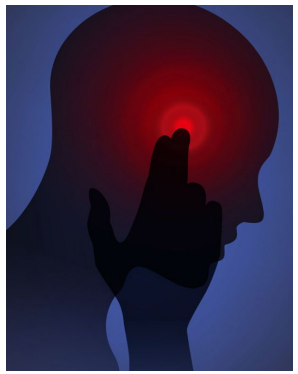
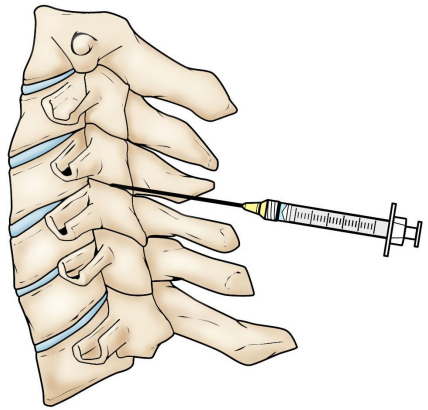


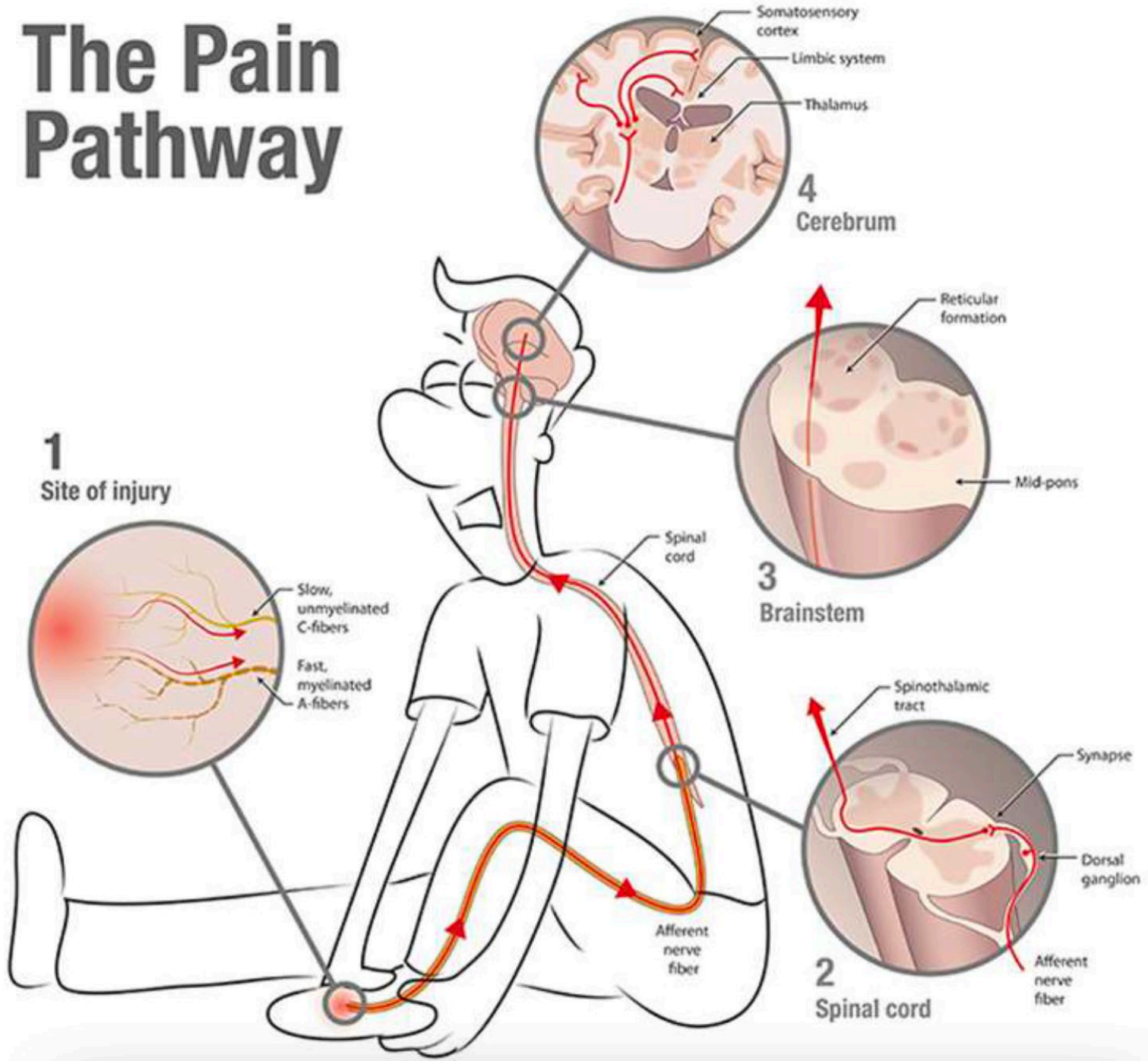
Chronic



Pain

- Pain is always a subjective experience
- Everyone learns the meaning of “pain” through experiences usually related to injuries in early life
- As an unpleasant sensation it becomes an emotional experience
- Pain is a significant stress physically, emotionally

The Pain Pathway



Peripheral Nerve Fibers involved in Pain

- **A-delta fibers –** small, myelinated fibers that transmit sharp pain
- **C-fibers –** small unmyelinated nerve fibers that transmit dull or aching pain.

Terms

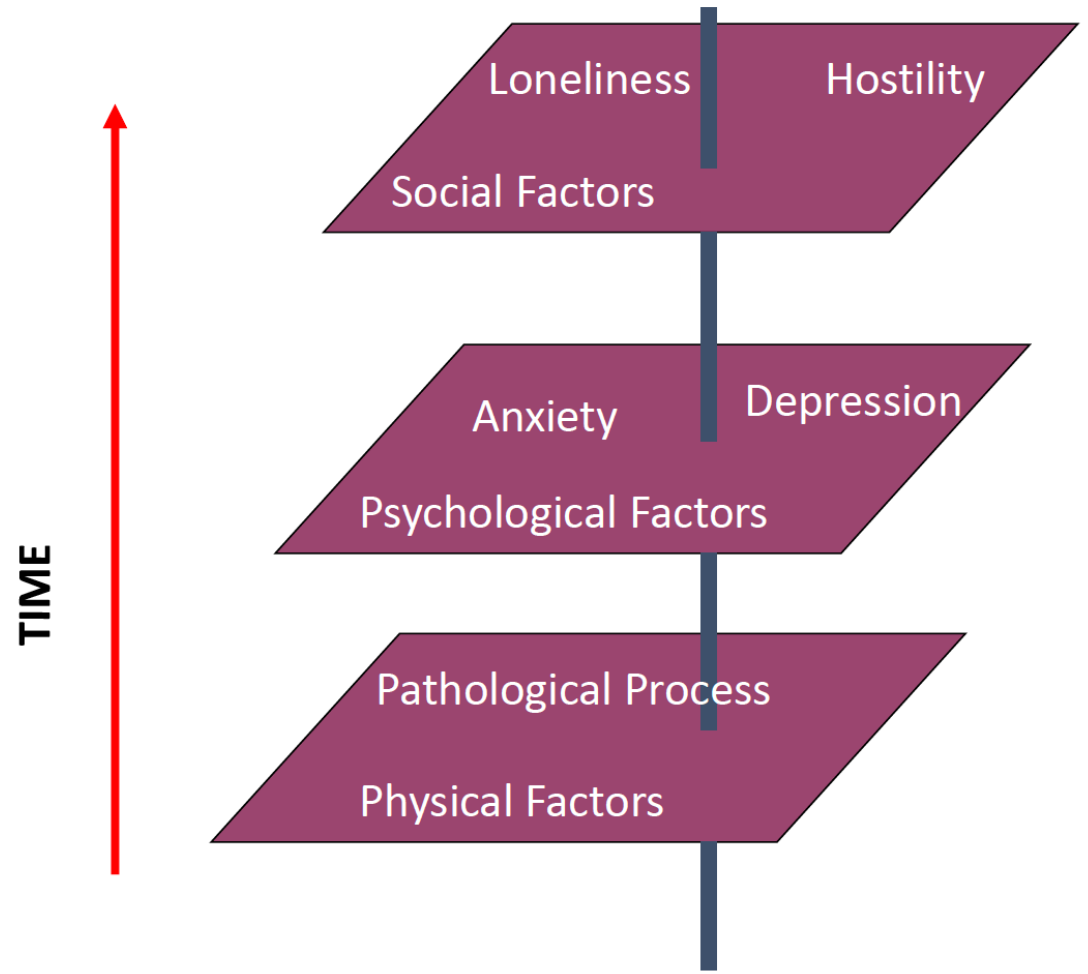
- Allodynia: Painless stimuli that are experienced as pain eg. clothing, light touch.
- Hyperalgesia: An amplified response to a noxious stimulus
- Hyperesthesia: Delayed and explosive response to noxious stimulus applied to
- affected area.
- Paresthesia: Spontaneous pins and needle sensation.
- Neuralgia: Pain in distribution of nerve or nerves.
- Neuropathy: A disturbance of function or pathological change in a nerve;
  - On one nerve - mononeuropathy;
  - In several nerves - mononeuropathy multiplex;
  - If diffuse and bilateral - polyneuropathy.
- Causalgia – recurrent episodes of severe burning pain.
- Phantom limb pain – feelings of pain in a limb that is no longer there and has no functioning nerves.

Chronic Pain

- **Chronic pain**: Long-term and typically defined if it lasts for > three months. It is more subjective and not as easily clinically characterized as acute pain and is more psychological. This kind of pain usually affects a person's life, changing personality, their ability to function, and their overall lifestyle.

- Chronic pain can be Nociceptive, Neuropathic, or mixed

Dimensions of Chronic Pain



Nociceptive Pain

- **Somatic pain:** caused by the activation of pain receptors in either the cutaneous (the body surface) or deeper tissues (musculoskeletal tissues).
  - Nature: crampy, pressure, deep, dull to sharp, referred

- **Visceral pain**: pain that is caused by activation of pain receptors from infiltration, compression, extension or stretching of the thoracic, abdominal or pelvic viscera (chest, stomach and pelvic areas).
  - Nature: dull to sharp, throbbing, achy, localized

Neuropathic Pain

- Caused by injury to the nervous system either as a result of a tumor compressing nerves or the spinal cord, or cancer infiltrating into the nerves or spinal cord.
- Nerve signals become amplified or distorted
- Nature: Burning, electric, searing, tingling, and migrating or traveling.

Common Etiologies of Chronic Pain

- **Somatic** – low back pain, degenerative and inflammatory arthritis, lumbosacral radiculopathy, Failed back surgery, vertebral compression fractures, bony metastases, Myofascial pain syndrome.

- **Visceral** – abdominal cancers, chronic pancreatitis

- **Neuropathic** – CRPS, Post herpetic neuralgia, Trigeminal neuralgia, diabetic neuropathy, phantom limb pain, spinal stenosis/sciatica, spinal mets,

Evaluation of Chronic Pain

Goals:

- Determine Etiology to better treat this pain
- Determine if correctable, intractable, or potentially dangerous causes
- Determine impact on patient’s life
- Take a detailed pain history to aid in controlling this pain

Common complaints and etiologies

- **Low back Pain** – Spinal Canal Stenosis, Foraminal Stenosis, Failed back surgery syndrome, Muscle Strain, Herniated disc, Spondylolisthesis, Facet joint syndrome, Sacroiliitis, Piriformis syndrome
- **Neck Pain** - Spinal Canal Stenosis, Foraminal Stenosis, Facet joint syndrome
- Head/face Pain – Migraine, trigeminal neuralgia
- **Body Pain** – Fibromyalgia, Post herpetic neuralgia
- **Limb Pain** – CRPS, Diabetic neuropathy
- **Hip Pain**
  - Anterior – Hip Joint disease i.e Osteoarthritis, avascular necrosis, neck fracture
  - Lateral – Greater Trochanteric bursitis
  - Posterior – Radiculopathy, Sacroiliitis, Piriformis syndrome
- **Knee Pain** – Osteoarthritis, Ligament injuries

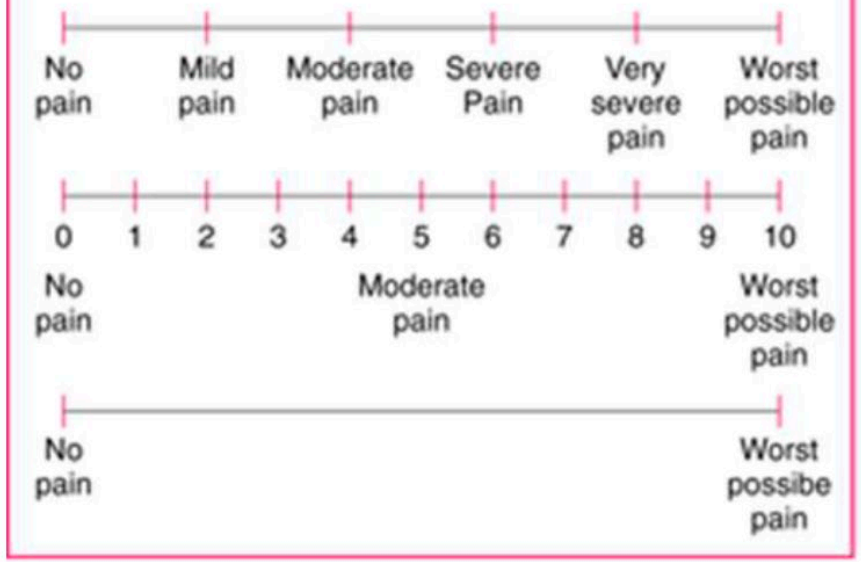
With so much overlap between patient complaints and etiology, it is very important to perform a thorough History and Physical as well as reviewing appropriate images

Important factors for evaluation

- Location, onset.
- Quality, radiation.
- Provocation (worse when sitting, standing, transitioning)
- Severity using pain scale (Numerical rating scale is most common)
- H/O past, personal, social, economic, psychological and emotional status.
- Response to previous treatments
- Prior surgeries at the affected area
- Plain radiographs, CT, MRI, bone scans, EMGs,
- Have they been evaluated by a surgeon yet?

Pain Scales

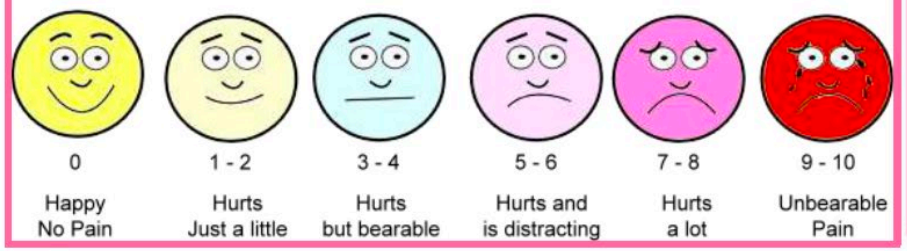
Visual Analog Scale



Word Descriptor Scale

0 = No pain
1 = Mild pain
2 = Distressing pain
3 = Severe pain
4 = Horrible pain
5 = Excruciating pain

Pain Levels



Verbal Scale

"On a scale of 0 to 10, with 0 meaning no pain and 10 meaning the worst pain you can imagine, how much pain are you having now?"

Functional Pain Scale

0 = No pain
1 = Tolerable and pain does not prevent any activities
2 = Tolerable and pain prevents some activities
3 = Intolerable and pain does not prevent use of telephone, TV viewing, or reading.
4 = Intolerable and pain prevents use of telephone, TV viewing, or reading.
5 = Intolerable and pain prevents verbal communication

Physical Exam maneuvers

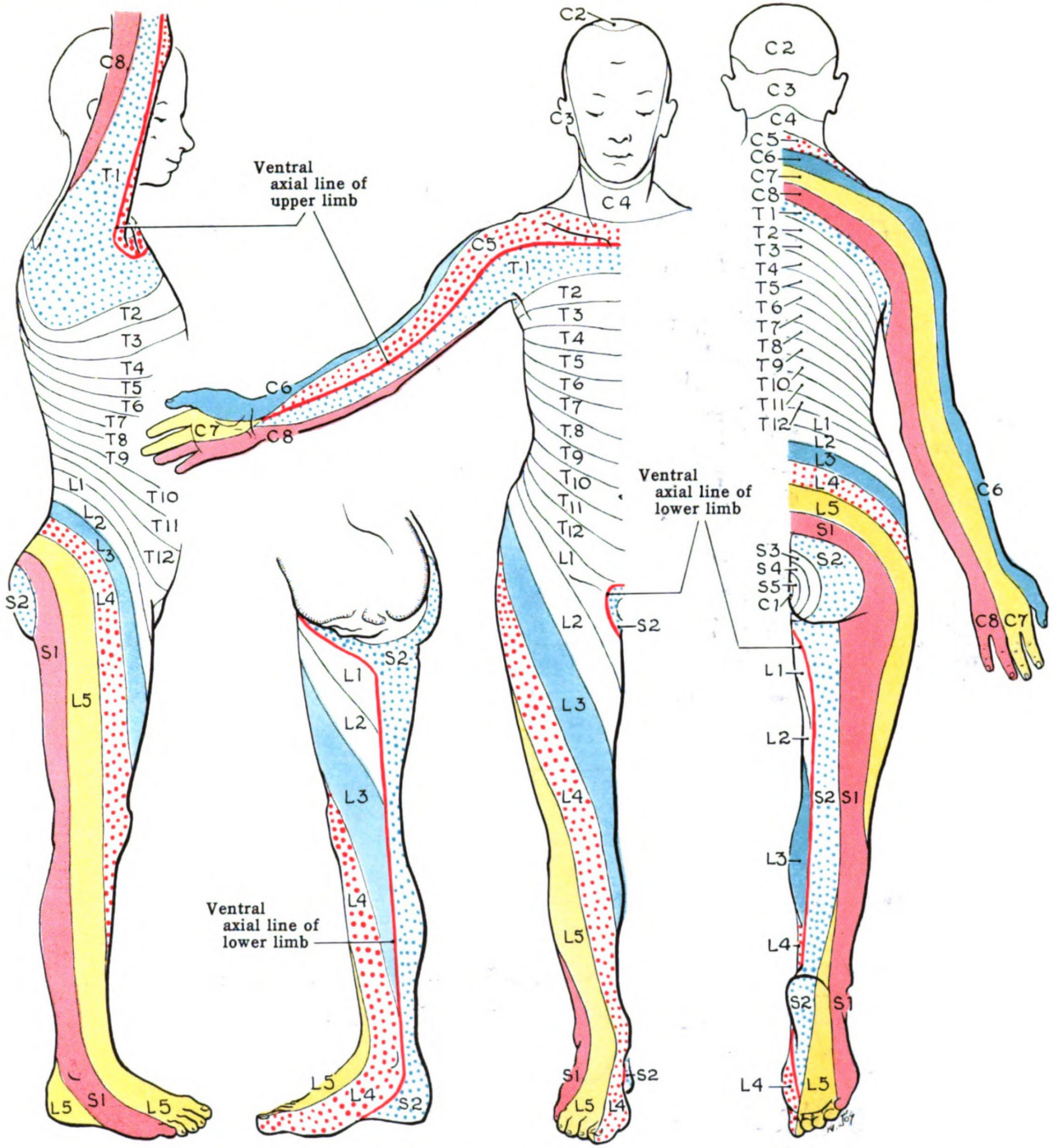
Neurological exam

	Lower Motor Neuron Lesion	Upper Motor Neuron Lesion
Muscle Strength	Weakness/paralysis	Weakness/paralysis
Muscle Tone	↓/absent muscle tone	↑ muscle tone
Reflex strength	↓/absent reflex strength	↑ reflex strength + Babinski sign
Wasting	Rapid muscle wasting	Muscle mass maintained
Causes	Poliomyelitis, motor neuron disease, spinal cord injury at segmental level, peripheral nerve dysfunction, muscle myotonias, myasthenia gravis, muscular dystrophies	Stroke (contralateral symptoms), cord section

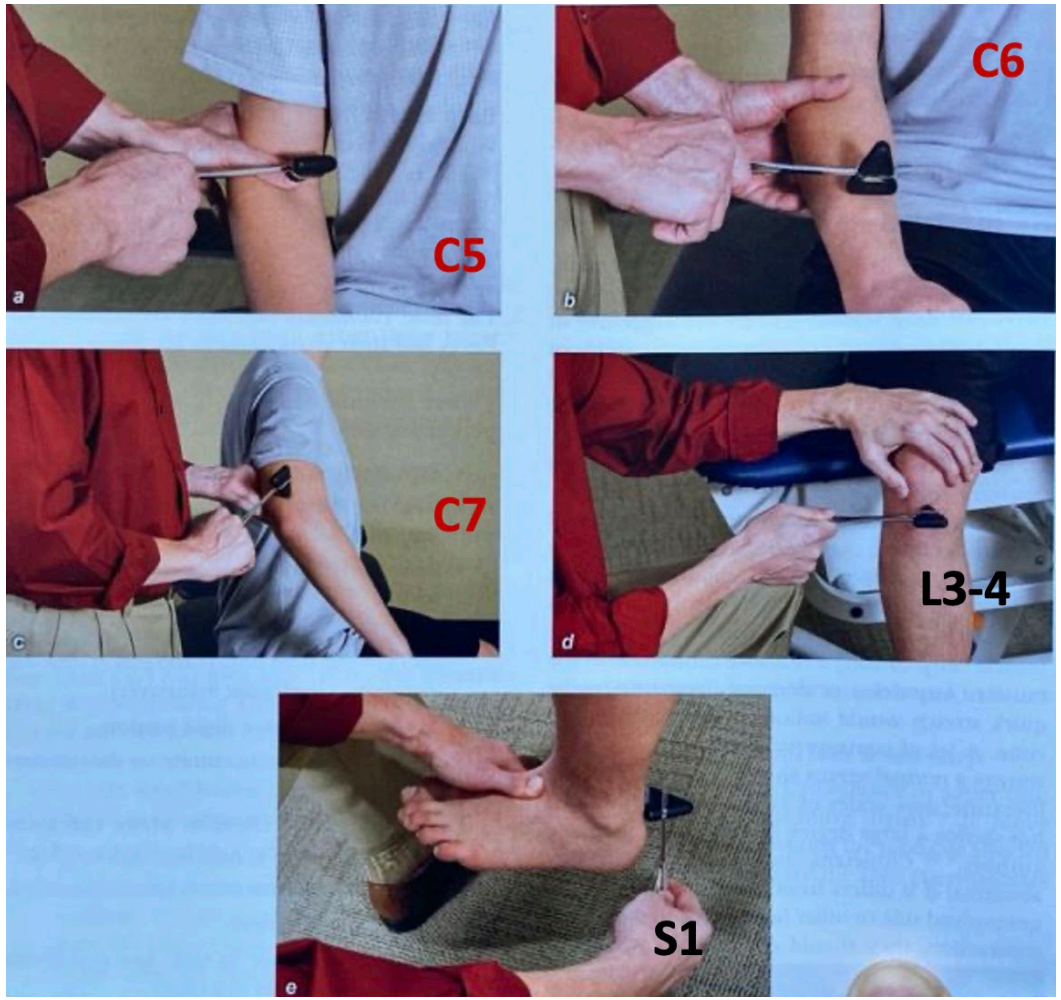
Motor Strength

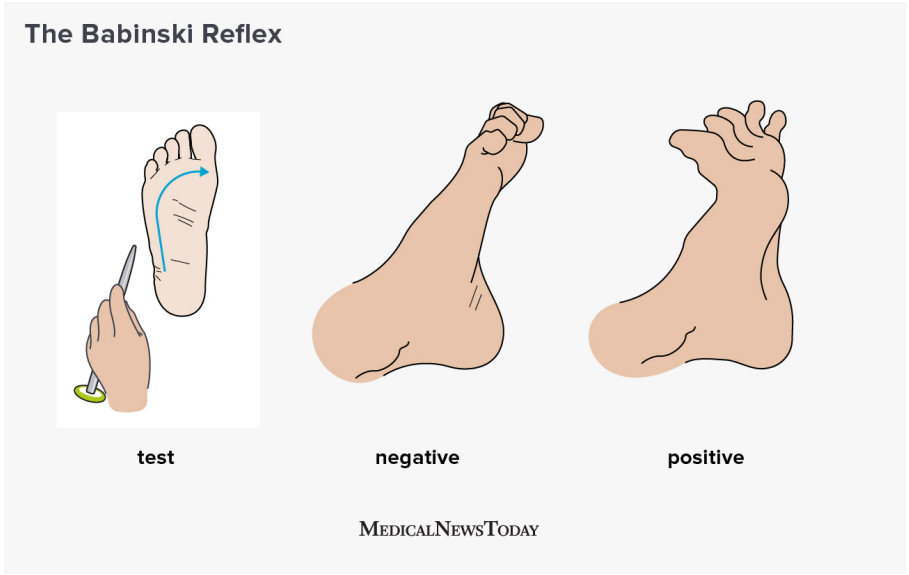
Nerve root	Nerve	Action
C4-5	Axillary	Shoulder abduction
C5	Musculocutaneous	Elbow flexion
C6	Radial	Wrist extension
C6	Median	Forearm pronation
C7	Radial	Elbow extension
C8	Anterior Interosseus Nerve	DIP flexion
T1	Ulnar	5th digit abduction
L2	Femoral	Hip flexor
L3	Femoral	Knee extension
L4	Deep peroneal	Ankle dorsiflexion
L5	Deep peroneal	Great toe extension
L5	Superior Gluteal	Hip abduction
S1	Tibial	Plantarflexion

Dermatome Sensation

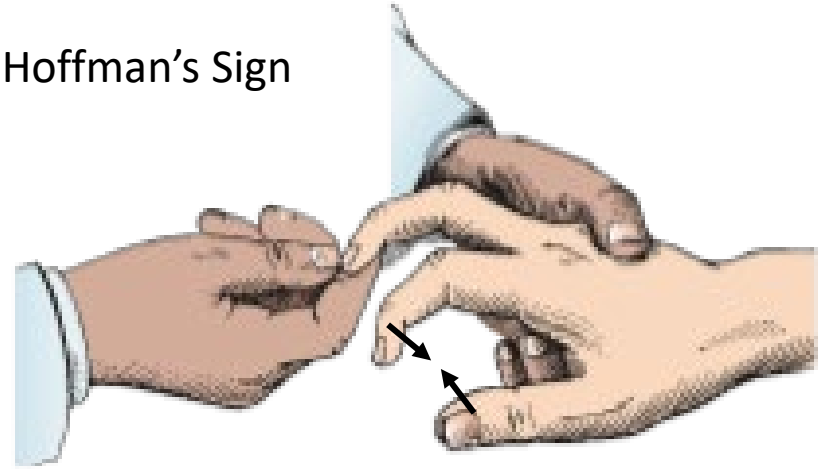


Reflexes





Hoffman's Sign



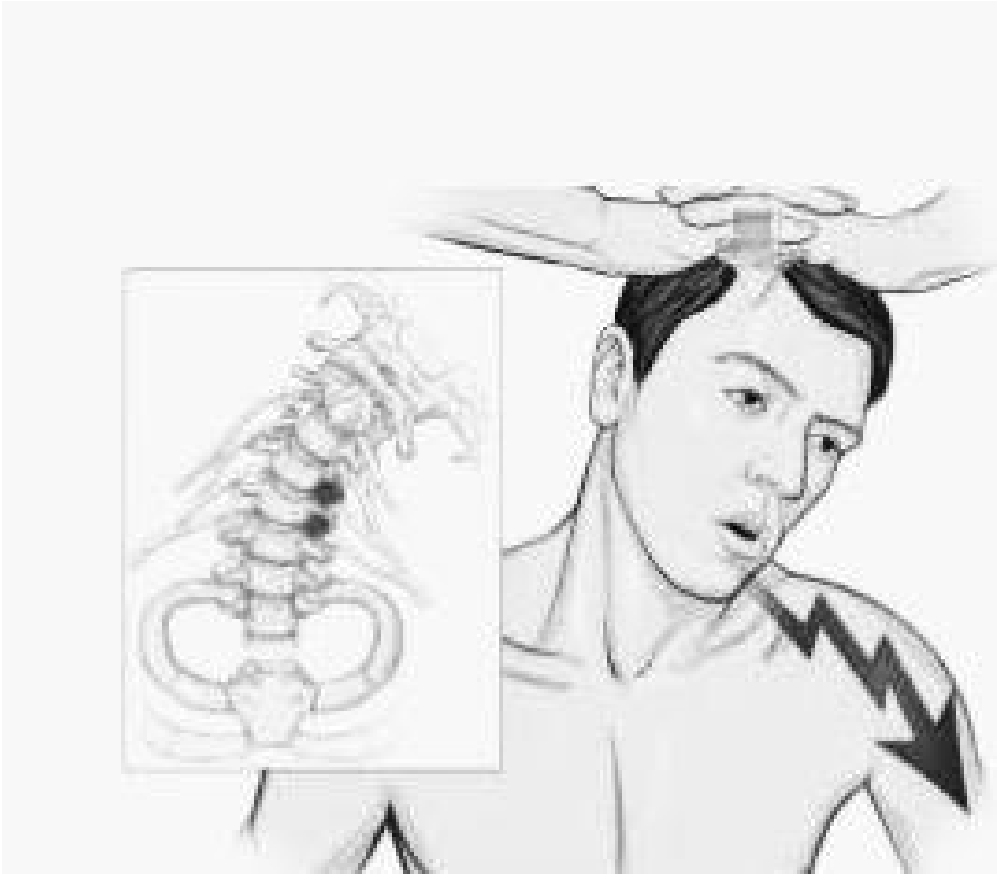
Cervical Exam

- Midline tendreness
- Paraspinal tenderness
- Facet loading test
- Spurling's test

Spurling test

- Extend and rotate patient's head to the affected side and apply axial compression. Positive test elicits radicular pain.

- Highly specific for cervical radiculopathy

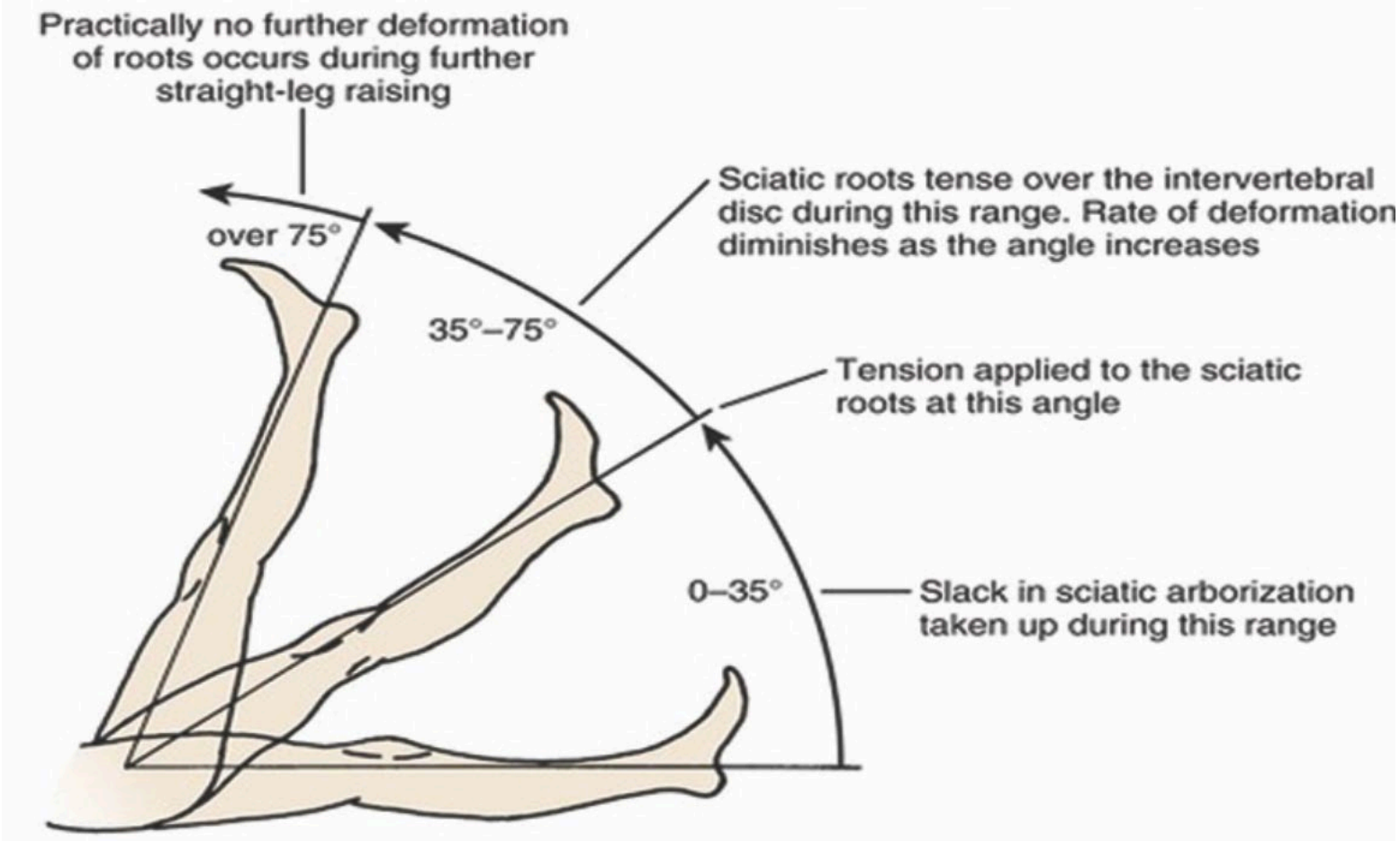


Lumbar Exam

- Midline tenderness
- Paraspinal tenderness
- Straight leg test
- Facet loading test

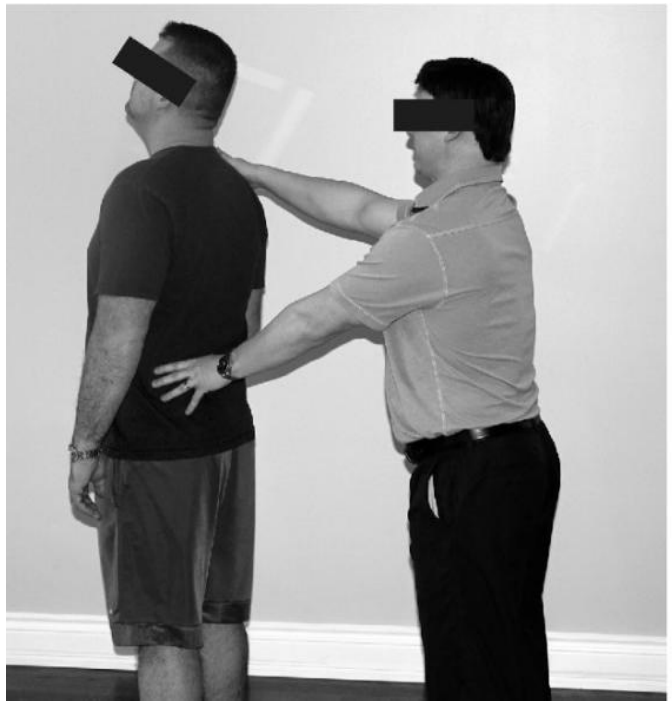
Straight Leg Raise

- Positive if shooting sensation down the legs between 30–70°.
- Nerve root tension/ radiculopathy (L4–S1)



Facet loading

- Facetogenic pain
- Pain in extension with lateral flexion and rotation to the same side of facet



Sacral/Hip Exam

- Tenderness to palpation over SI joints
- FABER
- Gaenslen's test
- Compression test

Tenderness to palpation over SI joints

- Pain over dimples of venus aka gluteal dimples

FABER

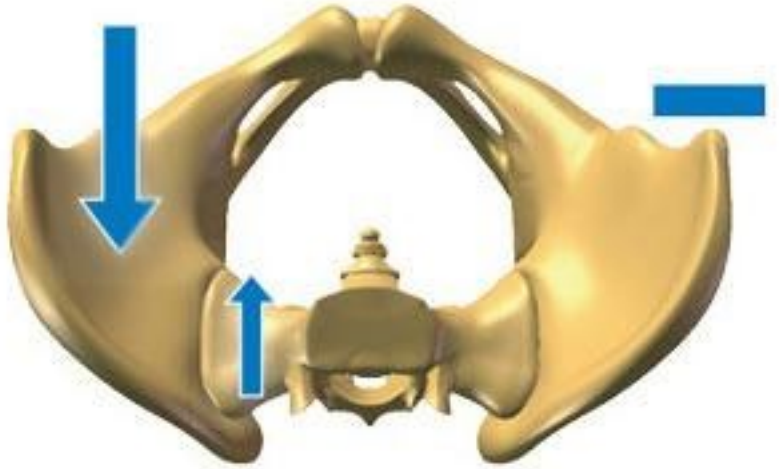
- Performed by putting applying pressure to a flexed, abducted, and externally rotated leg add contralateral hip
- Positive if there is pain in the back
- If there is pain in the hip, consider hip pathology

tensile force on the anterior aspect of the SI joint on the side tested

Gaenslen's

torsional stress on the SI joints

Thigh Thrust



anteroposterior shear stress on the SI joint

Compression

- If pain is where pressure is being applied, consider hip pathology such as greater trochanteric bursitis

compression force across the SI joints

Drug Options

TABLE 64-1 ANALGESIC DRUGS, TARGETS, MECHANISMS, AND SIDE EFFECTS

Drugs	Targets	Mechanisms	Functional Consequences	Side Effects
Opioids	G-protein coupled μ, δ, κ receptors	↓ cAMP ↓ Ca^{2+} currents ↑ K^+ currents	↓ Excitability of peripheral and central neurons ↓ Release of excitatory neurotransmitters	μ, δ: Sedation, nausea, euphoria/reward, respiratory depression, constipation κ: Dysphoria/aversion, diuresis, sedation
NSAIDs	Cyclooxygenases (COX-1, COX-2)	↓ Prostaglandins ↓ Thromboxanes	↓ Sensitization of sensory neurons ↑ Inhibition of spinal neurons	Nonselective: gastrointestinal ulcers, perforation, bleeding, renal impairment COX-2: thrombosis, myocardial infarction, stroke
Serotonin agonists	G-protein coupled 5-HT receptors 5-HT_3: ion channels	↓ cAMP (5-HT_1) ↑ cAMP ($5\text{-HT}_{4\text{-}7}$) ↑ PLC (5-HT_2)	↓ Release of excitatory neuropeptides ↓ Neurogenic inflammation ↑ Vasoconstriction	Myocardial infarction, stroke, peripheral vascular occlusion
Antiepileptics	Na^+, Ca^{2+} channels GABA receptors	↓ Na^+ currents ↓ Ca^{2+} currents ↑ GABA receptor activity	↓ Excitability of peripheral and central neurons ↓ Release of excitatory neurotransmitters	Sedation, dizziness, cognitive impairment, ataxia, hepatotoxicity, thrombocytopenia
Antidepressants	Norepinephrine/5-HT transporters Na^+, K^+ channels	↓ Norepinephrine/5-HT reuptake ↓ Na^+ currents ↑ K^+ currents	↓ Excitability of peripheral and central neurons	Cardiac arrhythmia, myocardial infarction, sedation, nausea, dry mouth, constipation, dizziness, sleep disturbance, blurred vision

Ca^{2+}, Calcium; *cAMP*, cyclic adenosine monophosphate; *GABA*, γ-aminobutyric acid; *5-HT*, 5-hydroxytryptamine (serotonin); *K^+*, potassium; *Na^+*, sodium; *NSAIDs*, nonsteroidal antiinflammatory drugs; *PLC*, phospholipase C.

NSAIDs (Aspirin, ibuprofen, indomethacin, diclofenac)

- Avoid chronic use in high-risk patients (i.e. GI or kidney patients)
- Not for use in chronic background analgesia
- Use in selected pts with good indications
- Bone pain
- Inflammatory pain
- Somatic pain with poor response to other analgesics
- Be aware of S/E: impaired platelet function, Gastric ulcers, Nephrotoxicity, formation of highly reactive metabolite.
- PRESCRIBE FOR LIMITED DURATION

Acetaminophen

- First-line agent for Headache, fever, Arthritis, back pain, etc.
- Safe alternative to NSAID's for non-inflammatory pain
- Safe given q4h to max 4000 mg/day
- Caution with liver disease or heavy Ethanol ingestion or G6PD Deficiency
- Rapid onset (20-30 mins)
- Do not EXCEED :
  - 4 gm/day > 10 days in healthy pts.
  - 3.2 gm/day for chronic use in healthy pts.
  - 2.6 gm/day for chronic use in non-healthy pts.

Opioids

- Individualized route, dosage, and schedule
- Not usually prescribed in our clinic
  - Patients who are on opioids must sign an opioid consent and have a urine screening when writing a new script or renewing a script
- Side Effects
  - Constipation is a given, no tolerance develops, use stimulants.
  - Nausea/vomiting – tolerance can occur in 2-5 days, Prochlorperazine/metoclopramide can help.
  - Sedation – tolerance can occur in 2-3 days, changing drug can help if persists.
  - Respiratory suppression in toxic doses.

Anti-Convulsants

- Used most commonly in neuropathic pain.
- M/A: Sodium channel and calcium channel blockade
- Commonly drugs used:
  - Gabapentin
  - Pregabalin
  - Topiramate
- S/E: Impairment in mental status and motor function, Hepatotoxicity, thrombocytopenia, dermatological and hematological reactions.

Anti-Depressants

- Used in treatment of Neuropathic pain, Headache and other conditions.
- Action due to blockade of Presynaptic reuptake of serotonin, norepinephrine or both.
- Common drugs used
  - Amitriptyline
  - Nortriptyline
  - Duloxetine
- S/E, include Arrhythmias due to block of cardiac ion channels by TCA. It also blocks histamine, cholinergic and adrenergic receptor, and serotonin syndrome especially if patient is already taking other antidepressants.
- TCAs are the most efficacious drug for chronic pain
- TCAs have sedative properties so great option if patient is having trouble sleeping

Bread and Butter Diagnosis

Cervical Stenosis +/- Radiculopathy

- CC: Neck pain +/- tingling or burning down to the hands
- Imaging:
  - MRI will show stenosis with a possible bulging disc
- PE:
  - Decreased sensation specific dermatome in upper extremity
  - + Spurling test with radiculopathy
  - +/- Hoffman's sign
- Treatment:
  - Physical therapy
  - Gabapentin/pregabalin, duloxetine, Topiramate, TCA
  - Cervical steroid injection
  - Last resort, surgery

Lumbar Stenosis +/- Radiculopathy

- CC: Lower back pain +/- tingling or burning down the legs. Pain improved when sitting or leaning forward. Pain worse when standing.
- Imaging:
  - MRI will show stenosis with a possible bulging disc
- PE:
  - Decreased sensation specific dermatome in lower extremity
  - + straight leg raise with radiculopathy
  - + midline tenderness
- Treatment:
  - Physical therapy
  - Gabapentin/pregabalin, duloxetine, Topiramate, TCA
  - Cervical steroid injection
  - Last resort, surgery

Sacroiliitis

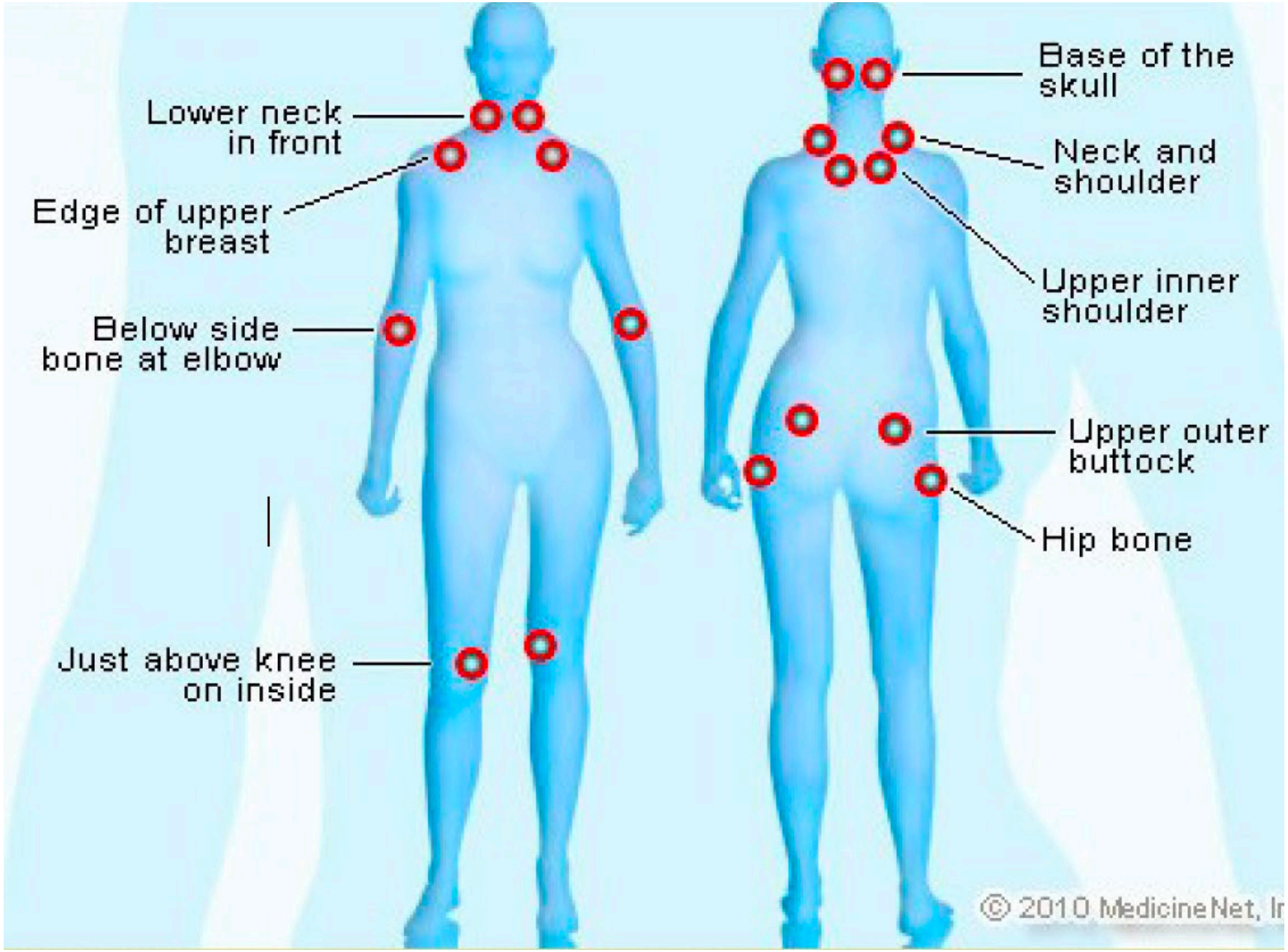
- CC: Lower back pain
  - In contrast to other causes of mechanical LBP, such as myofascial, facetogenic, and discogenic pain, SI joint pain is more likely to be unilateral.
  - Pain is usually sharp and may radiate into the thigh or groin.
  - Pain is worse during transition, such as getting up from a chair.
  - Pain is improved with NSAIDs
- Imaging:
  - MRI will show stenosis with a possible bulging disc
- PE: Physical examination is notoriously unreliable for teasing out SI joint pain, the following may be positive or negative
  - Tenderness to palpation over SI joints
  - FABER
  - Gaenslen's test
  - Compression test
- Diagnosis:
  - The only way to diagnose a painful SI joint is by diagnostic blocks.
- Treatment:
  - Physical therapy
  - NSAIDS
  - SI joint steroid injection
  - SI joint radiofrequency nerve ablation

Facet Joint syndrome

- CC: Paint anywhere along the back that is wrose with extension and rotation
- Imaging:
  - None
- PE:
  - + Pain over lateral spine
  - + Facet loading
- Diagnosis:
  - Medial branch nerve block
- Treatment:
  - Physical therapy
  - NSAID
  - Medial branch nerve ablation

Fibromyalgia

- CC: Generalized body pain. Will have tender points, so the patient may complaint about when they are sitting or laying down. Sleep disturbances and fatigue are common
  - Can have a history of anxiety or depression
- Imaging:
  - None
- PE:
  - Multiple tender points (next slide)
- Treatment:
  - First line treatment is low impact aerobic exercise 60 minutes a day for 6 days a week
  - May try medications such as Pregabalin and duloxetine


Lower neck in front
Edge of upper breast
Below side bone at elbow
Just above knee on inside
Base of the skull
Neck and shoulder
Upper inner shoulder
Upper outer buttock
Hip bone
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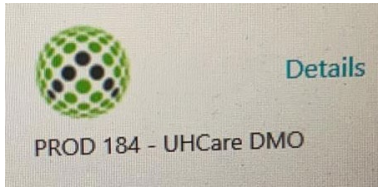
EMR TIPS

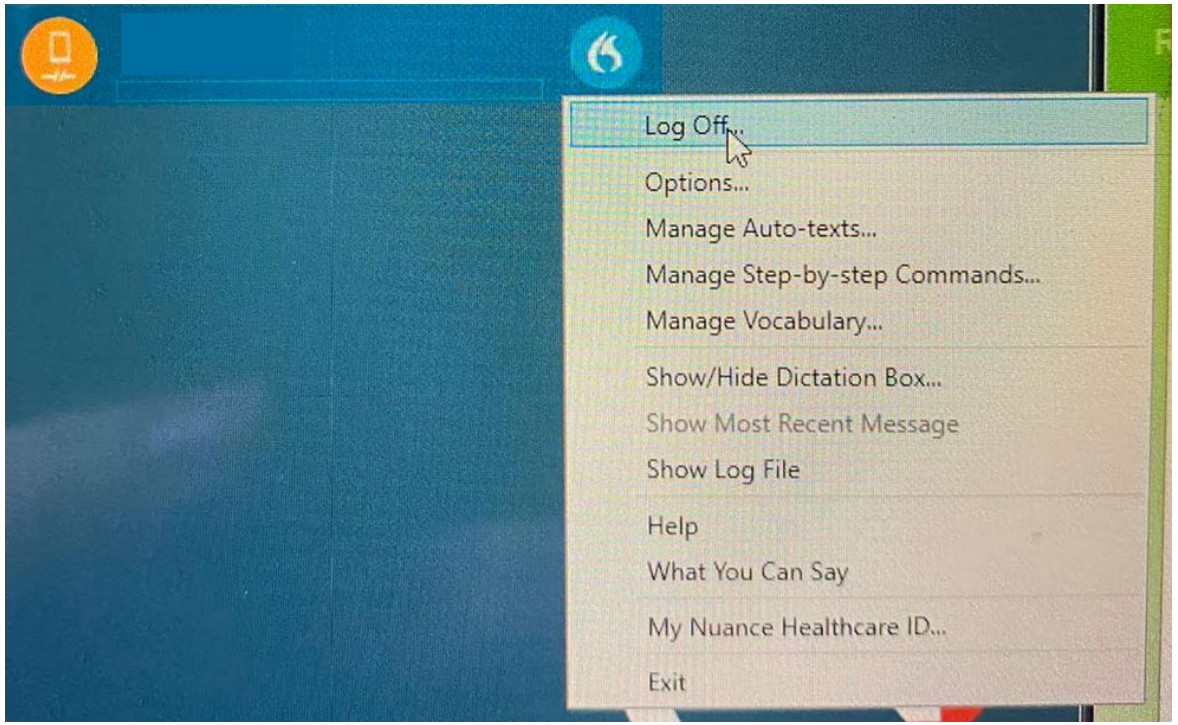
Dragon Dot Phrases

- Please refer to word document for dot phrases
- This will include dot dot phrases for:
  - History
  - Physical exam
  - Documentation for procedures, in office injections
  - Drug doses and titrations
  - Proper physical therapy documentation
  - Patient Discussion
  - Patient A/P

How to set up dragon

- Need to call IT to get the dragon app put on your VMware
- We don’t use the actual dragon app
- Log onto UHAcuteCare DMO in MyApps and it will automatically have dragon
  - Any DMO apps will use dragon
  - PROD 184 – UHCare DMO is inpatient dragon
- Download PowerMic Mobile to get dragon mic on your phone
  - Will need to log off and switch to mobile app to use

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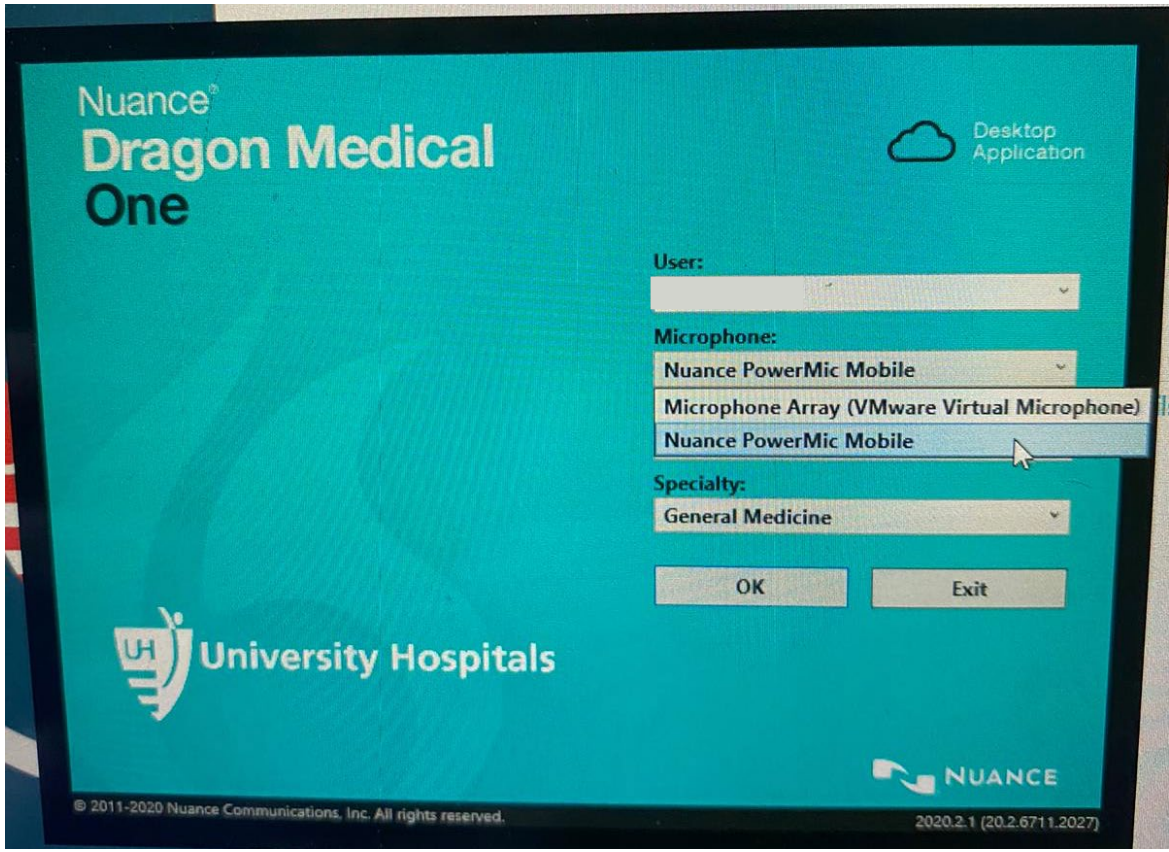
Options...
Manage Auto-texts...
Manage Step-by-step Commands...
Manage Vocabulary...
Show/Hide Dictation Box...
Show Most Recent Message
Show Log File
Help
What You Can Say
My Nuance Healthcare ID...
Exit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General Medicine
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