# Pain Control in the Era of the Opioid Epidemic:

## Perspectives and Pearls of Wisdom from Various Pharmacy Practice Settings

Colorado Pharmacists Society Quarterly Webinar

Wednesday, October 3, 2018

11:30 am - 12:30 pm

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# Program Outline

- Describe the risks, benefits, and MOAs of non-opioid medications for chronic non-cancer pain
- Summarize the importance and benefit of non-medication interventions
- Identify compounded medications of clinical use in managing pain conditions
- Explain the concept of "ALTO" = Alternatives to Opioids and discuss utilization in pain treatment pathways for specific indications
- Discuss the implementation of an ED opioid-reduction process and policy for acute pain

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# Presenters:

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# Disclosure Statement – no financial relationships to disclose

## Statement of Disclosure

The presenters have no relevant financial relationships with commercial interests pertaining to the content presented in this program.

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# Housekeeping:

- Use Zoom chat box to submit questions
- Webinar is accredited for 1.0 contact hour of knowledge-based CPE
- Webinar will be recorded for on-demand viewing

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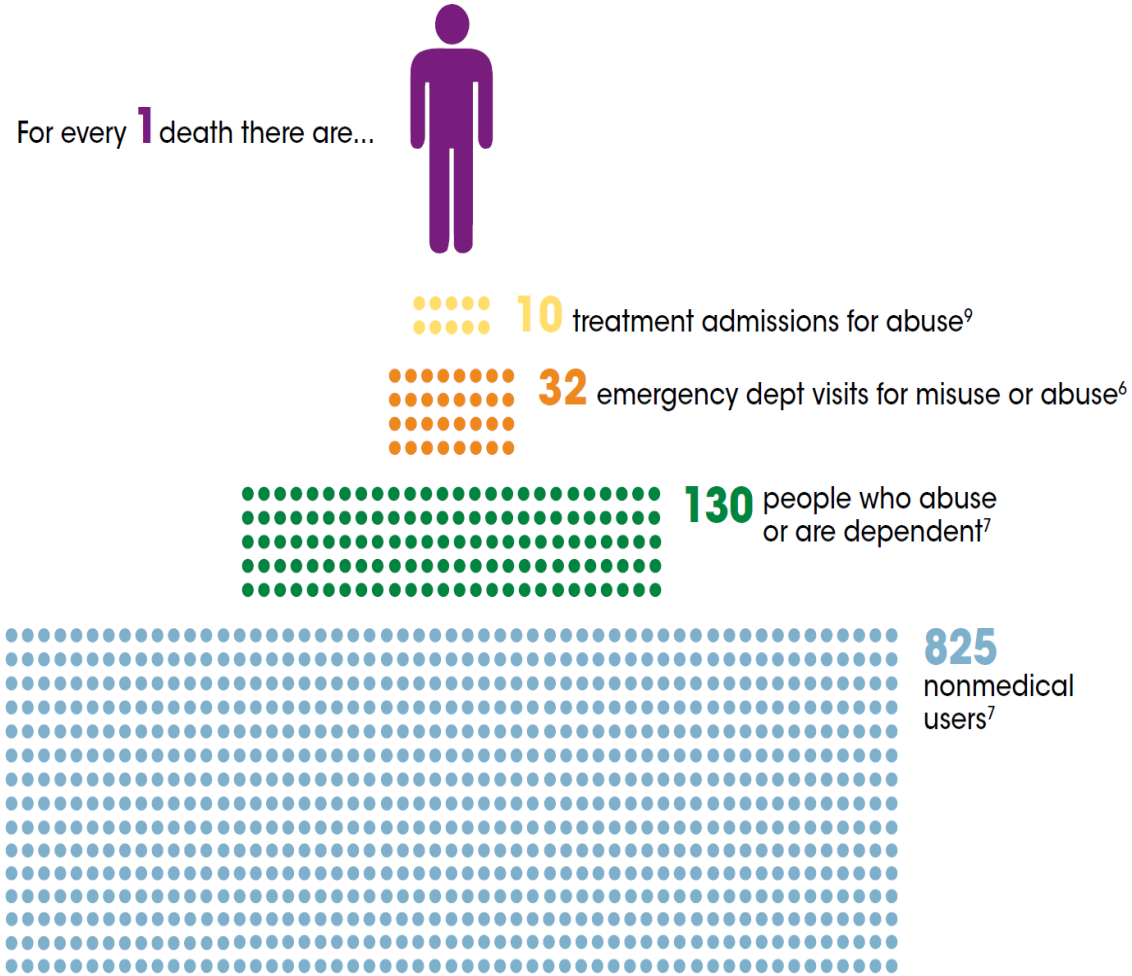
# Opioid Concerns

- Opioids were involved in 42,249 deaths in 2016
- 500% increase since 1999
- 40% of all opioid overdose deaths involve a prescription opioid
- More than 11 million people abused prescription opioids in 2016




Rudd RA et al. MMWR Morb Mortal Wkly Rep. ePub: 16 December 2016.
https://www.cdc.gov/drugoverdose/prevention/opioid-use-disorder.html
CDC Prescription Painkiller Overdose Policy Impact Brief, Nov 2011. http://www.cdc.gov/homeandrecreationalsafety/rxbrief/index.html

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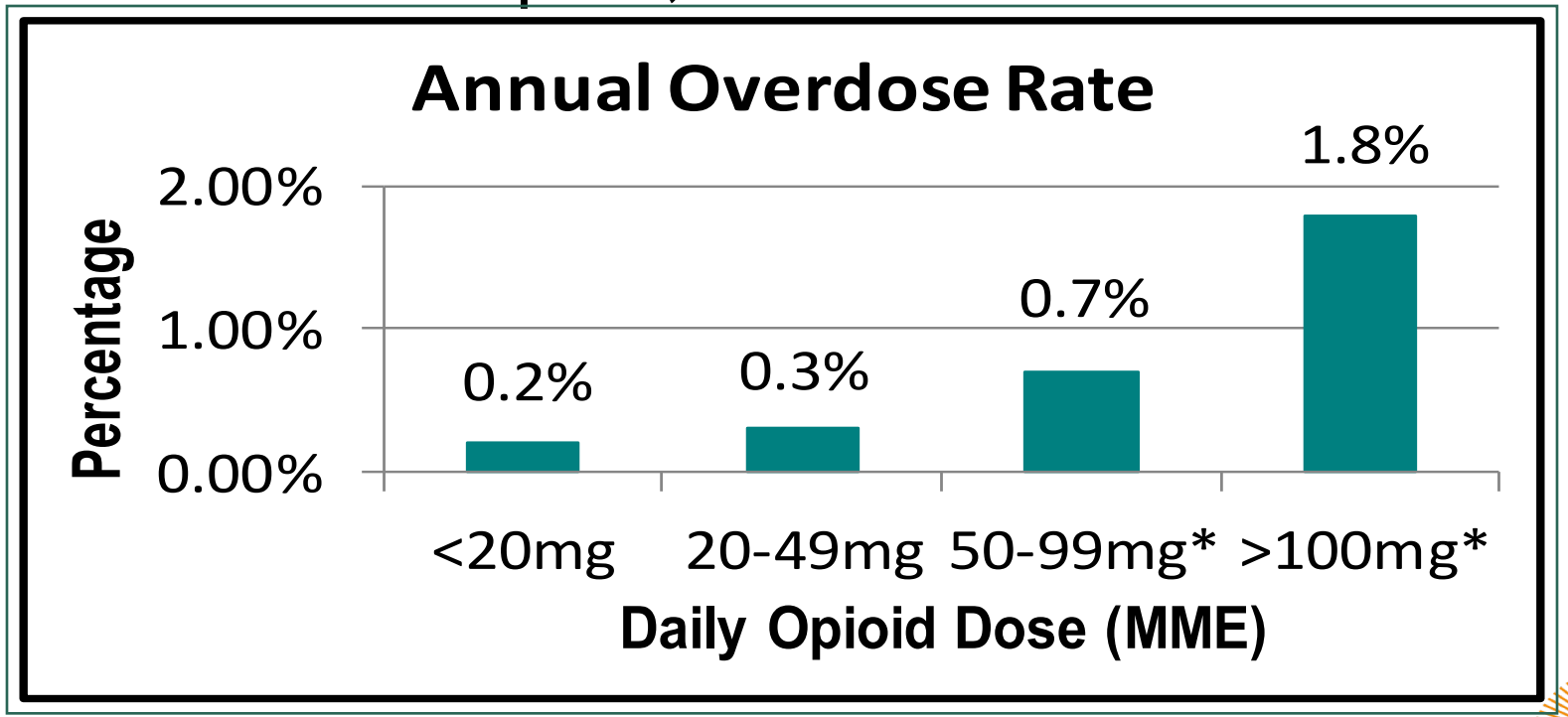
# Dunn - Seattle HMO Study

- Designed to determine the opioid overdose risk in patients (n=9940) who received 3+ opioid prescriptions within 90 days for chronic non-cancer pain, 1997-2005




Dunn K et al. Intern Med 2010; 152:85-92

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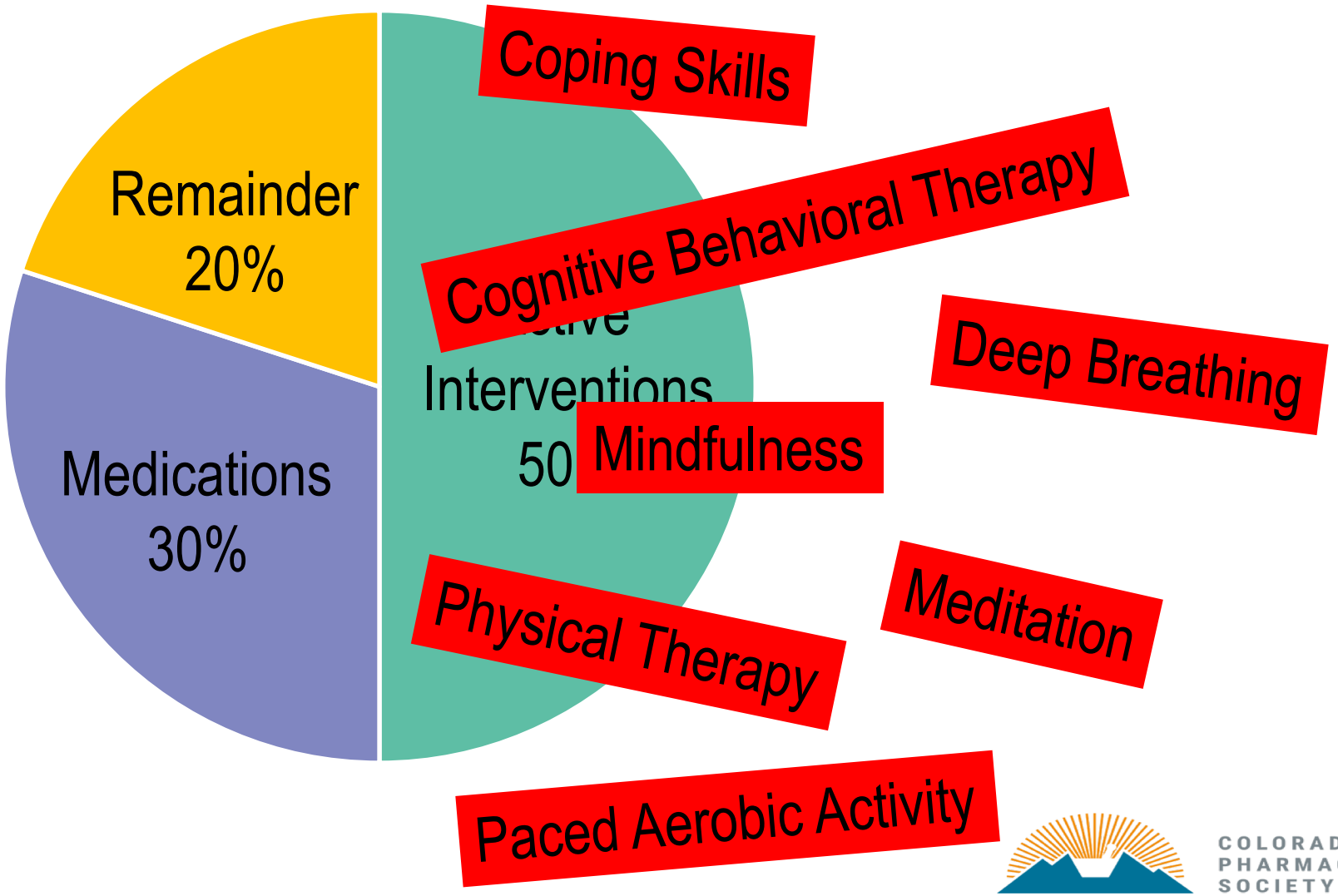
# Pain Management Pie Chart

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# Non-Medication Options

- Mindfulness-Based Stress Reduction and Cognitive Behavioral Therapy have been shown to improve pain 50-60%
- Physical therapy
  - Development of a Home Exercise Program
- Mental Health for coping skills and help manage depression, anxiety, trauma and /or stressors
  - Very difficult to manage pain with any medications if not managing depression/anxiety

# Medication Management

- Goals are to use the lowest effective dose to support activity/function
- Establish SMART goals to determine medication efficacy:
  - Specific
  - Measurable
  - Action oriented
  - Realistic
  - Time dependent

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# MSK and Joint Pain

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# Acetaminophen

- MOA: prostaglandin reduction in the CNS
- Uses – osteoarthritis, opioid potentiation, mild to moderate pain
- Considerations
  - Liver failure
- Multiple OTCs
- Max 3 gm/day (2 gm/day in liver failure)

# Acetaminophen for OA

## For

- OARSI 2014 – knee in patients without comorbidities
- ACR 2012 – knee and hip
  - 2018 update pending
- EULAR 2003/2004 – hip and knee (first line)

## Inconclusive

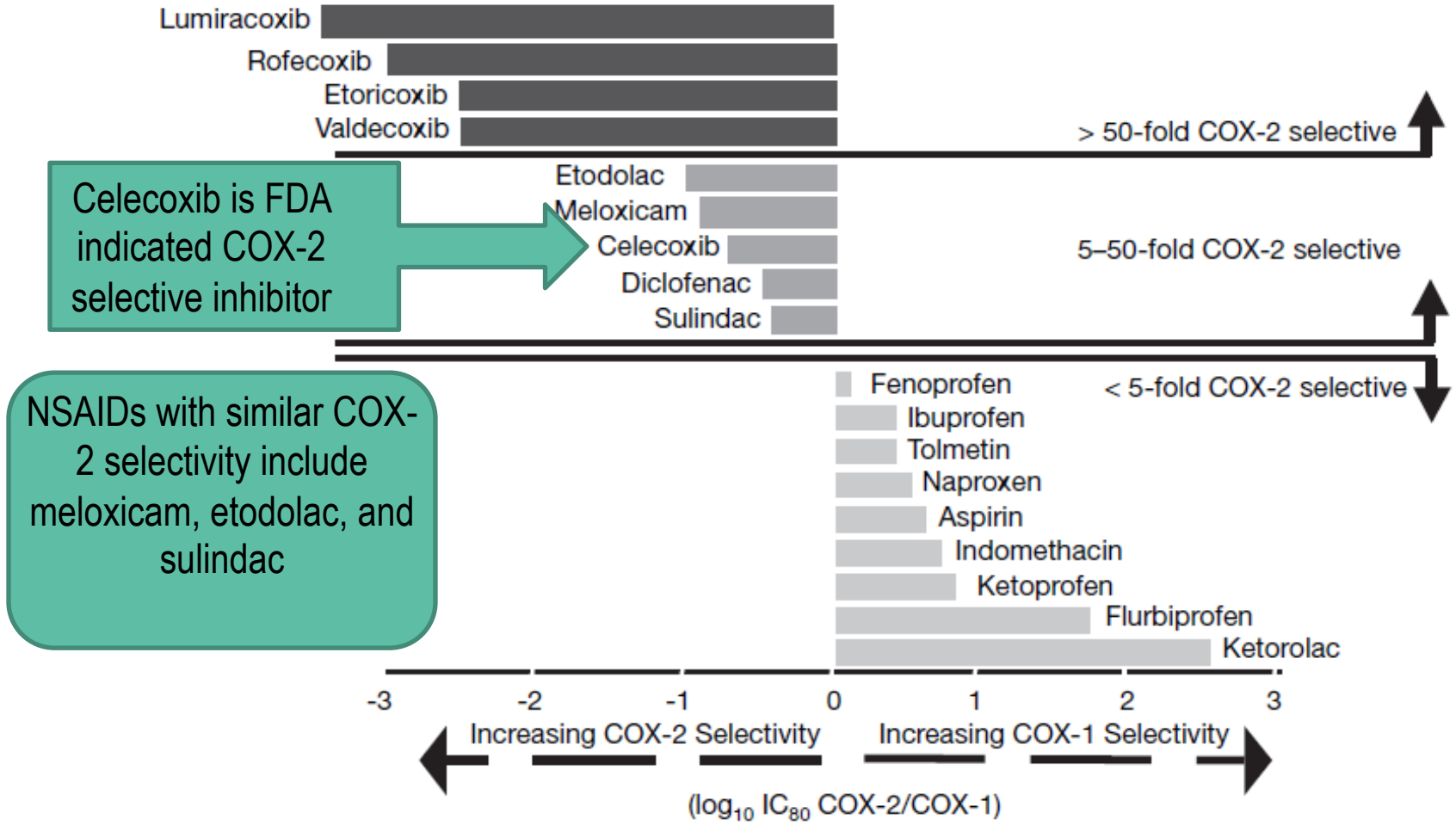
- OARSI 2014 – knee in patient with comorbidities
- AAOS 2013 – knee

McAlindon TE et al. Osteoarthritis and Cartilage 22 (2014) 363e388
Hochberg et al. Arthritis Care & Research Vol. 64, No. 4, April 2012, pp 465– 474.
Jevsevar DS et al J Bone Joint Surg Am. 2013 Oct 16;95(20):1885-6
Zhang W et al. Ann Rheum Dis, Published Online First: 7 October 2004; 64: 669 - 681.
Jordan KM et al. Ann Rheum Dis, Publish Online First: 21 July 2003; 62: 1145 - 1155.

# NSAID

- MOA: prostaglandin reduction at site of inflammation
- Uses – osteoarthritis, MSK pain, etc
- Considerations
  - Renal/hepatic impairment
  - GI upset
  - Age
  - Anticoagulation
  - CV risk

# COX Selectivity




Celecoxib is FDA indicated COX-2 selective inhibitor

NSAIDs with similar COX-2 selectivity include meloxicam, etodolac, and sulindac

Herndon C, et al. *Pharmacotherapy* 2008;28(6):788-805.

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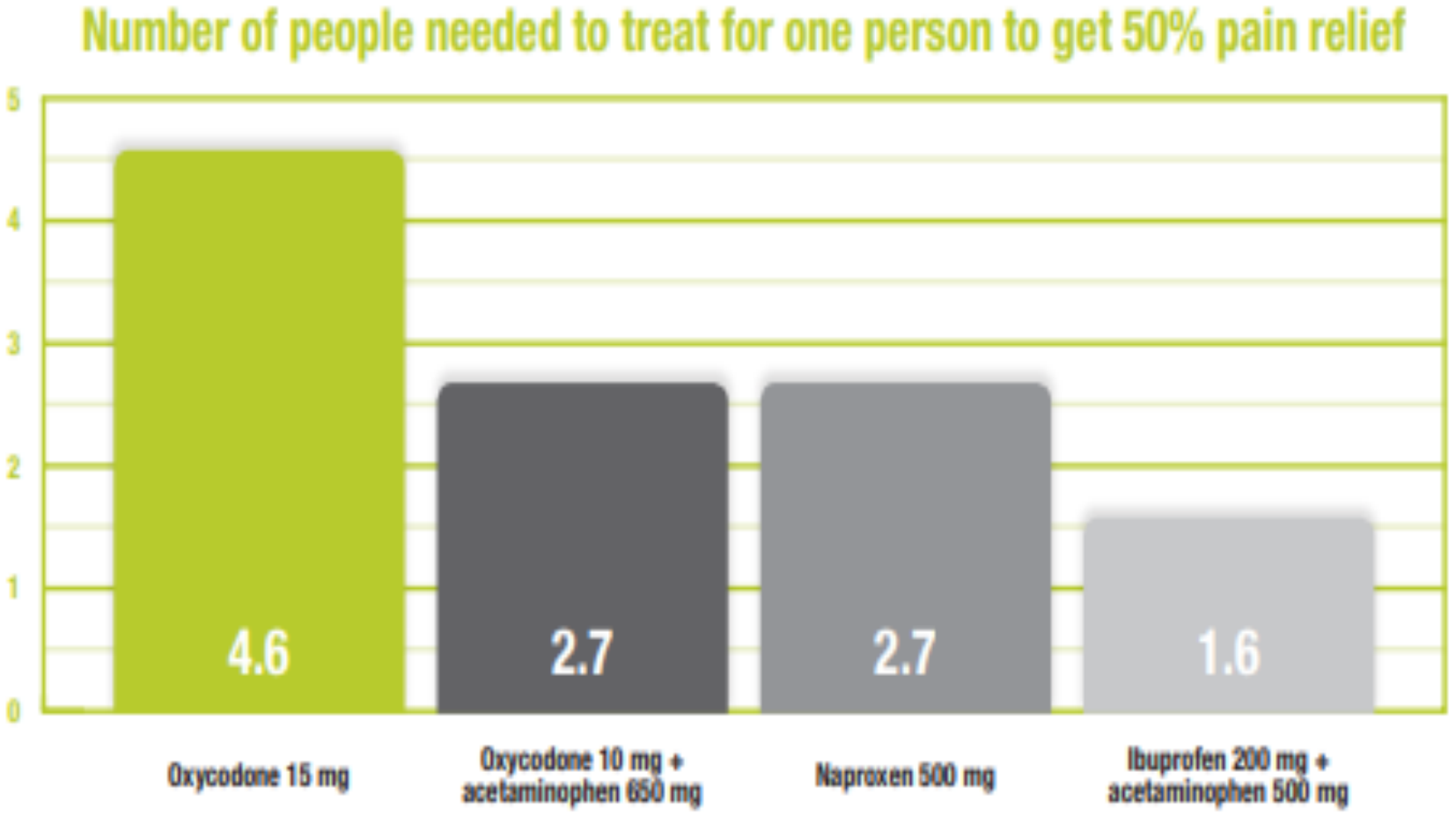
# NSAID + APAP > Opioid




Derry C et al. Cochrane Database Syst Rev. 2009 Jan 21;(1):CD004234.
Derry C et al. Cochrane Database Syst Rev. 2013 Jun 24;(6):CD010210.
Gaskell H et al. Cochrane Database Syst Rev. 2009 Jul 8;(3):CD002763.
Holgate A et al. Cochrane Database Syst Rev. 2004;(1):CD004137.
Moore PA et al. J Am Dent Assoc. 2013 Aug;144(8):898-908.

# Neuropathy and Radiculopathy

# Antidepressants

- Analgesic and anti-depressant properties are independent
  - Analgesic effect usually observed before anti-depressant effect
- TCAs are likely the most effective and are the most well studied
- SNRIs may also be beneficial
- Limited data suggest some benefit of bupropion
- SSRIs are the least effective for neuropathic pain

Dworkin RH, et al. Pain 2007;132:237–251.
Attal N, et al. European Journal of Neurology 2006;13:1153-1169.

# Tricyclic Antidepressants

- MOA: serotonin and norepinephrine reuptake inhibition, sodium channel blockade
- Target dose
  - Amitriptyine: 75-125mg/day
  - Nortriptyline: 50-100mg/day
- Adequate Trial: 6-8 weeks
- Considerations:
  - Age, anticholinergic effects, QT prolongation, sedation

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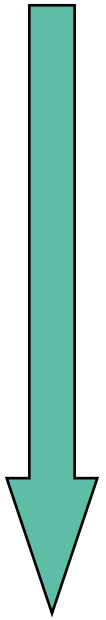
# TCA– Adverse Effects

- Blurred vision
- Cognitive changes
- Constipation
- Dry mouth
- Orthostatic hypotension
- Sedation
- Sexual Dysfunction
- Tachycardia
- Urinary retention

**Least**



**Most**

- Desipramine
- Nortriptyline
- Imipramine
- Doxepin
- Amitriptyline

# SNRIs

- MOA: serotonin and norepinephrine reuptake inhibitors
- DOSE
  - Venlafaxine SR 150-225mg daily
  - Duloxetine 30-60mg daily
- DURATION
  - 2-4 weeks at maximum tolerated dose
- Considerations
  - Hepatic impairment and HTN

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# Anticonvulsants

- Gabapentin and pregabalin are the most well studied
- MOA: calcium channel ligands
- Generally well tolerated
  - Major side effect is sedation and/or dizziness upon initiation

Dworkin RH, et al. Pain 2007;132:237–251.
Attal N, et al. European Journal of Neurology 2006;13:1153-1169.

# Anticonvulsants

- DOSE
  - Gabapentin target dose is 600mg TID
  - Adjustments needed for renal impairment
- DURATION
  - 4-6 weeks at maximum tolerated dose
- Considerations
  - Renal function
  - Weight gain
  - CHF/edema
  - Mood
  - Tremor
  - Vision changes

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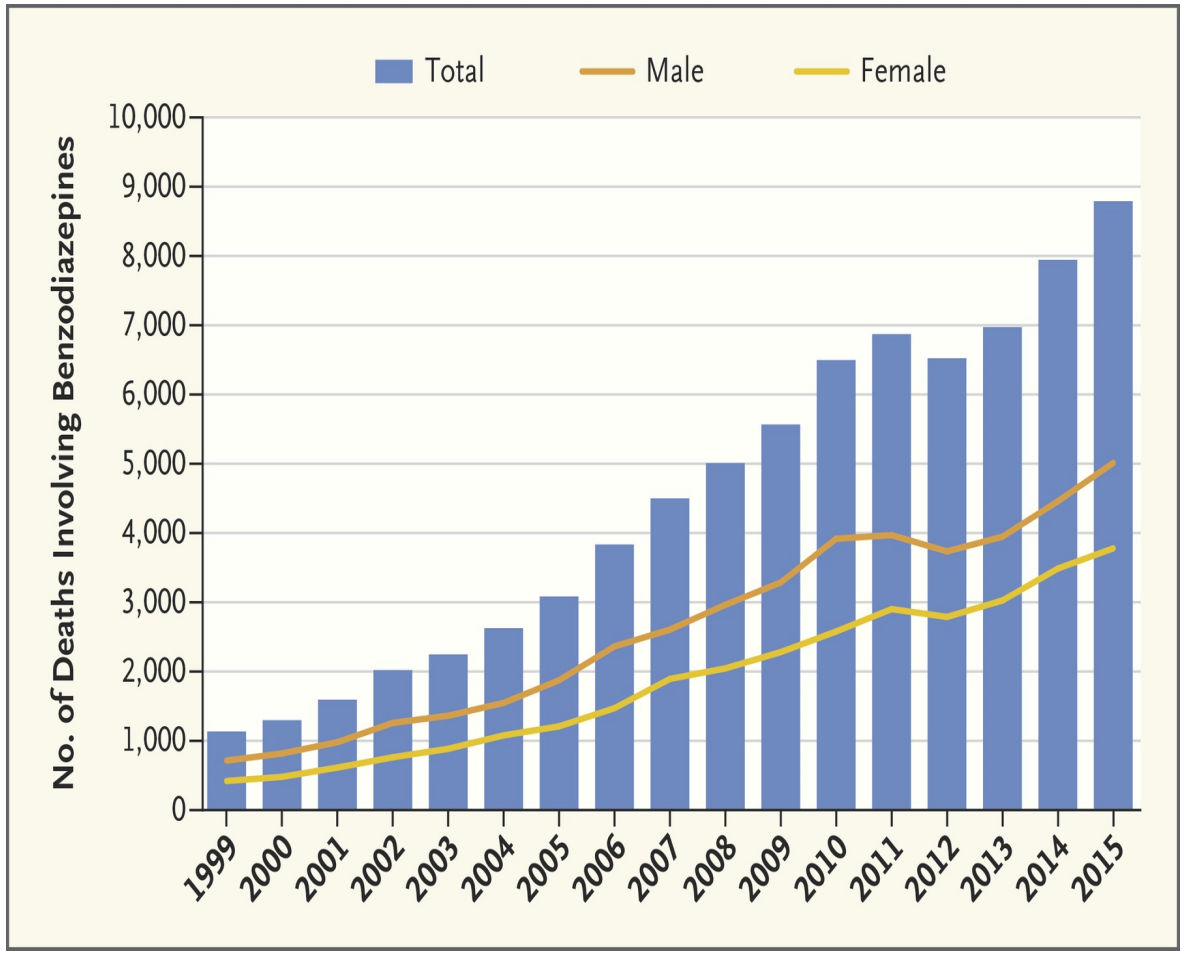
# NOT Recommended

# Benzodiazepines and Hypnotics

- BZDs prescribed in 42.7% of overdose cases
- BZDs were involved in 31% of the opioid-analgesic poisoning deaths in 2011
- Sedative hypnotics prescribed in 74.4% of overdose cases





Coolen P et al. MMWR 2009;58(42):1171-1175
Dunn K et al. Intern Med 2010; 152:85-92
Lembke et al. N Engl J Med 2018; 378:693-695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# Muscle Relaxants

- Muscle relaxants should only be used for 2-3 week periods on a limited basis
  - No data regarding the chronic use of muscle relaxants
- Dunn Study - muscle relaxants prescribed for 52.3% of patients
- Elderly
  - The use of skeletal muscle relaxants was associated with a 40% increase in fracture risk

Dunn K et al. Intern Med 2010; 152:85-92
Peron EP et al. Am J Geriatr Pharmacother. 2011 Feb; 9(1):1-10.

# Pencol Compounding Pharmacy

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## The Use of Transdermal Pain Creams

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Pain affects more Americans than diabetes, heart disease, and cancer combined and is cited as the most common reason that Americans access the healthcare system [3].

A survey by the National Institutes of Health found that 21% to 30% of adults reported pain lasting more than 24 hours during the course of a given month, and the most commonly reported types of pain were:

- low back pain (27%) Hobbies
- severe headache or migraines (15%)
- neck pain (15%)
- facial ache or pain (4%) [2].

As a result of the high number of pain sufferers, over 260 million prescriptions for opioid painkillers are written each year [4].

Chronic pain affects more than 1.5 billion people worldwide, including nearly 100 million American adults, and results in a national economic burden of up to $635 billion dollars per year in medical treatment and lost productivity in the workforce due to work disability and medical appointments [1].

Chronic pain is the most common cause for long-term work disability [3].

The most common chronic pain related conditions include:

- severe headaches
- musculoskeletal injuries, such as back or neck pain
- Arthritis
- Cancer
- neuropathic pain

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# Reasons to Use Transdermal Pain Medication

1. Opioid addiction –decrease the 260 million RX's

a) Currently, 46 people a day die from prescription drug overdoses in the US [4]. Opioid analgesics account for nearly 60% of drug overdose deaths, which is higher than the number of deaths caused from overdose of all illicit drugs combined, including heroin and cocaine

b) Potential Prescriber challenges / Restrictions

2. Side-effects of current oral medication used in the treatment of pain

3) Poly-Pharmacy

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# Common Side Effects of Oral Pain Medication

| | |
|---|---|
| Oral Pain Medication | Common Side Effects |
| NSAIDS | GI toxicity and complications such as bleeding, perforation, and ulcers; nephrotoxicity, cardiovascular disease, and cartilage degeneration. |
| Acetaminophen | Toxic ingestion: renal insufficiency and acute liver failure |
| Narcotics (Opioids) | CNS effects such as sedation and decreased cognition |
| Muscle relaxants | CNS effects such as dizziness and drowsiness |
| Tricyclic antidepressants | CNS effects such as constipation, dry mouth, and tachycardia |

# Transdermal Creams

Transdermal pain compounds are typically prepared by using either a single or combination of multiple Active Pharmaceutical Ingredients (API's) in a specially designed compounding base. These bases are transdermal drug delivery systems designed to deliver 1 or more drugs through the skin.

# Benefits of Transdermal Pain Medication

1. Customizable dosages, formulations, and drug combinations
2. Potential for lower systemic absorption and minimization of side effects.
3. Convenience and potential for better adherence to treatment regimen – inability to swallow oral pain medications
4. Minimizing the risk of abuse and addiction

# Types of Pain Most Often Treated

1. Musculoskeletal pain
2. Neuropathy
3. Arthritic
4. Postoperative pain

# The Most Common Categories Of API'S Used In Transdermal Creams

1. Non-Steroidal Anti-Inflammatory Drugs (NSAIDS
    a) Ibuprofen
    b) Ketoprofen
    c) Diclofenac

2. Muscle Relaxants
    a) Cyclobenzaprine

3. Anticonvulsants
    a) Gabapentin

4. TCA
    a) Amitriptyline

5. Anesthetics
    a) Lidocaine
    b) Tetracaine

6. Other
    a) Ketamine

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Refills: ____

| Patient | Diagnosis Code(s) |
|---|---|
| DOB | Allergies |
| Address | Phone(s) |
| Notes | |

**Worker's Compensation Claim Information:**

| Insurance Company | Claim No |
|---|---|
| Date of Injury | Adjuster Phone |

***Please fax the patient demographic and insurance information with this form***

**Quantity Prescribed**

☐ 90 GM SIG: Apply 1 gram to affected area 3 times daily

☐ 120 GM SIG: Apply 1 gram to affected area 3-4 times daily

Refills: _____

☐ Other _____ GM Alt Sig: _____

1 ☐ Diclofenac 3%, Tetracaine 2%, Cyclobenzaprine 2%

2 ☐ Diclofenac 3%, Tetracaine 2%

3 ☐ Diclofenac 3%, Tetracaine 2%, Amitriptyline 2%

4 ☐ Diclofenac 3%, Tetracaine 2%, Verapamil 6%

5 ☐ Ketoprofen 10%, Lidocaine 2%

6 ☐ Amitriptyline 2%, Gabapentin 6%, Tetracaine 2%, Clonidine 0.2%

7 ☐ *_____ 10%, Baclofen 2%, Amitriptyline 2%, Gabapentin 6%, Tetracaine 2%

8 ☐ *_____ 10%, Baclofen 2%, Amitriptyline 2%, Diclofenac 3%, Gabapentin 6%, Tetracaine 2%, Clonidine 0.2%

9 ☐ *_____ 10%, Baclofen 2%, Amitriptyline 2%, Diclofenac 3%, Gabapentin 6%, Tetracaine 2%

10 ☐ Amantadine 3%, Amitriptyline 2%, Diclofenac 3%, Gabapentin 6%, Tetracaine 2%, Clonidine 0.2%

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# All about the base

- 1. The base is important (water – oil emulsions)
  - A. PCCA – Lipoderm and ActivMax
  - B. Medisca - Lipo Cream Base, Mediderm Cream base, Penderm Cream base
  - C. Letco – Liposome
  - Specially designed bases to carry active ingredients across the epidermis/dermis layers of the skin

# Additional Resources and Articles

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3401865/ - one of my favorite studies, shows the peripheral (lido) and central (keto) actions
- https://www.omicsonline.org/open-access/pain-management-therapy-the-benefits-of-compounded-transdermal-pain-medication-2329-9126.1000188.php?aid=33304 (excellent review article written by Andrea Branvold)
- https://academic.oup.com/painmedicine/article/17/2/230/2460674 -nice study proves how Lipoderm drives drugs through skin (remember this is trunk, cadaver skin – hardest type to penetrate through)
- https://www.mayoclinicproceedings.org/article/S0025-6196(12)01170-6/pdf - interesting regarding topical NSAIDS

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# ALTO Approach for Pain Management

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# Alternatives To Opioids (ALTO)

- Multi-modal non-opiate approach to analgesia for specific conditions
- **Goals:** To utilize non-opiate approaches as first line therapy and educate our patients
  - Opiates will be second line treatment
  - Opiates can be given as rescue medication
  - Discuss realistic pain management goals
  - Discuss addiction potential and side effects of opioids

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# Lidocaine


- Used **topically**, **intravenously**, or as **trigger point injections**
- MSK, migraines, renal colic, abdominal, neuropathic
- Lidocaine patches are great for pain!


- Lidocaine IV doses </= to 1.5 mg/kg over 10 min may be given in non-ICU areas (max 200 mg/dose)
  - When used at low doses, IV lidocaine is generally benign
  - **Caution** with IV use in patients with a severe cardiac history
  - Over 1 hour on the inpatient units

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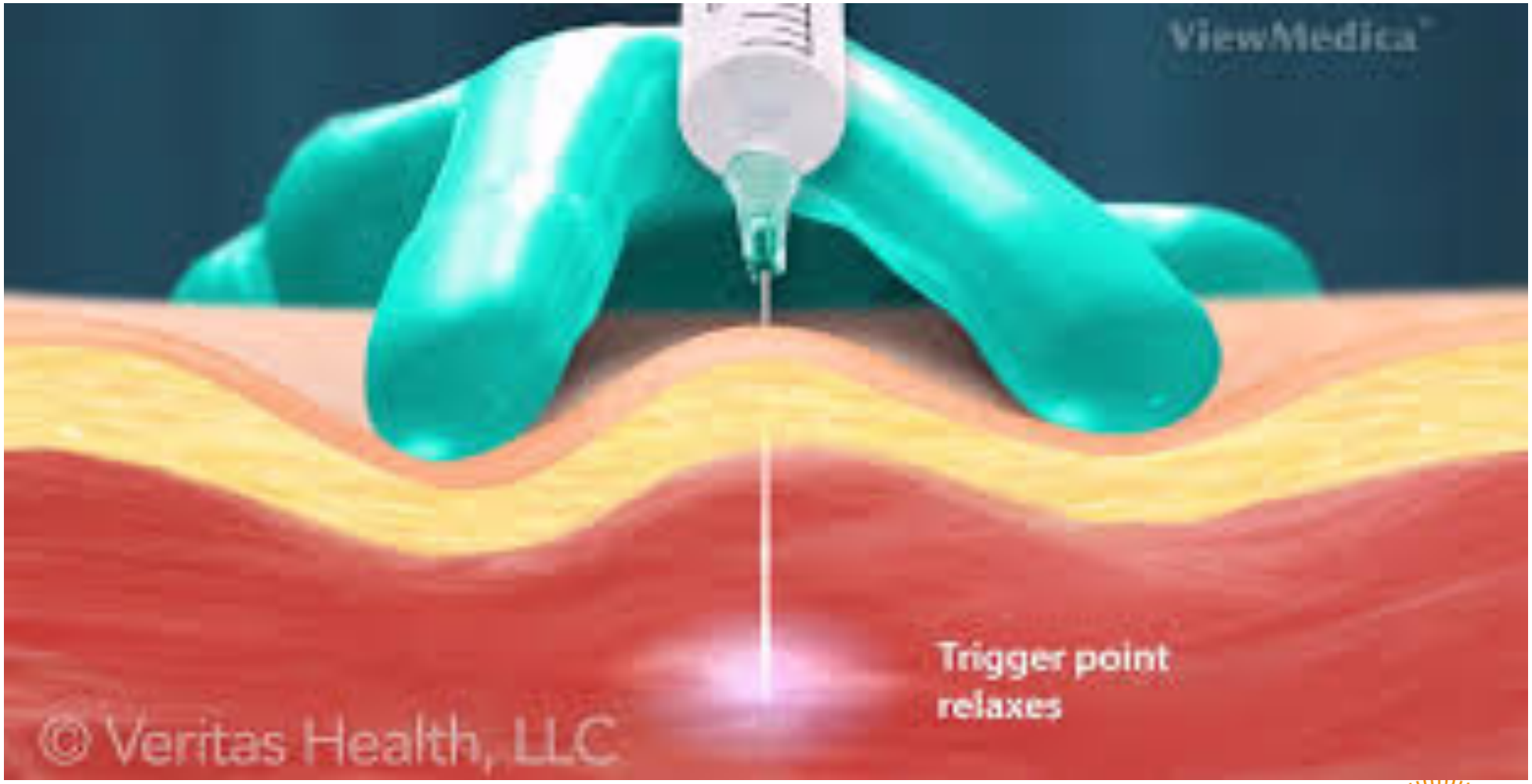
# Trigger Point Injections

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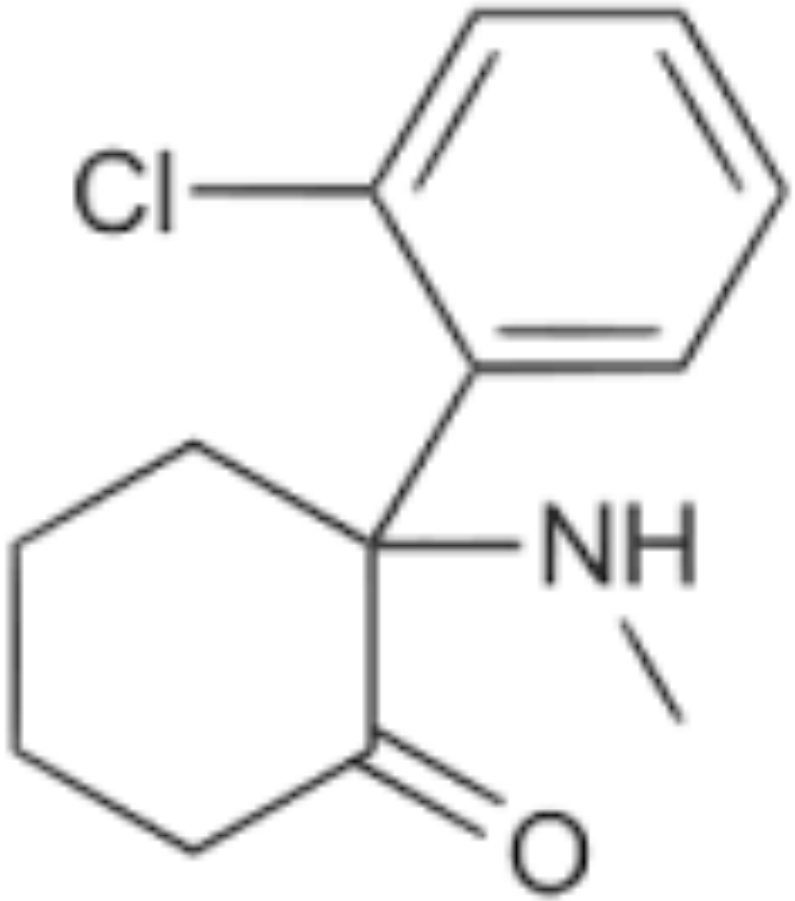
# Ketamine

- Antagonizes NMDA receptors
- When using ketamine at a low dose, it is generally benign
- Used **intranasally** or **intravenously**
- Should not be used in patients with PTSD
- Can be used adjunctively with opioids to reduce opioid requirements

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# Ketamine


- Ketamine use is dose-dependent
- May be used for analgesia
  - Doses </= 0.2 mg/kg via slow IVP or IVPB over 10 min
  - Can be followed by 0.1 mg/kg/hr infusion
  - May be given in non-ICU areas
- Ketamine 50 mg IN can also be given
  - No IV access

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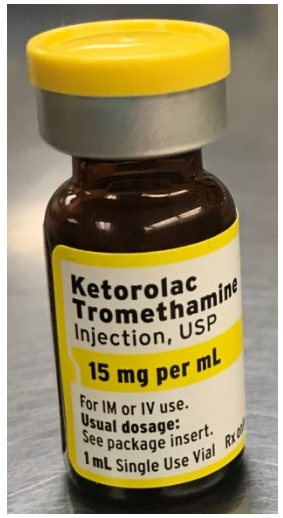
# Other Options

- **Ketorolac**
  - 10-15 mg for everyone!
    - No difference in pain reduction with 30 vs 10 mg*
  - Great for many pain indications including musculoskeletal pain and renal colic
- **Haloperidol**
  - Low dose (1-2.5 mg IV)
  - Great for nausea and abdominal pain
    - Cannabinoid induced hyperemesis

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# ED Pain Treatment Pathways

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# Headache/Migraine

**1st Line/Immediate**

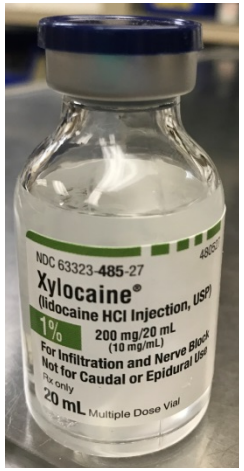
1 L 0.9% NS + high-flow oxygen

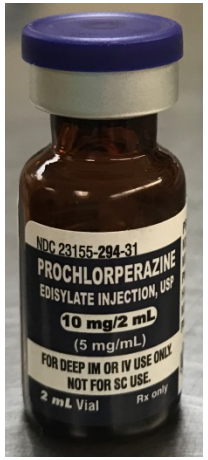
Ketorolac 15 mg IV

Dexamethasone 10 mg IV

Metoclopramide 10 mg IV

Trigger point injection with lidocaine 1%




**2nd Line/Alternative**

APAP 1000 mg PO + IBU 600 mg PO

Promethazine 12.5 mg IV OR prochlorperazine 10 mg IV

DHE 1 mg IV OR Sumatriptan 6 mg SC

Magnesium 1 g IV

Valproic acid 500 mg IV

Lidocaine 1.5 mg/kg IV

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# Musculoskeletal Pain

**Non-IV Options**

APAP 1000 mg PO + IBU 600 mg PO

Cyclobenzaprine 5 mg PO OR diazepam 5 mg PO

Ketamine 50 mg IN

Trigger point injections 1-2 mL lidocaine 1%


**IV Options**

Ketamine 0.2 mg/kg IV + 0.1 mg/kg/hr gtt

Ketorolac 15 mg IV

Dexamethasone 8 mg IV

Diazepam 5 mg IV


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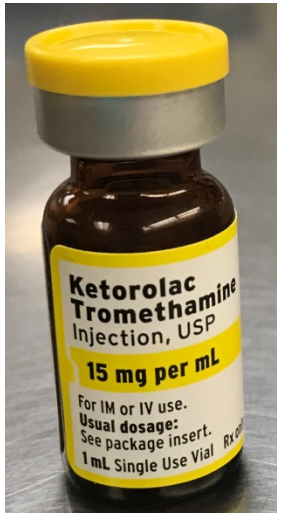
# Renal Colic

**1st Line/Immediate**
Ketorolac 15 mg IV
Acetaminophen 1000 mg PO
1 L 0.9% NS bolus

**2nd Line**
Lidocaine 1.5 mg/kg IV

**Alternative**
DDAVP 40 mcg IN
Ketamine 50 mg IN

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# Implementation: Is this possible?

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# Step 1: ID Project Champions

- ED Nursing
  - Director, charge RNs, staff
- ED Physicians
  - Director, staff
- Hospital Leadership
  - CNO, CMO, CEO
- Other Support
  - IT
  - Pharmacy
  - Quality
  - Marketing/Communication

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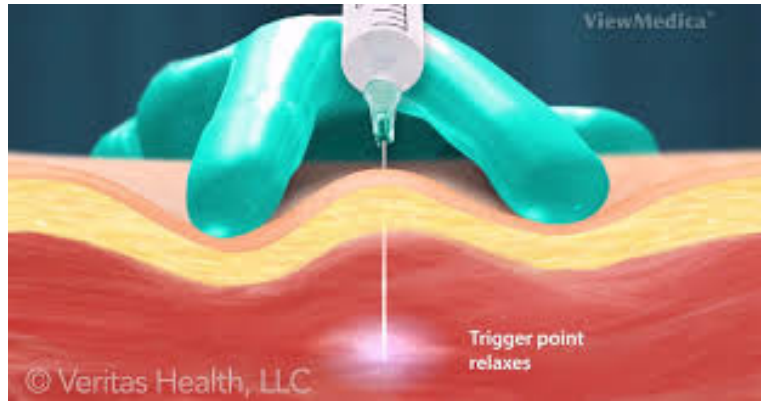
# Step 2: Provider Education

- Physicians teach physicians
  - Training sessions on trigger point injections and nerve blocks
  - Scripting on how to manage up ALTO options
- Partner with pharmacy to create opioid-free pain management orderset
  - Organized by indication
- Utilization of outpatient prescribing guidelines
  - For when discharging patients home
  - Inclusion of many oral options for each indication
- Internal publication of opioid prescribing patterns

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# Step 3: Nursing Education

- Nurses teach nurses – teach the teacher model
  - Utilized annual “Skills Days” to train all staff
- Learn about the new multimodal, ALTO pathways
  - Education boards
  - Weekly newsletters
  - Podcasts (see last slide)
  - Webinars
  - Badge buddies
- Be proactive with patient and family concerns
  - Begin conversation regarding best practices to manage pain

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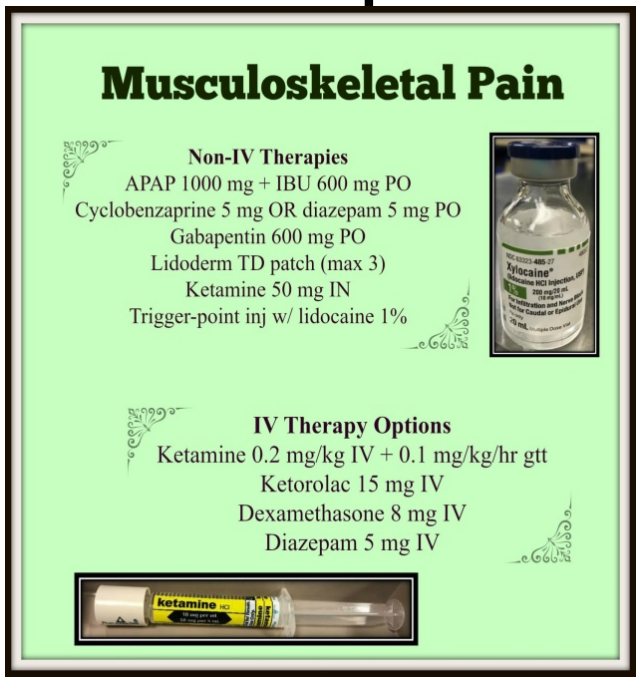
# Step 3: Nursing Education

- Manage pain control expectations – talk about realistic pain goals
- Utilize AIDET-based scripting: “control” of pain versus “relief” of pain
- Promote “increasing comfort”



# Step 4: Patient Education

- Patients
  - Educate patients and families on pain assessment tools
  - Provide non-pharmacologic alternatives to medication
    - Warm blankets, ice packs, dim lights, music
  - Handout educational pamphlets
    - ALTO approach to pain management
    - Risks or opioids
- Marketing
  - Reach out to community partners to promote the ALTO approach
  - Work with ED staff on creating educational boards, handouts, and signs to advertise ALTO and set expectations
    - Tell the “why”

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# Step 5: Pharmacy

- Policy Changes
  - Procedural Sedation
    - Ketamine dosing – clearly define analgesia vs sedation doses
  - High-risk Medication Administration
    - Lidocaine administration
    - Ketamine administration
- Smart Pumps
  - Addition of new medications – clearly label “for pain”
    - Lidocaine
    - Ketamine
- Stocking of ALTO medications

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# Step 6: IT & Data

- CPOE
  - Creation of ALTO-based pain management order set
  - Create order strings for unique entries – clearly label “for pain”
- Data Collection
  - Opioid and ALTO usage reports built in Meditech
  - Other reports off the dashboard to characterize patient population

# Timeline for Success

**6 months prior**

- Enlist project champions throughout hospital
- Work with IT to create ED ALTO order set

**3 months prior**

- Begin educating nurses and physicians on new medications, orders, and scripting
- Update high risk med and procedural sedation policies

**1 month prior**

- Stock medications in ED
- Program smart pumps for new medications
- Marketing  push to the hospital and community

https://cha.com/wp-content/uploads/2018/01/CHA-Opioid-Checklist.pdf

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# State-Wide Opioid Taskforce

- Colorado Opioid Safety Collaborative
  - Colorado Hospital Association
  - Swedish Medical Center ED Opioid Reduction Pilot
  - CO ACEP Opioid Taskforce
    - https://cha.com/wp-content/uploads/2018/01/COACEP_Opioid_Guidelines-Final.pdf
  - Colorado Consortium
  - Colorado Emergency Nurses Association
- Expand Swedish pilot to 10 other ED pilot sites in CO
  - Data collection: 6 months pre- and post- implementation
    - Goal = 15% reduction in opioid administration

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# Overall Results from Pilot

**36%** ↓

in opioid administration

Measured in MEUs/1,000 ED visits across all 10 EDs

2017 vs. 2016

**31%** ↑

in ALTO administration

**35,000**

fewer projected opioid administrations during the pilot than during the baseline period

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# Lessons Learned

- Change is possible!!
- Collaborate – don't feel isolated; reach out to other facilities
- Tell the "why" – have all members take ownership of the opioid crisis
- Partner with your marketing department for messaging to community
- Have a communication plan for within the facility
  - ALTOs will trickle to the inpatient side!
- Include patients when making decisions to manage pain
- Gather metrics to show if change is effective
- Share successes with department

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# CPE Information

The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education (CPE). This activity has been accredited for **1.0 contact hours** of knowledge-based CPE.

To receive CPE, participants must create a profile on **ipharmCE.UCDenver.edu** with their NABP eProfile ID number and birthdate, and complete the program evaluations by **November 3, 2018**. CE credit will be uploaded to CPE once evaluations are completed.

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# Save the Date: CPS 2019 Winter Meeting


Registration: http://www.cps.civicaconferences.com/2019-winter-meeting/

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# Thank You!

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