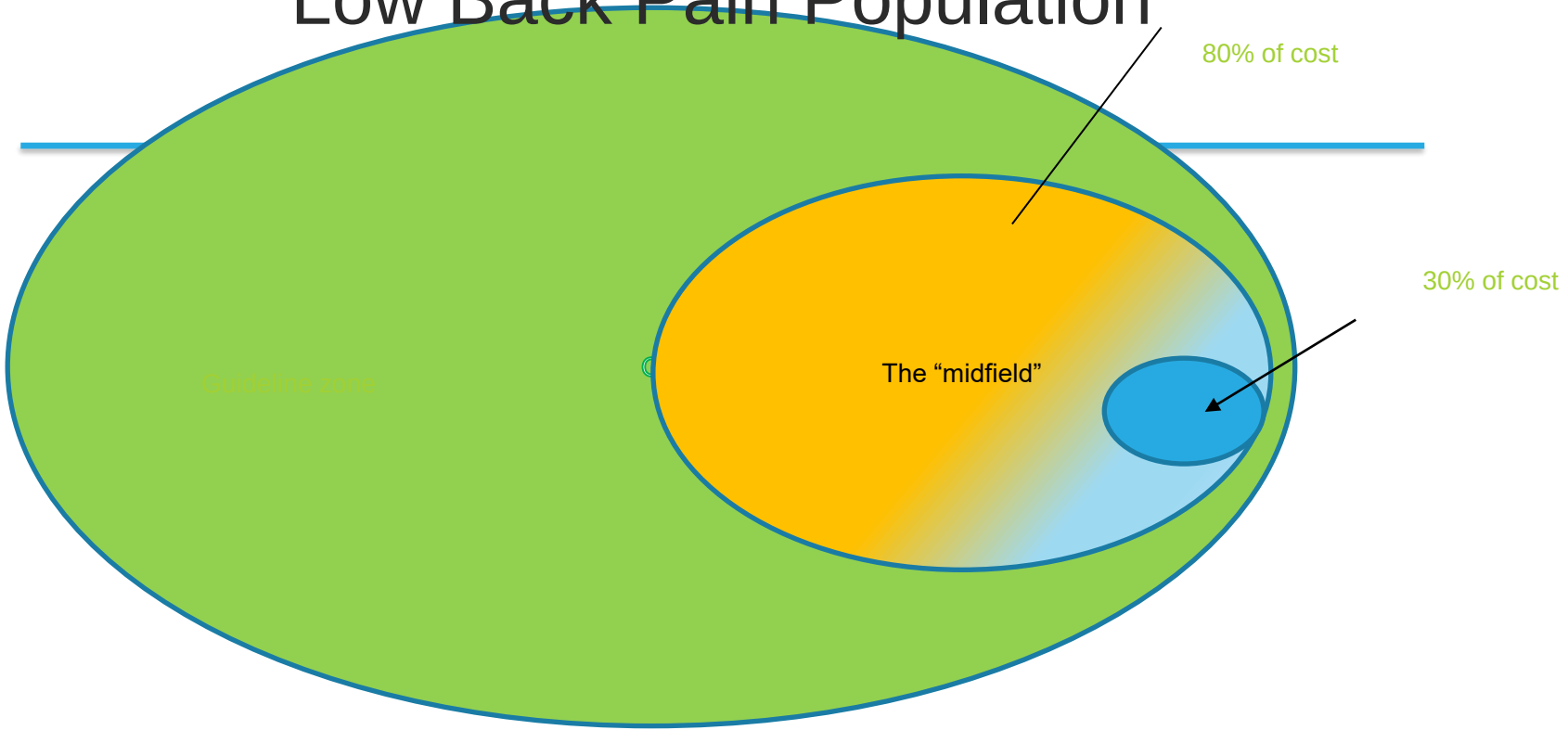
--Research consortium for health care value assessment

Low Back Pain Population



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WA Health Alliance

2022 PIC:

Acute LBP:

- Avoid ED
- Avoid Surgeon evaluation
- Develop supported self-care

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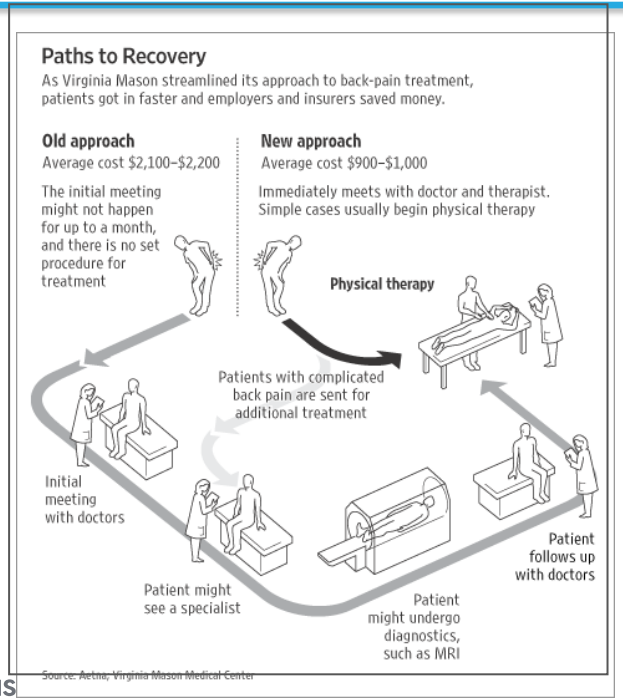
Interdisciplinary Spine Team

Back pain best practice



Details

- Same day access for patients
- Concurrent visits with doctors and physical therapists
- Over-the-counter pain medicine and structured follow-up
- Downstream referral if red flag symptoms

Results

- 55% reduction in spend per episode of back pain
- 1/3 fewer diagnostic imaging procedures performed
- 67% fewer missed days of work
- 91% patient sat

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SOURCE: Fuhrmans, Vanessa. "A Novel Plan Helps Hospital Wean Itself Off Pricey Tests." The Wall Street Journal. N.p., 12 Jan. 2007. Web. 04 Aug. 2015. <http://www.wsj.com/articles/SB116857143155174786>.

Multidisciplinary Evaluation Leads to the Decreased Utilization of Lumbar Spine Fusion: An Observational Cohort Pilot Study

Yanamadala, Vijay MD, MBA[*,†,‡]; Kim, Yourie RN, BSN[*,§]; Buchlak, Quinlan D. MPsych[*]; Wright, Anna K. PhD[*]; Babington, James MD[*,§]; Friedman, Andrew MD[*,§]; Mecklenburg, Robert S. MD[¶]; Farrokhi, Farrokh MD[*,†]; Leveque, Jean-Christophe MD[*,†]; Sethi, Rajiv K. MD[*,†,‖]

Spine: September 1st, 2017 - Volume 42 - Issue 17 - p E1016–E1023
doi: 10.1097/BRS.0000000000002065
Clinical Case Series

Results. A total of 137 consecutive patients were reviewed at our multidisciplinary conference during the 10-month period. Of these, 100 patients had been recommended for lumbar spine fusion by an outside surgeon. **Consensus opinion of the multidisciplinary conference advocated for nonoperative management in 58 patients (58%) who had been previously** recommended for spinal fusion at another institution ($\chi^2 = 26.6$; $P < 0.01$). Furthermore, the surgical treatment plan was revised as a product of the conference in 28% (16 patients) of the patients who ultimately underwent surgery ($\chi^2 = 43.6$; $P < 0.01$). We had zero 30-day complications in surgical patients.

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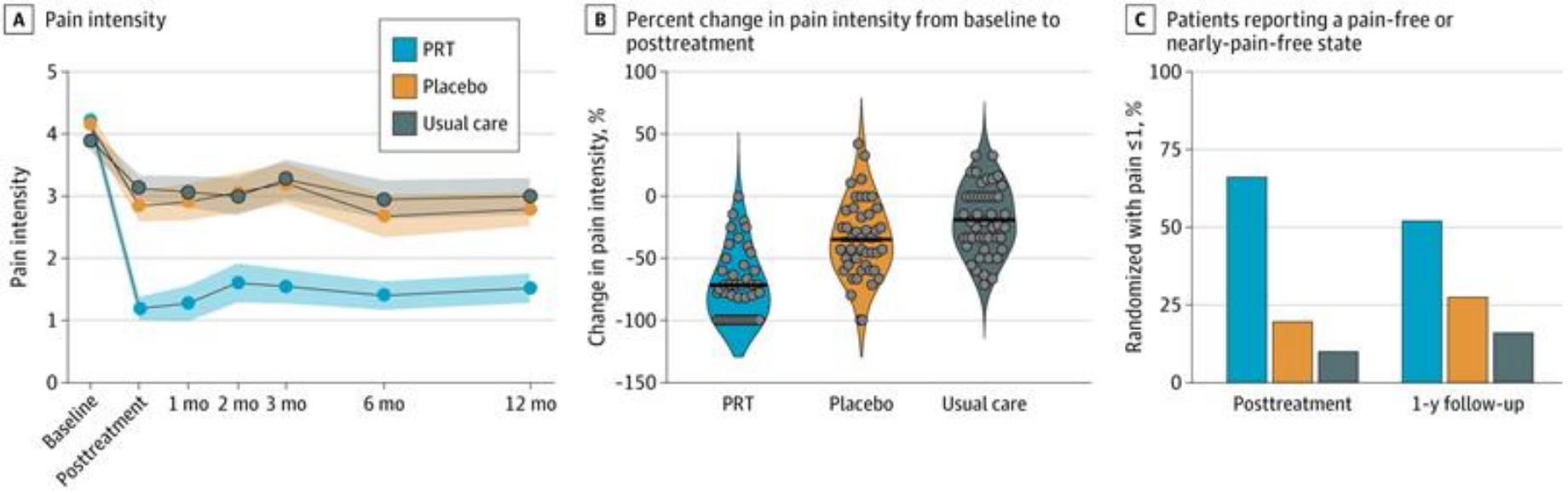
Ashar YK, Gordon A, Schubiner H, et al. Effect of Pain Reprocessing Therapy vs Placebo and Usual Care for Patients With Chronic Back Pain: A Randomized Clinical Trial. *JAMA Psychiatry.* Published online September 29, 2021. doi:10.1001/jamapsychiatry.2021.2669



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Hip, Pelvic and SI Pain

Diagnosis

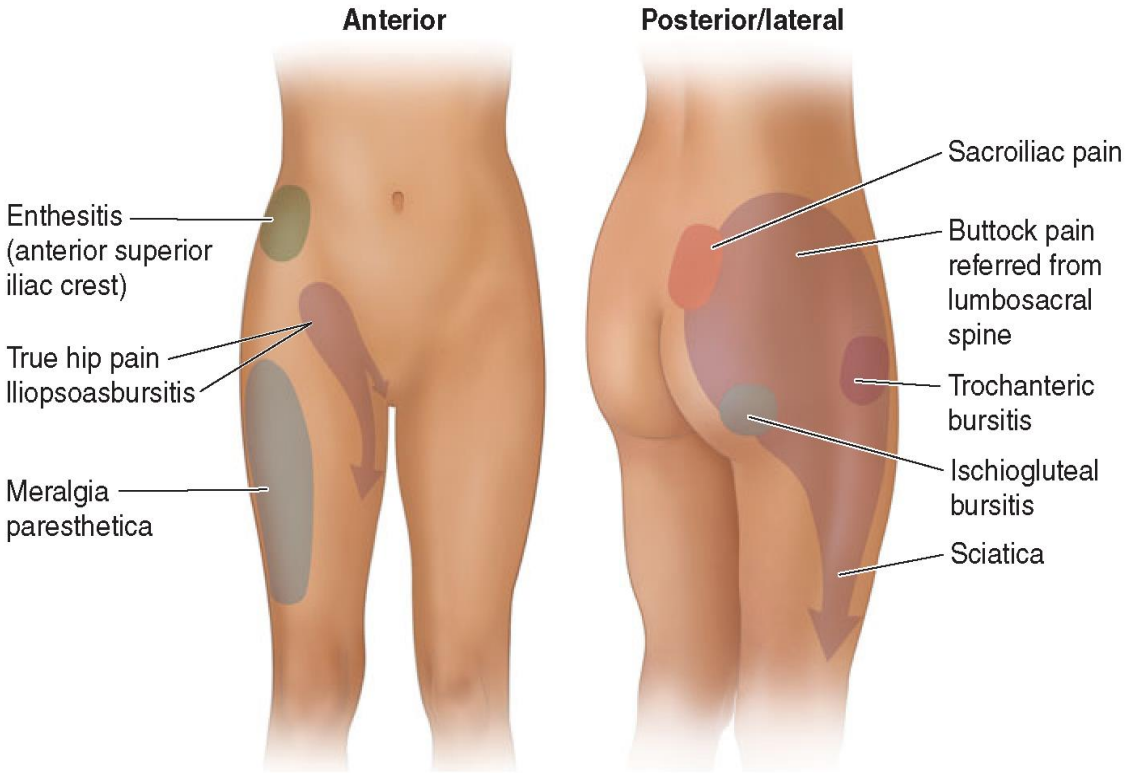
History

Location, aggregating factors

Sensory symptoms and distribution

? Inflammatory or red flag symptoms

Examination



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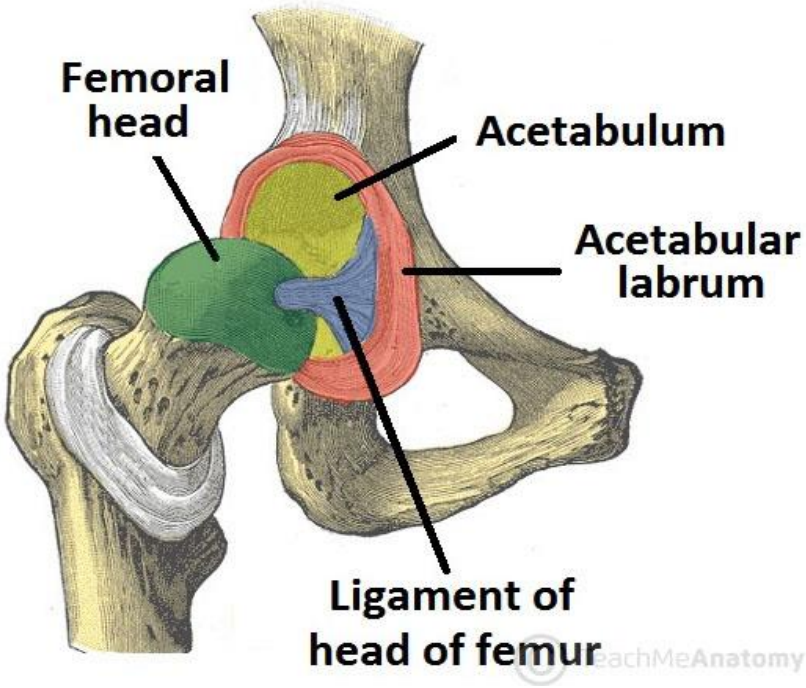

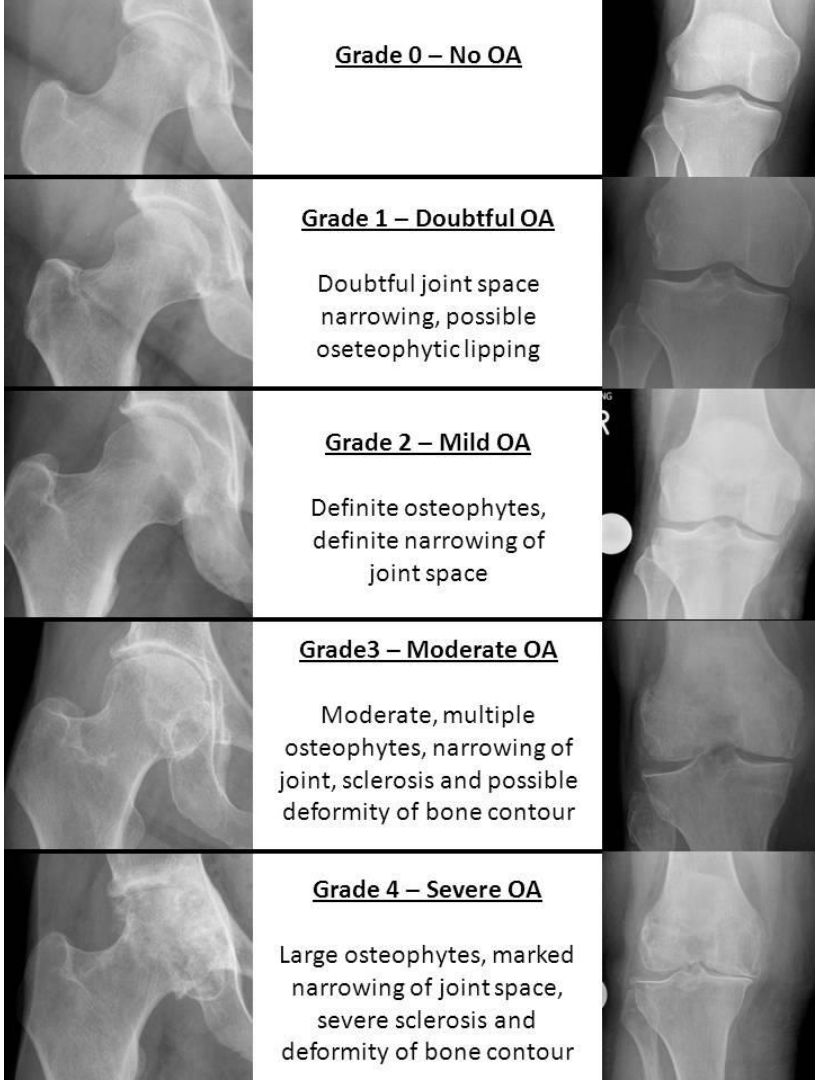

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Intra articular pattern

DDx

- Hip OA
- Avascular necrosis
- Synovitis
- Labral pathology
- Tumor, Paget's disease

Mimics:

- psoas bursitis or tendonopathy
- abdominal or pelvic pathology
- Meralgia paresthetica
- Upper lumbar radiculopathy

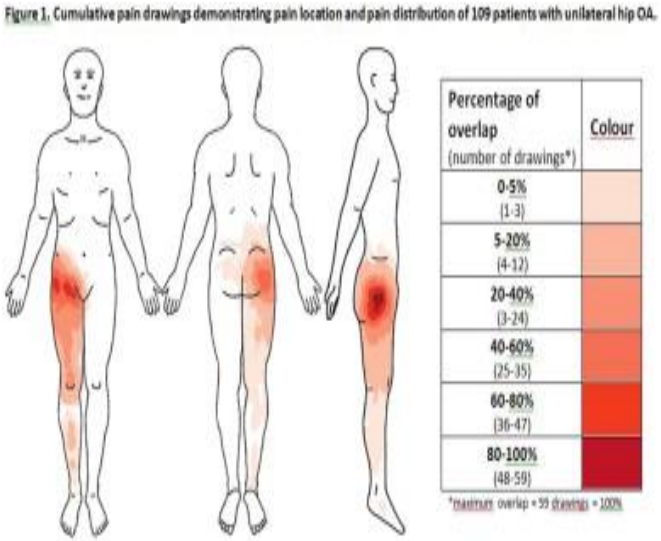

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Table 2	
Differential diagnosis	Important signs and symptoms
Hip OA, labral tear, AV, FAI	• Pain in 1 or more of the following regions: deep gluteal region, anterior thigh, knee, groin. • Positive FADDIR test • Hip locking, giving way • Lateral hip, groin pain and/or deep buttock pain with passive hip medial rotation • Decreased hip range of motion
Lumbar referral	• Dermatome and sclerotome pain pattern will be present, rather than pain over ITB specifically. • L2, L3 and L5 in particular[14]
Inflammatory joint disease	• Obvious inflammatory symptoms with stiffness that lasts more than 1 hour. • Symmetrical symptoms. • Hand symptoms often involved.
Neck-of-femur fracture	• Pain around hip joint area and aggravated by weight-bearing activity
Reference: Grimaldi and Fearon (2015). Gluteal tendinopathy: Integrating pathomehanics and clinical features in its management	

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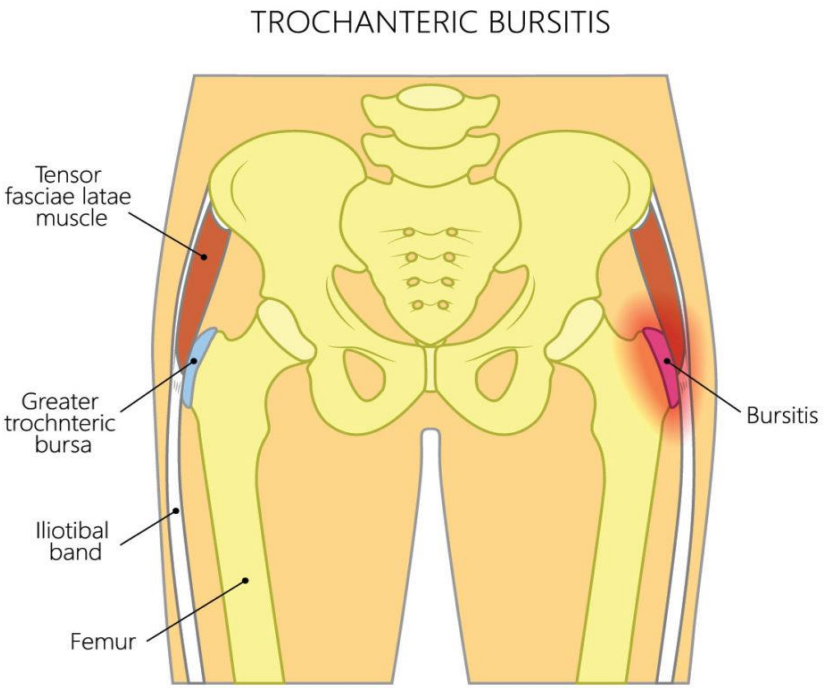
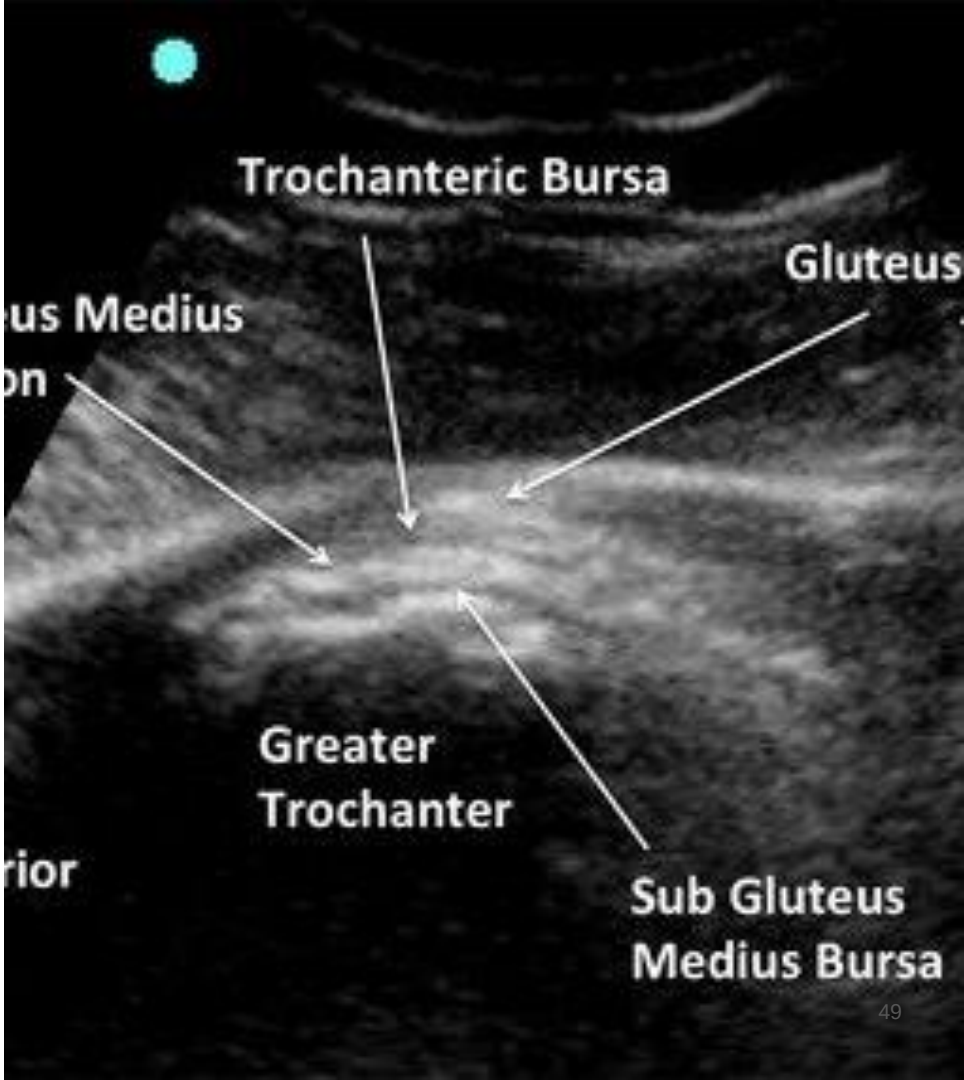
Trochanteric Pain Syndrome





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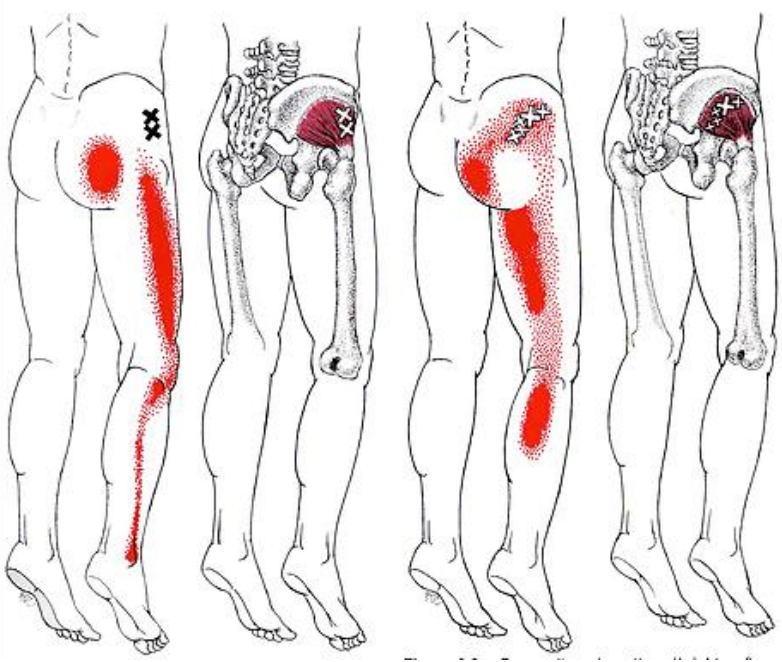
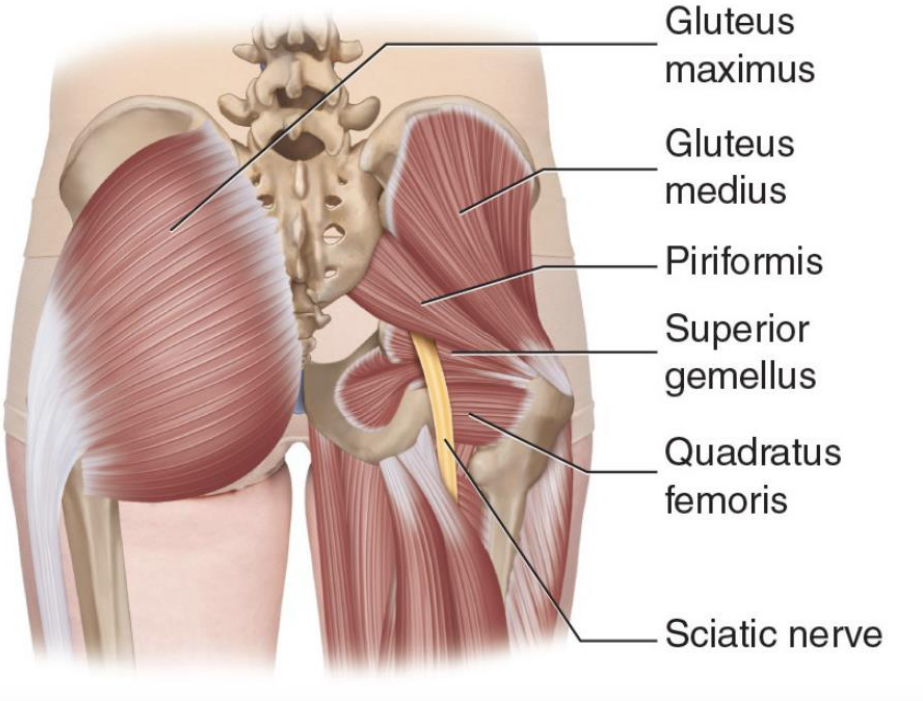
Piriformis Syndrome





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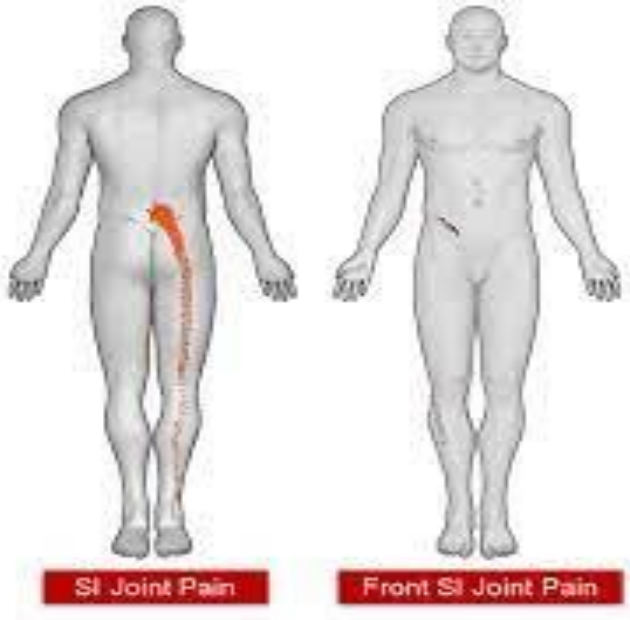
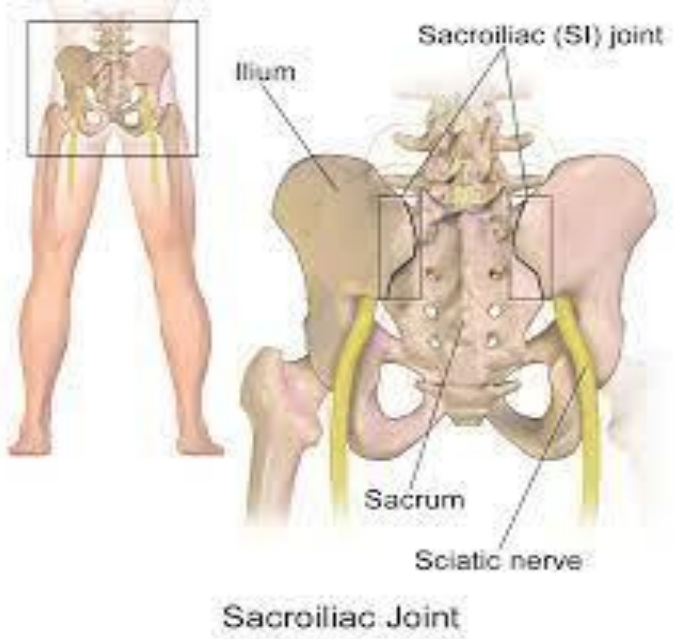
Sacroiliac Joint





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Ankylosing Spondylitis

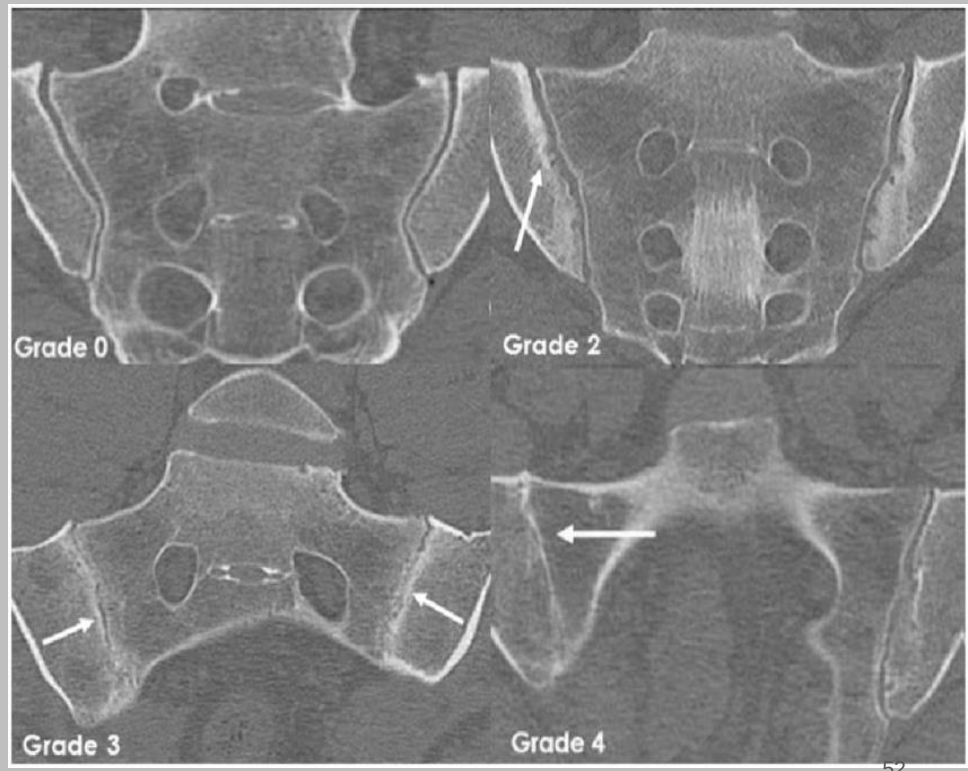
Box 1: Modified New York Criteria1 for the diagnosis of AS

1. **Clinical**
- Low back pain and stiffness >3 months, which improves with exercise and not relieved by rest
- Limitation of lumbar spine in both saggital and frontal planes
- Limitation of chest expansion relative to normal for age and sex

2. **Radiological**
- Bilateral sacroiliitis >grade 2
- Unilateral sacroiliitis >grade 3 or 4

Grade 0 = normal
Grade 1 = suspicious
Grade 2 = sclerosis, some erosions
Grade 3 = severe erosions, widening of the joint space, some ankylosis
Grade 4 = complete ankylosis

AS is present if the radiological criterion is associated with at least one clinical criterion.



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DDX

Inflammatory sacroiliitis

- AS, psoriatic arthritis

Traumatic instability

Transfer lesion

Osteoarthritis

Infection

Insufficiency fracture

Mimics

- Lumbar facet pain
- Bartolottis joint

FABER or Patrick's Test

Thigh thrust or Cyriac's

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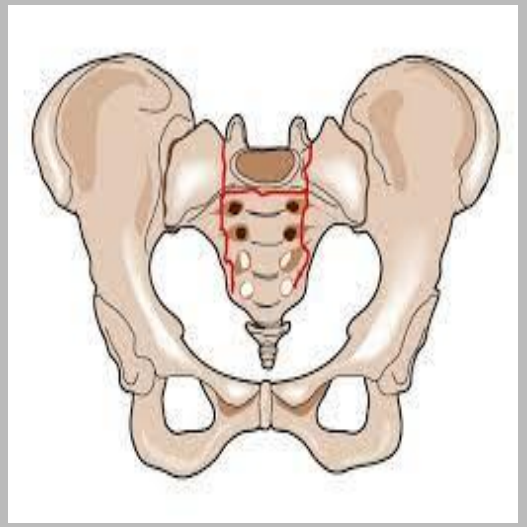

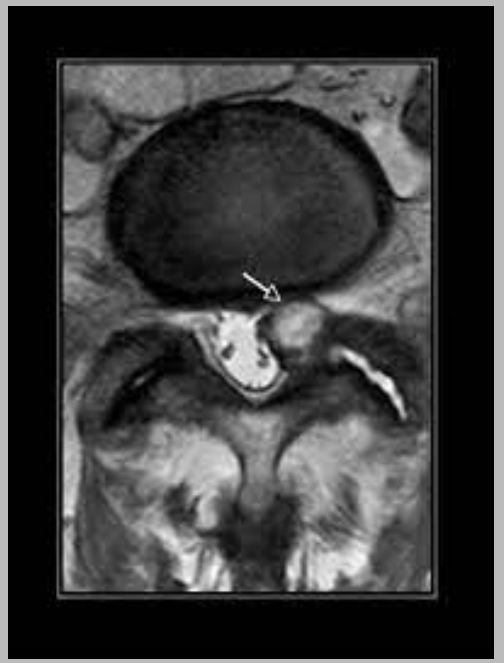

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Neck Pain

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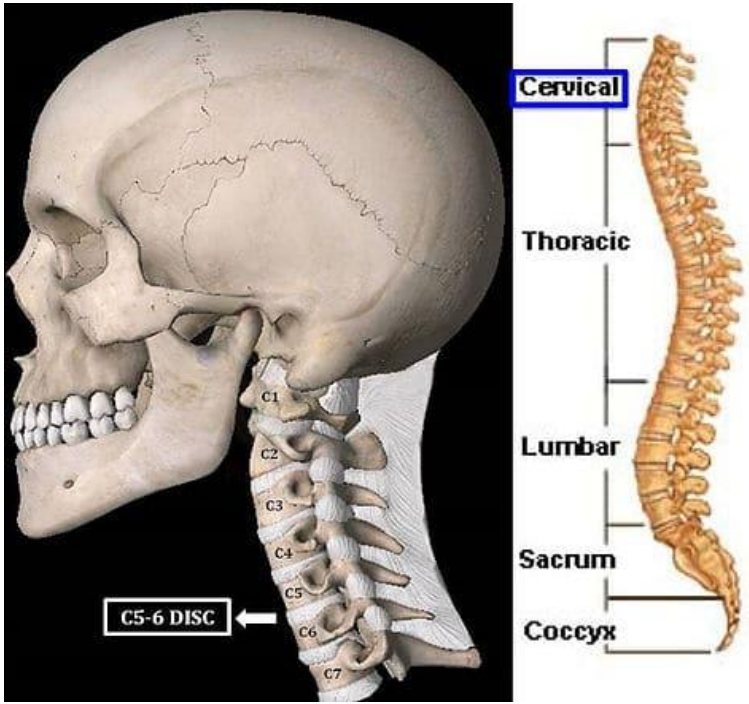

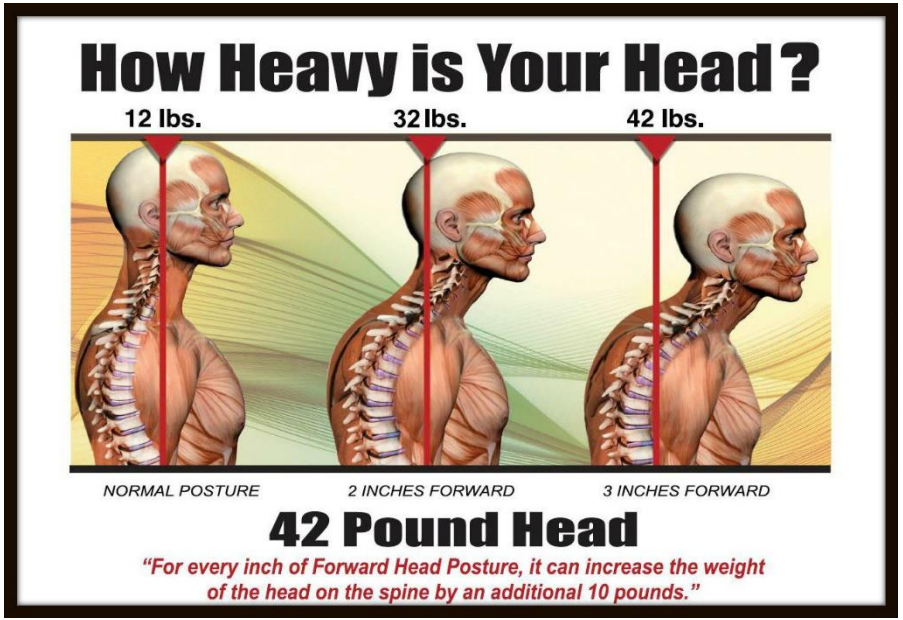

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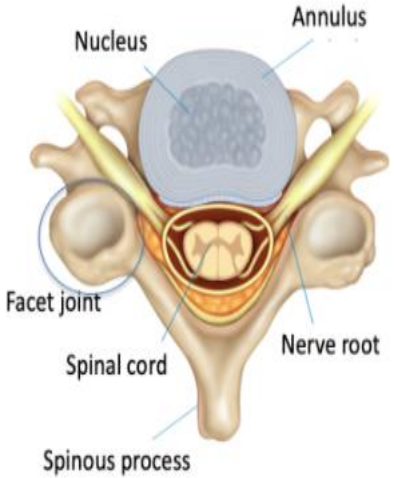

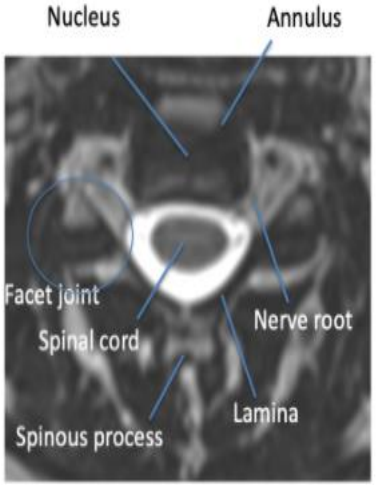

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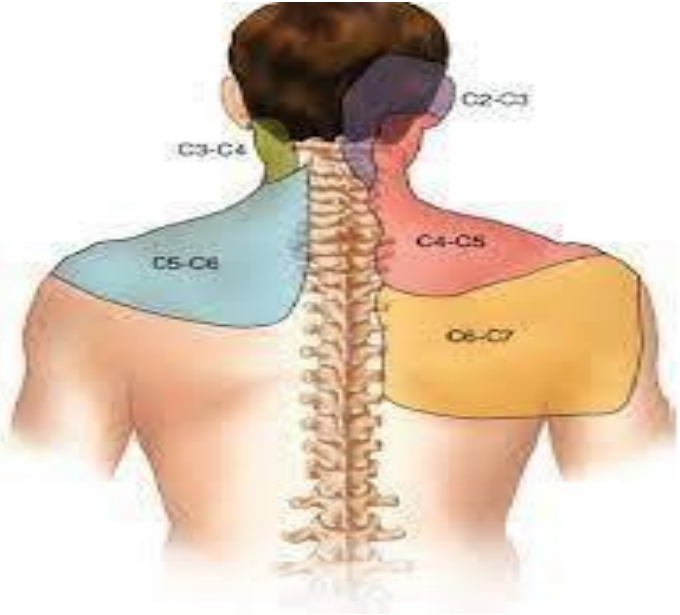

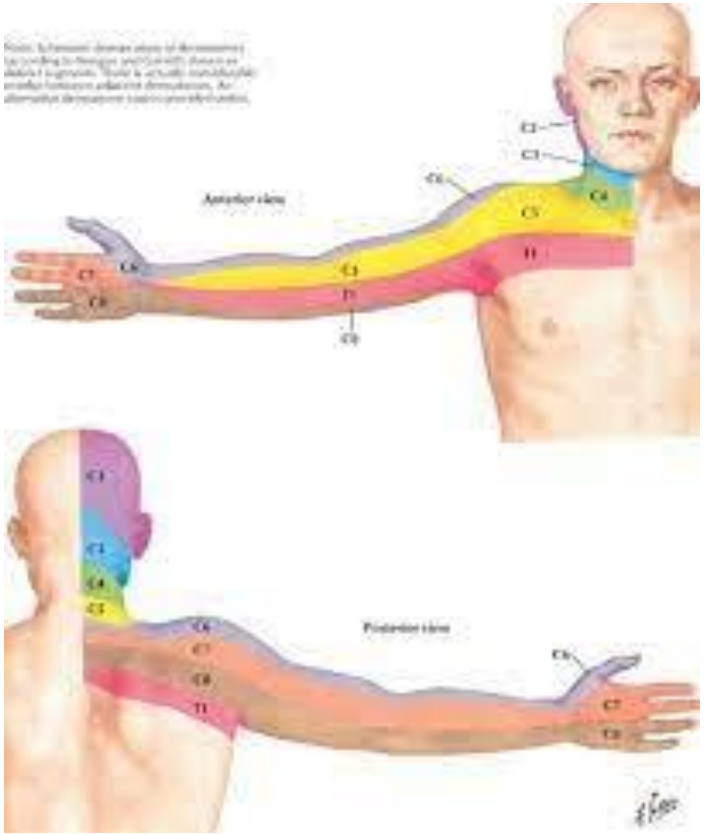

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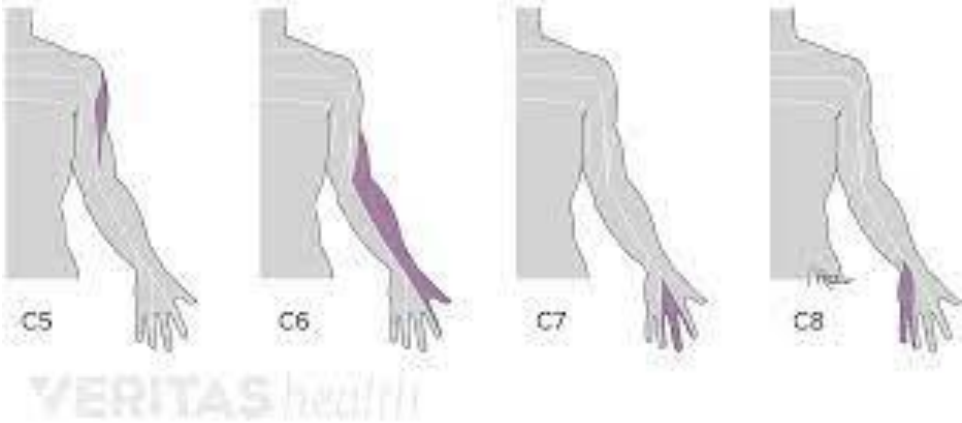
C5 vs Shoulder Pathology

Radiculopathy	Shoulder pathology
--Sensory change	--no sensory change
--may be weak in abd.	--may be weak
--improves with arm elev	--worse
--positive spurling's	--no change
--PROM shoulder ok	--Painful



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C6 or C7 vs. CTS

CTS

--Sensory findings spare dorsal thumb and proximal thenar area

--No radiation above elbow

--early morning predominance

--elbow flexion and wrist extension nl

--positive shake sign

--May coexist

Consider emg and ncs

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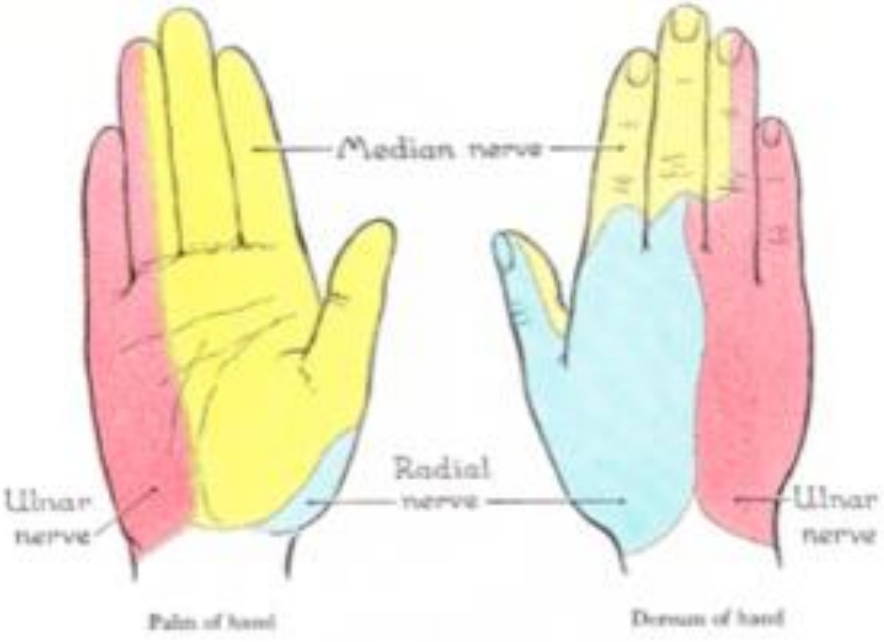

2: Sensory innervation of the hand. Image from: Wikimedia Commons.

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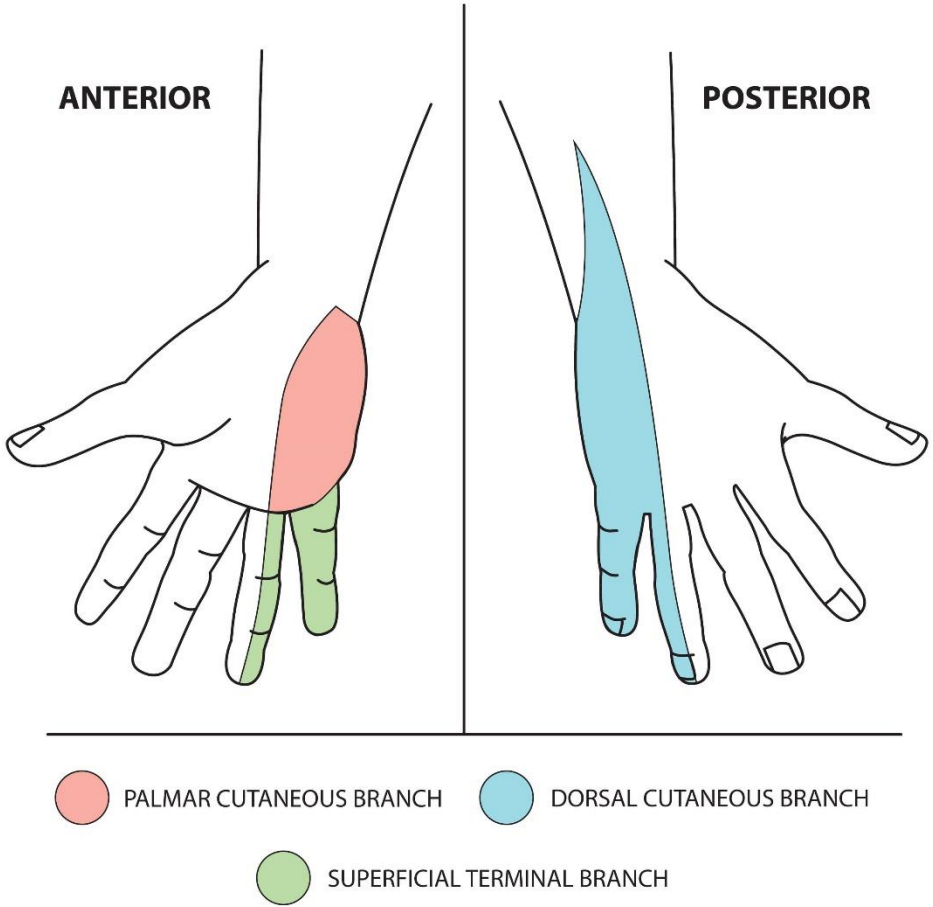

C8 vs. Ulnar vs TOS

Ulnar neuropathy

--Sensory exam splits ring finger

--Triceps jerk and strength nl

--Index finger extension nl

--atrophy of FDI, ADM favors

TOS--worse with overhead activity

Remember Pancoast Tumor—CXR if other workup inconclusive

EMG and NCS useful

Finally: Recognize cervical Myelopathy

	Number of patients (%)
Symptoms	
Neck pain and stiffness	19 (39%)
Numbness of arms	41 (84%)
Numbness of legs	33 (67%)
Hand clumsiness	33 (67%)
Leg stiffness	23 (47%)
Gait disturbance	39 (80%)
Lhermitte phenomenon	3 (6%)
Sphincter disturbances	19 (39%)
Sudden quadriparesis	7 (14%)
Signs	
Hyperreflexia of arms	36 (73%)
Hyperreflexia of legs	47 (96%)
Spastic gait	29 (59%)
Impaired vibration sense at wrist	23 (47%)
Impaired vibration sense at ankle	32 (65%)
Reduced pinprick sense in arm	30 (61%)
Reduced pinprick sense in leg	32 (65%)
Weakness of arms	23 (47%)
Weakness of legs (spastic paraparesis)	11 (22%)
Reduced pinprick sense with a level at trunk	9 (18%)

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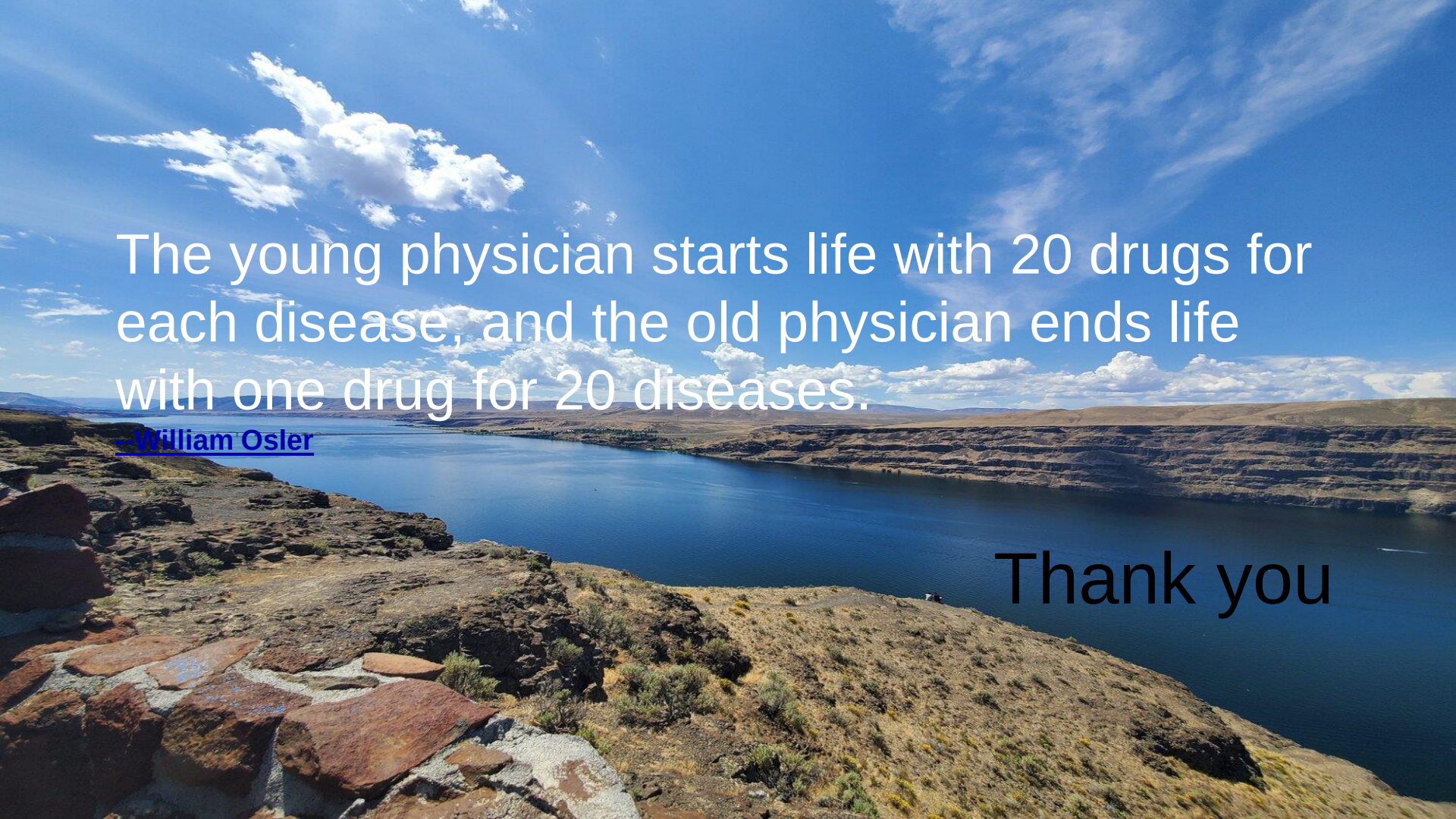
The young physician starts life with 20 drugs for each disease, and the old physician ends life with one drug for 20 diseases.
--William Osler
Thank you