Pain Management in the Elderly

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Disclosures

- None

Objectives

- Understand the pathogenesis of pain
- Understand the mechanism by which non-opioids work
- Describe best practice methods for prescribing medications in the geriatric population.

Epidemiology

- Over 100 million Americans suffer persistent (chronic) pain and most pain sufferers seek help from their primary care clinicians.[1]
- Nearly 20 percent of outpatient visits and 12 percent of all prescriptions are for pain management.[2]
- Patients with symptoms of persistent pain are seen by clinicians in multiple clinical settings.

1. Institue of Medicine. Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research. Available at http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2011/Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research/Pain%20Research%202011%20Report%20Brief.pdf (Accessed on Sept 2017).
2. Alford DP, Liebschutz J, Chen IA et al. Update in pain medicine. J Gen Intern Med. 2008;23(6):841.

Risks of Opioid Use

- Opioids fueled a doubling of suicides and OD's in the US
  - killing Americans at twice the rate today than they did 17 years ago
  - reversal of this trend will work if we **WORK** on this as a team

Bohnert ASB, Ilgen MA. Understanding Links among Opioid Use, Overdose, and Suicide. N Engl J Med. 2019 Jan 3;380(1):71-79.

Defining Pain

Acute vs. Chronic Pain

- Acute pain
  - a vital protective mechanism that is a cue for the body to do something to stop the pain.
- Persistent (chronic) pain
  - widespread or regional pain that lasts longer than expected or beyond the normal tissue healing time.
  - chronic pain may have no discernible cause at all or may be a signal that disease is present and increasing.

Persistent Pain Associated With…

- Falls
- Sleep disruption
- Depression
- Anxiety
- Agitation
- Delirium
- Cognitive decline

The Pathogenesis of Pain

Types of Pain

- Nociceptive versus Neuropathic Pain
  - Nociceptive pain is pain that results from damage to body tissue and usually described as a sharp, aching, or throbbing pain.
  - Neuropathic pain is a type of persistent pain state that usually is accompanied by tissue injury where the damaged nerve fibers send incorrect signals to other pain centers. Pain is usually described as a burning, aching, needles, or like an electric shock

*Of course it can be a mixture of the two as well

Why Pain is Geriatrics is Different

- Changes related to age in the nervous system (i.e., changes in pain receptors, peripheral nerves, and the central nervous system) may alter pain perception.

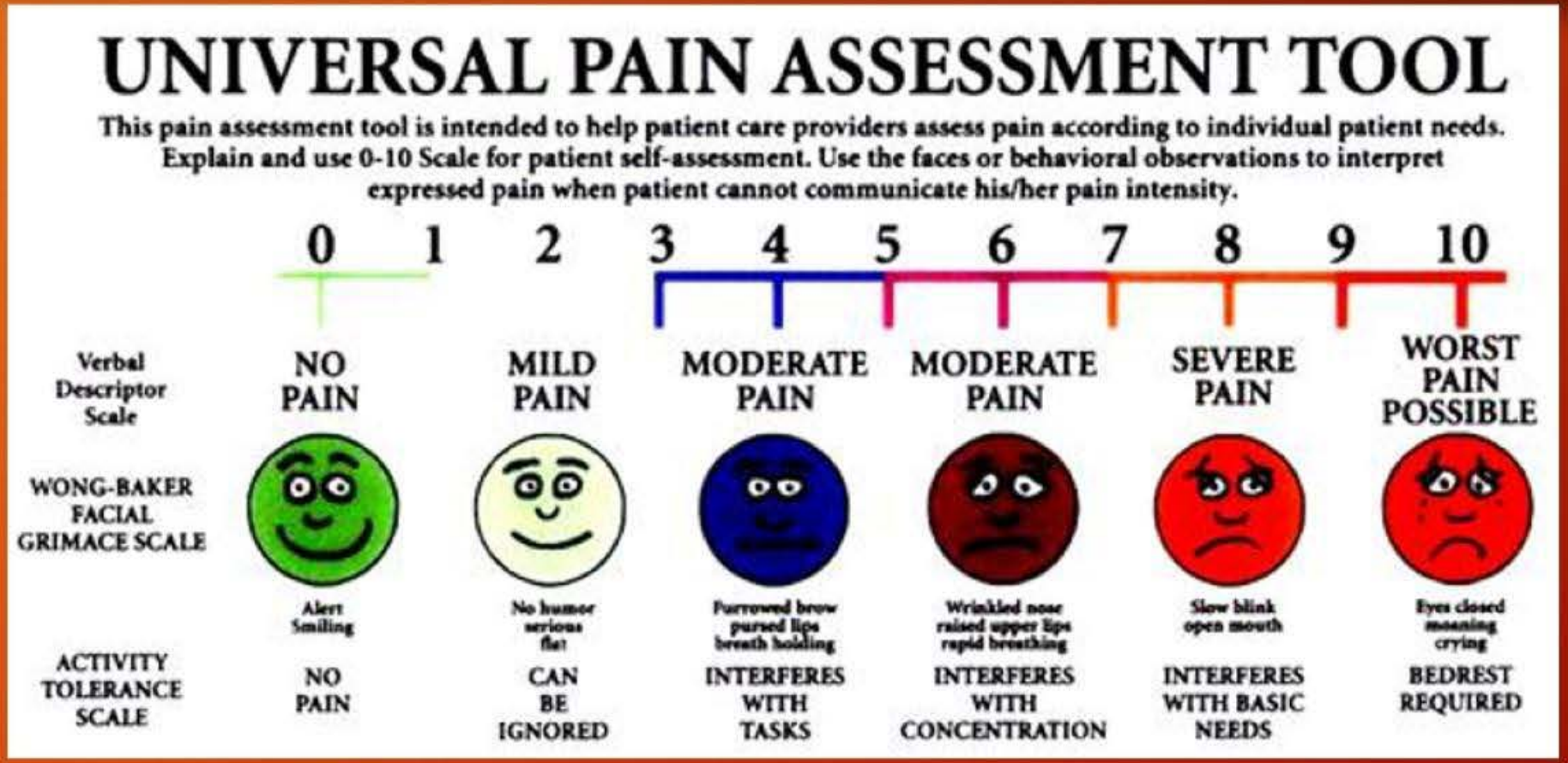
- Other conditions often mask pain complaints (i.e. cognitive impairment, concurrent illnesses, and visual and hearing impairment).

Ferrell BA, Charette SL. Pain management. In: Halter JB, Ouslander JG, Tinetti ME, et al, eds. Hazzard's Geriatric Medicine and Gerontology. 6th ed. New York, NY: McGraw-Hill, Inc; 2009:359-371.

How to Start

- Important to—
  - Get a comprehensive history and physical exam
    - geriatric assessment tools
  - Highlight those comorbities that can contribute to pain e.g., depression and anxiety
  - Rely on caregivers to help you assess how bad the pain really is
  - Consider using pain scales (numerical or visual analog)
  - Pain logs can also be helpful

Pain Scale


UNIVERSAL PAIN ASSESSMENT TOOL
This pain assessment tool is intended to help patient care providers assess pain according to individual patient needs. Explain and use 0-10 Scale for patient self-assessment. Use the faces or behavioral observations to interpret expressed pain when patient cannot communicate his/her pain intensity.
0 1 2 3 4 5 6 7 8 9 10
Verbal Descriptor Scale
NO PAIN
MILD PAIN
MODERATE PAIN
MODERATE PAIN
SEVERE PAIN
WORST PAIN POSSIBLE
WONG-BAKER FACIAL GRIMACE SCALE
Alert Smiling
No humor serious flat
Furrowed brow pursed lips breath holding
Wrinkled nose raised upper lips rapid breathing
Slow blink open mouth
Eyes closed moaning crying
ACTIVITY TOLERANCE SCALE
NO PAIN
CAN BE IGNORED
INTERFERES WITH TASKS
INTERFERES WITH CONCENTRATION
INTERFERES WITH BASIC NEEDS
BEDREST REQUIRED

Pain Assessment

Identify the source of pain and to assess the characteristics of pain:

- Examination of the site of pain and common sites of pain referral
- Focus on the musculoskeletal and neurological systems, such as for weakness and dysesthesia
- An observation of physical function
- Assessment of psychological and cognitive function
  - What may be painful in a younger person may present in the elderly as behaviors changes.

Signs/Symptoms of Physical Discomfort

1. Facial expressions
2. Verbal expressions
3. Body expressions
4. Changes in eating or sleeping habits
5. Sudden changes in usual routines
6. Increase in confusion, irritability, distress, or wandering

Zagaria ME. Collaborative Patient Care for Seniors With Pain. US Pharm 2011;36(1):21-25

Factors Affecting Undertreatment of Pain

- Patient factors that may contribute to under treatment of pain
  - Pain represents a new or worsening disease process
  - Fear of being prescribed an opioid
  - Fear of "addiction"
  - Fear of analgesics losing effect and not being effective once pain is severe
  - Previous dismissal of pain report by healthcare providers
  - Labeled as a weak or difficult patient or a complainer
  - Cultural and/or religious beliefs

Malec M, Shega JW. Pain Management in the Elderly. Med Clin North Am. 2015 Mar;99(2):337-50.

Factors Affecting Undertreatment of Pain

- Provider factors that may contribute to under treatment of pain
  - Lack of training in pain assessment and/or management
  - Fear of state and federal initiatives scrutinizing physicians who prescribe opioids
  - Fear of diversion when an opioid is prescribed
  - Fear of opioid-related side effects including increased risk of falls and confusion
  - Fear of litigation surrounding any use of opioids

Malec M, Shega JW. Pain Management in the Elderly. Med Clin North Am. 2015 Mar;99(2):337-50.

Multimodal Approach to Pain Management

- Treatment Approaches
  - Pharmacotherapy
  - Physical therapy
  - Complementary and alternative medicine
  - Interventional approaches
  - Psychological support
  - Exercise

Non-Pharmacological Approaches to Pain Management

- Remember non-pharmacological treatments have been shown to be—
  - Beneficial
  - Cost effective
  - Few side effects
  - Void of adverse drug events

Non-Pharmacological Approaches to Pain Management

- Non-pharmacological treatments include—
  - Physical therapy
  - Accupuncture / Accupressure
  - Relaxation therapy
    - massage
    - biofeedback
  - Cognitive-Behavioral Therapy (CBT)
    - meditation
  - TENS (transcutaneous electrical nerve stimulation)
  - Exercise
  - Heat/Cold

Cavalieri TA. Pain management in the elderly. J Am Osteopath Assoc. 2002;*102*:481-485.

Ferrell BA, Josephson KR, Pollan AM, Loy S, Ferrell BR. A randomized trial of walking versus physical methods for chronic pain management. *Aging (Milano)*. 1997;*9*(1-2):99-105.

AEC

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Suggestions from a Geriatrician—

- Centering treatment targets around stressors may often lead to better outcomes than managing only the pathology itself.

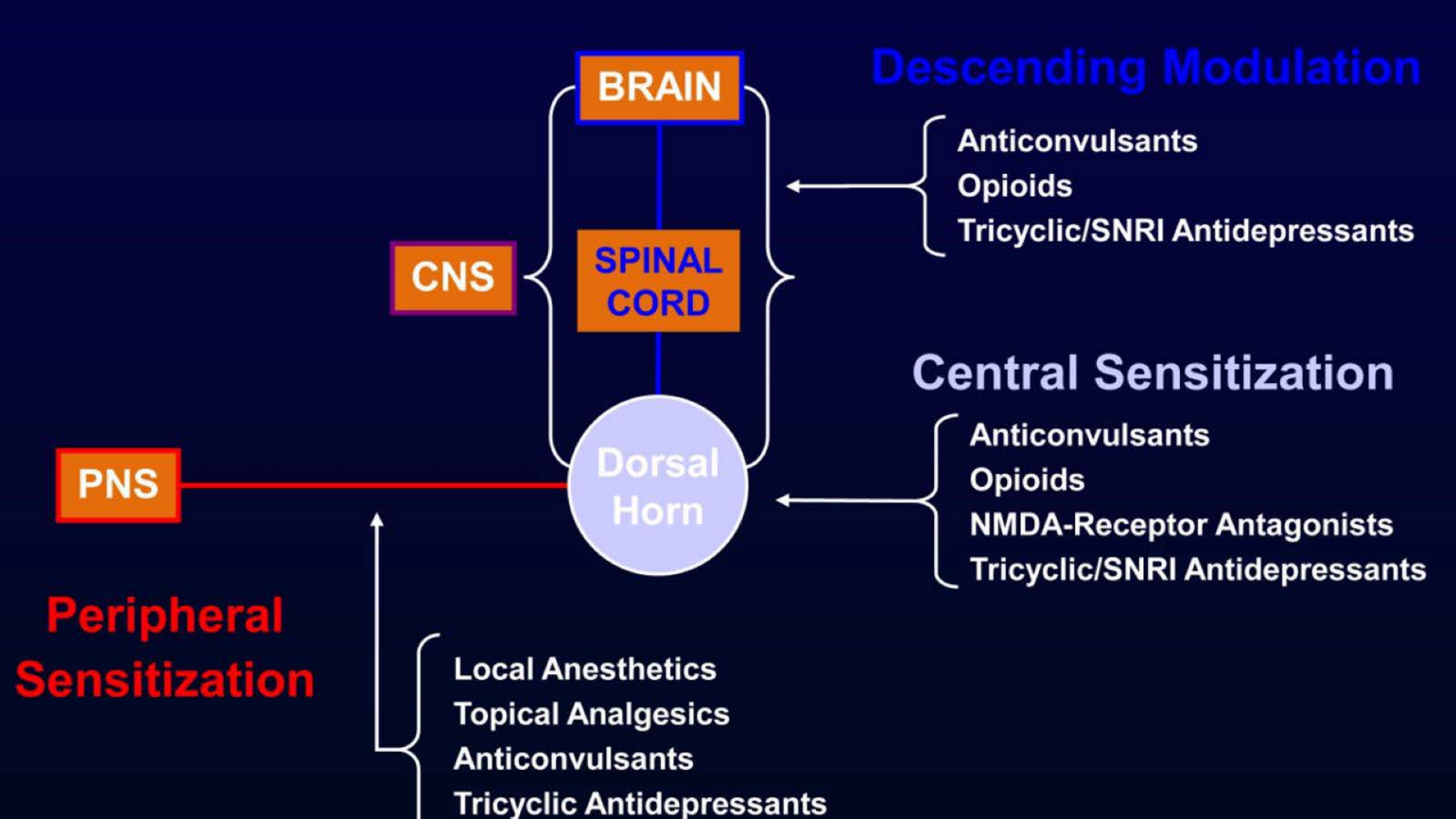
- Non-opioid medications are preferred over opioids for non-cancer pain.

Weiner D, Karp J, Berstein C, et al. Pain Medicine in Older Adults: How Should it Differ? Comprehensive Treatment of Chronic Pain by Medical, Interventional and Behavioral Approaches. Deer T, Ray A, Gordin V et al. (Eds), Spigner, 2012.

Additional Recommendations—

- Persistent pain is multifactorial in cause and REQUIRES both pharmacologic and nonpharmacologic strategies.
- Persistent pain is manageable but not curable.
- The increased potential for drug-drug and drug-disease interactions must always be considered when prescribing in the elderly.

Pharmacological Treatments


BRAIN
CNS
SPINAL CORD
PNS
Dorsal Horn
Descending Modulation
Anticonvulsants
Opioids
Tricyclic/SNRI Antidepressants
Central Sensitization
Anticonvulsants
Opioids
NMDA-Receptor Antagonists
Tricyclic/SNRI Antidepressants
Peripheral Sensitization
Local Anesthetics
Topical Analgesics
Anticonvulsants
Tricyclic Antidepressants

Adjuvant Therapies

- Antidepressants / Anticonvulsants
- Alpha-2 adrenergic agonists
- Local anesthetics
- Corticosteroids
- NMDA receptor agonists
- Muscle relaxants
- Topical creams and gels
- Neuroleptics
- Antihistamines
- Psychostimulants
- Calcitonin

Kaye AD, Baluch A, Scott JT. Pain Management in the Elderly Population: A Review. Ochsner J. 2010 Fall; 10(3): 179-187.

Important Thoughts About Analgesics

- Analgesics should be initiated at the lowest effective dose.
- Analgesics should be titrated upward slowly using the mantra "start low and go slow" to achieve pain control.
- Medications used on a schedule rather than as needed are often preferred for long-standing pain.
  - if you see as needed oxycodone being used routinely every 4 hours… consider oxycodone ER.

Non-Opioid Options

Non-Opioid Options

- Acetaminophen (APAP)—
  - Routine APAP is usually considered the first-line treatment in the management of mild persistent pain in the older adult.
    - it's much safer compared to other analgesics (particularly nonsteroidal anti-inflammatory drugs and opioids).
  - The maximum safe dose in geriatric adults is 3 grams in 24 hours due to potential liver toxicity.*

*For patients with underlying liver disease or those that consume more than 3 alcoholic beverages per day, only 2 grams of APAP is recommended.

Weiner D, Karp JKuehn BM. FDA focuses on drugs and liver damage: labeling and other changes for acetaminophen. JAMA 2009; 302:369.

Non-Opioid Options

- NSAIDs—
  - In general, nonsteroidal anti-inflammatory drugs (NSAIDs) should be avoided and are not preferred in older adults; if they are used please ensure pain is nociceptive and as short of course as possible is used.
    - naproxen may be a more reasonable choice in patients at risk of cardiovascular disease.[1]
    - celecoxib may be a more be a more reasonable choice in patients at risk of gastrointestinal hemorrhage.[2]
  - If NSAIDs are selected, PPIs or misoprostol are recommended for GI prophylaxis unless on a COX-2.

1. Coxib and traditional NSAID Trialists' (CNT) Collaboration, Bhala N, Emberson J, et al. Vascular and upper gastrointestinal effects of non-steroidal anti-inflammatory drugs: meta-analyses of individual participant data from randomised trials. Lancet 2013; 382:769.

2. Weiner D, Scheiman JM, Hindley CE. Strategies to optimize treatment with NSAIDs in patients at risk for gastrointestinal and cardiovascular adverse events. Clin Ther 2010; 32:667.

Injections

- Other options—
  - Steroid injections (e.g., joint injections, trigger point injections)

Understanding Analgesics

Mechanism of Action of Pain Relief

- **Antconvulsants**
  - sodium-channel blockers (oxcarbazepine)
  - calcium-channel blockade (gabapentin)
- **Antidepressants**
  - inhibit reuptake of norepinephrine and serotonin into presynaptic neurons (duloxetine)
  - sodium-channel blockade (tricyclics)
- **Topical Analgesics**
  - sodium-channel blockade (lidocaine patch 5%)
  - vanilloid receptor (capsaicin)
- **Opioids**
  - block neurotransmitter-release by nociceptive fibers, thus decreasing transmission of pain-producing signals (oxycodone)

Non-Opioid Option - Anticonvulsants

- Anticonvulsants—
  - Pregabalin and gabapentin have been shown to be effective in the treatment of neuropathic pain

Non-Opioid Option - Anticonvulsants

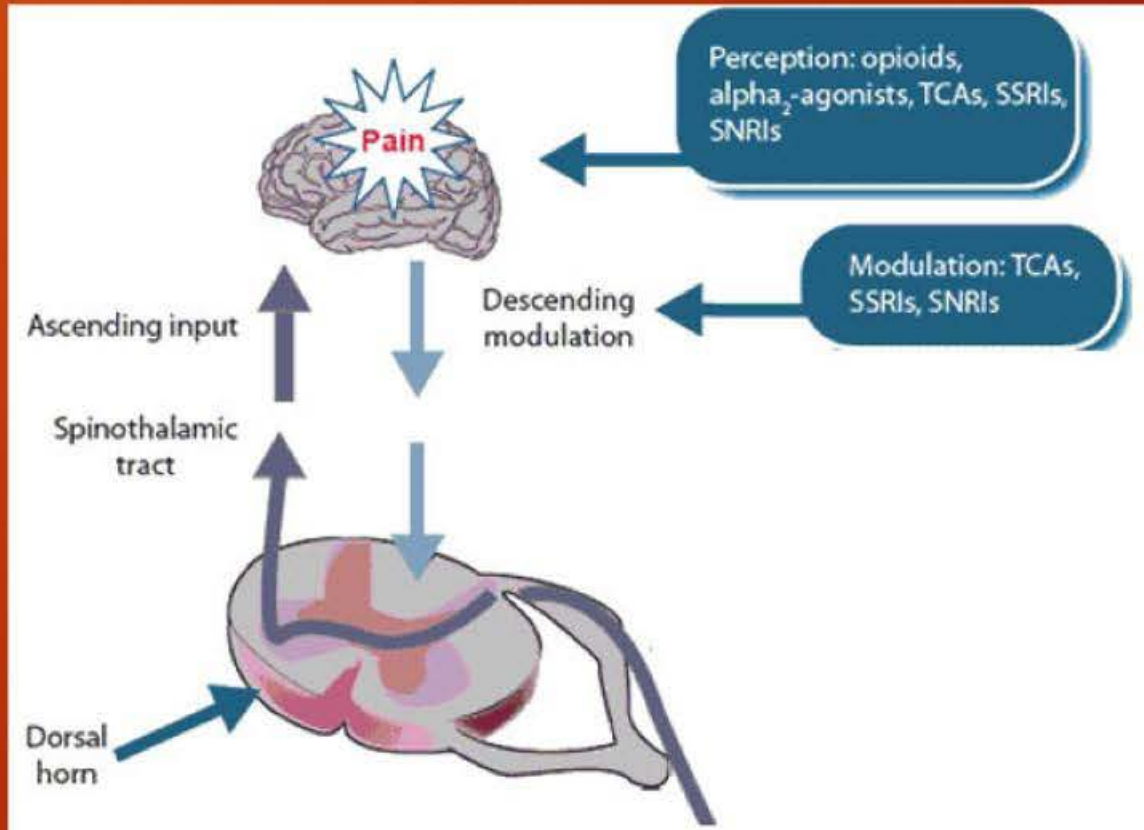
- Pregabalin and Gabapentin
  - Antiepileptic drug
  - They are excreted renally as unchanged drug and dose reduction with renal insufficiency is necessary
  - Gabapentin
    - requires slower dosing (100mg BID with increases every 3-7 days) with a maximum of 3600mg/d.
  - Pregabalin
    - can be titrated quicker with doses of 25-50mg BID increased by 25-50mg every 2-3 days

Non-Opioid Option - Anticonvulsants

- Oxcarbazepine—
  - Tends to be better for trigeminal neuralgia

Non-Opioid Option - Antidepressants

- **Antidepressants**—
  - To a lesser extent SSRIs
  - SNRIs
  - TCAs (not recommended in geriatrics)
  - Tramadol (to some extent)
    - avoid if seizure threshold is low!



Note: all of these have falls associated with them

Non-Opioid Option - Antidepressants

- Duloxetine
  - SNRI approved for—
    - diabetic peripheral neuropathy
    - fibromyalgia
    - chronic low back pain
    - osteoarthritis knee pain
  - Usually started at 20-30mg/d for 1-2 weeks then increased to 40-60mg/d
  - Side effects include
    - nausea
    - diarrhea
    - somulence or fatigue
    - hyponatremia
  - Be careful in any patient with liver disease or heavy EtOH
  - Should be considered in moderate to severe persistent pain

Non-Opioid Option - Antidepressants

- Venlafaxine and Milnacipran
  - Venlafaxine behaves like and SSRI until at least 112.5mg (some studies up to 150mg). So higher doses are often required
  - Milnacipran has the greatest affinity for norepineprhine

- Mirtazapine
  - Technically an atypical tetracyclic antidepressant
  - Beneficial in the adjuvant treatment of anxiety, agitation, insomnia and low appetite
  - Hits histatmine receptors so can be anticholinergic and has a higher incidence of hyponatremia than other antidepressants at higher doses

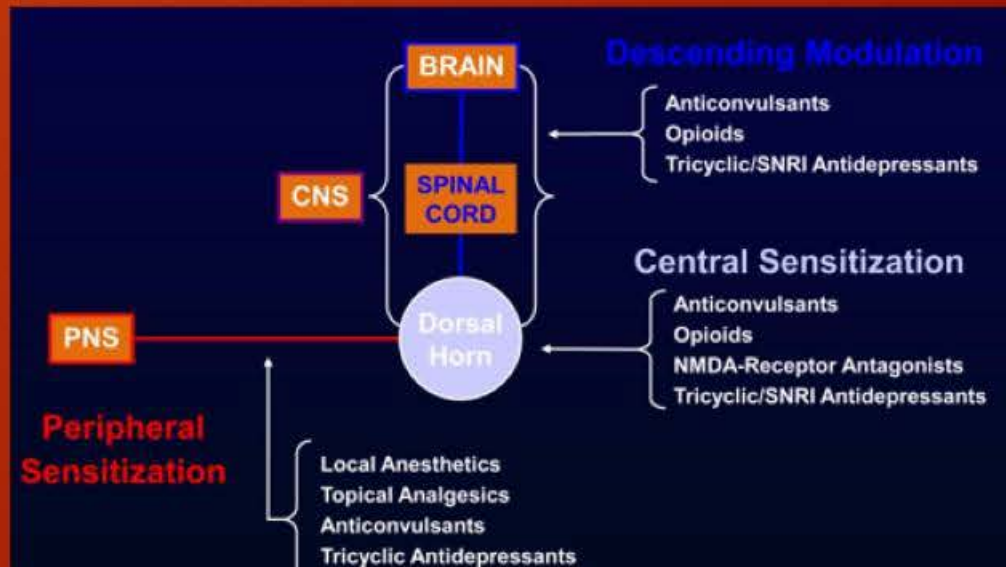
Non-Opioid Options - Glutamate Antagonists

- Dextromethorphan
  - Well known as an oral cough suppressant, but it's also an NMDA receptor antagonist and a serotonin reuptake transport inhibitor
  - Co-administration with quinidine maintains therapeutic levels for a longer than usual period of time

Non-Opioid Options - Glutamate Antagonists

- NMDA receptor antagonists
  - *N*-methyl-D-aspartate receptor (NMDAR) activity contributes to central sensitization in certain types of neuropathic pain.
    - Ketamine and memantine are the most commonly prescribed

METHADONE



Zhou H, Chen S, Pan H. Targeting N-methyl-D-aspartate receptors for treatment of neuropathic pain. Expert Rev Clin Pharmacol. 2011 May 1; 4(3): 379-388.

Non-Opioid Option - Topical Analgesics

- Topical Analgesics—
  - Topical analgesics have the advantage of rarely (but can) causing systemic adverse effects, and may be a good option in the older patient.
    - topical therapy (e.g., diclofenac, capsaicin, lidocaine)

Non-Opioid Option - Alpha$_2$ Agonists

- Tizanadine—
  - Anti-nociceptive activity
  - Works by alternating serotonergic activity in the dorsal horn
  - Often used as an anti-spastic for muscle spasms

Non-Opioid Option - 5-HT_3 antagonists

- Ondansetron—
  - Anti-nociceptive activity
  - Works by modulating dorsal horn function, stimulating norepinephrine and 5-HT release
  - Also potentiates mu-opioid receptors, decreasing neuronal excitability
  - Often used as an anti-nauseant

Non-Opioid Option - GABA inhibitors

- Baclofen—
  - Muscle relaxer that induces analgesia
  - Works by inhibiting GABA-B receptors
  - Evidence in TGN
  - Often used as an antispastic for muscle spasms

Opioid Options

Differences to Consider in the Elderly

01

Older adults may experience higher peak and longer duration of drug action.

02

The inability to excrete opioids make older adults more suceptible to sedation and respiratory distress.

03

Older adults (esp frail or the “old-old”) are at risk for too little or too much.

Guidelines for Prescribing Opioids

Opioids are not first-line or routine therapy for chronic pain	Establish and measure goals for pain and function	Discuss benefits and risks and availability of nonopioid therapies with pt	Use immediate-release opioids when starting	Start low and go slow
When opioids are needed for acute pain, prescribe no more than needed	Do not prescribe ER/LA opioids for acute pain	Follow-up and re-evaluate risk of harm; reduce dose or taper and discontinue if needed	Evaluate risk factors for opioid-related harms	Check PDMP for high dosages and prescriptions from other providers
	Use urine drug testing to identify prescribed substances and undisclosed use	Avoid concurrent benzodiazepine and opioid prescribing	Arrange treatment for opioid use disorder if needed	

Safest Options in Renal Failure

- Safest Options include—
  - Fentanyl
  - Methadone

- In general if pts have renal failure—
  - If the GFR is between 30-59 decrease the dose by approximately 50-75%
  - If the GFR is between 15-29 decrease the dose by approximately 50-75% and decrease the dosing interval
  - If the GFR is < 15, use opioids PRN only

Opioids to Avoid in the Elderly

- Meperidine
- Pentazocine
- Propoxyphene (discontinued worldwide)

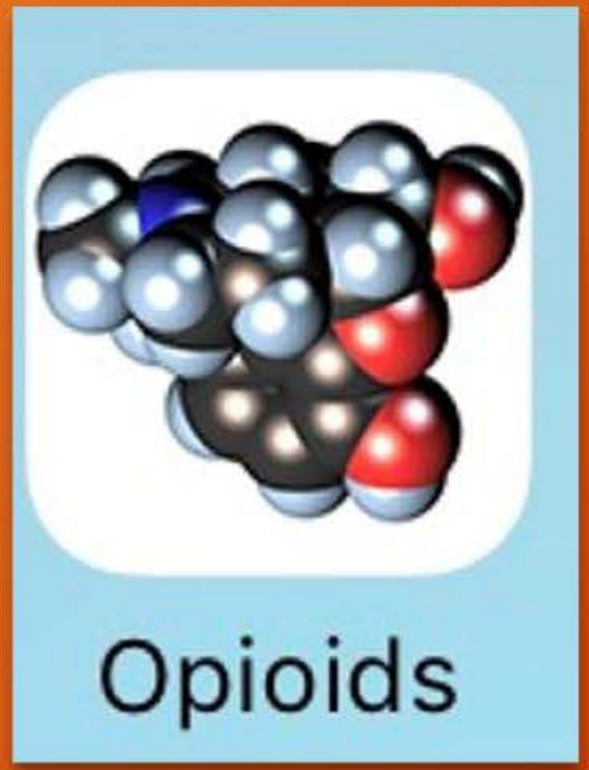
Characteristics of Opioids

Opioid	Potency	Who Step	Side Effects	Additional Considerations
Tramadol	Weak	2	Constipation, nausea, appetite loss, fatigue, dizziness, sweating	Lowers sz threshold; promotes serotonin release
Codeine	Weak	2	Constipation, nausea, appetite loss, fatigue, dizziness, sweating, falls	Variability in metabolism
Hydrocodone	Weak	2	Anxiety, constipation, dry mouth, headache, nausea	Usually formulated with APAP; liver issues
Morphine	Strong	3	Constipation, nausea, vomiting, appetite loss	Metabolites accumulate in renal insufficiency
Oxycodone	Strong	3	Constipation, dizziness, fatigue, heartburn, nausea, vomiting	No parenteral form
Hydromorphone	Strong	3	Constipation, dizziness, fatigue, dry mouth	Safer in renal insufficiency
Fentanyl	Strong	3	Constipation, dizziness, fatigue, heartburn, nausea, vomiting	Prolonged elimination
Methadone	Strong	3	Constipation, dizziness, dry mouth, headache, sweating, nausea	Multiple potential drug interactions; safer in renal dz
Oxymorphone	Strong	3	Constipation, dizziness, anxiety, fatigue, nausea	Caution in renal dz; give on empty stomach

When to Consider Long-Acting Opioids

- When noting that more than 4 doses of short-acting opioids are being used consider longer-acting agents

There’s an App for That



- App is Opioids

Thank you!

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