Acute Pain Management

Meeting the Challenges

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Acute Pain Management
Meeting the Challenges

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Meeting the Challenges of Acute Pain Management

Major changes have occurred in the treatment of pain with the focus now on a biopsychosocial model of pain care using multimodal treatments. A focused effort is needed to reduce harm to Veterans from unnecessary opioid prescribing and improve pain control in patients with acute pain conditions, including postoperative pain, by including non-pharmacological and non-opioid pain management approaches. With the right approach, we can reduce the number of Veterans who develop opioid use disorder and reduce overdose deaths.

U TURN PERMITTED

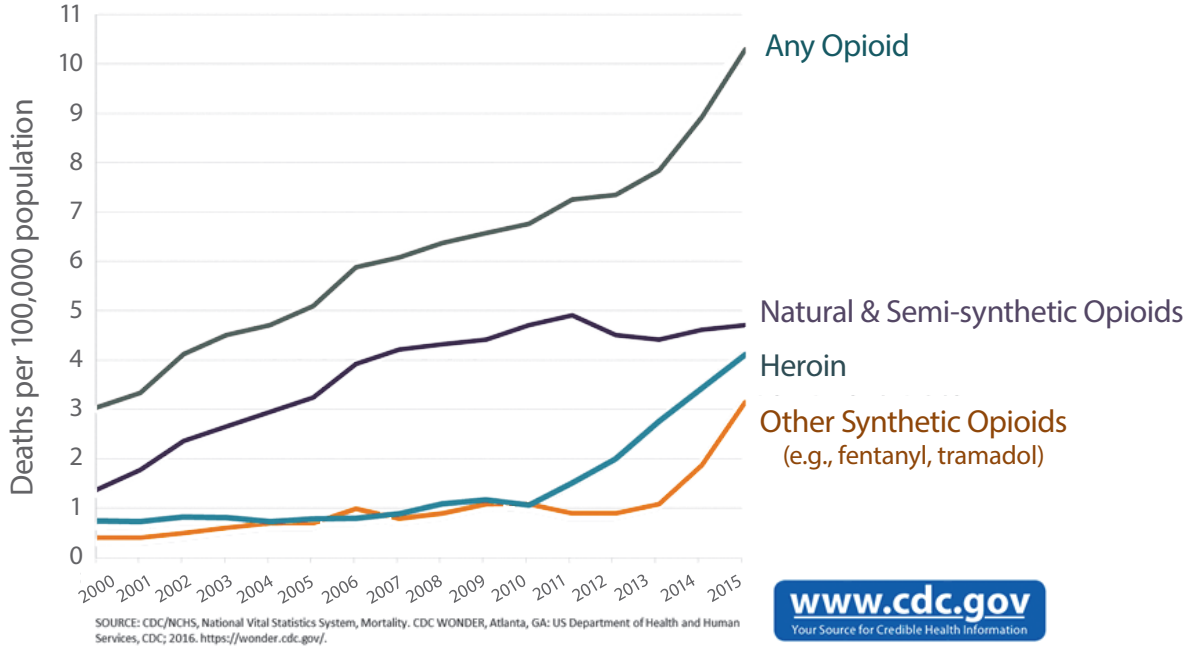
Opioids are no longer considered first line treatment for most types of acute and chronic pain.[1]

What started the changes?[1,2]

- ✓ Recognition of overdose deaths related to prescription opioids
- ✓ Increasing rates of opioid use disorder, heroin use, and other opioid related harms
- ✓ Lack of evidence that opioids work for long-term pain management

Despite knowledge of this, overdose deaths related to opioids continue to increase.

Figure 1. Overdose Deaths Involving Opioids 2000–2015[1]

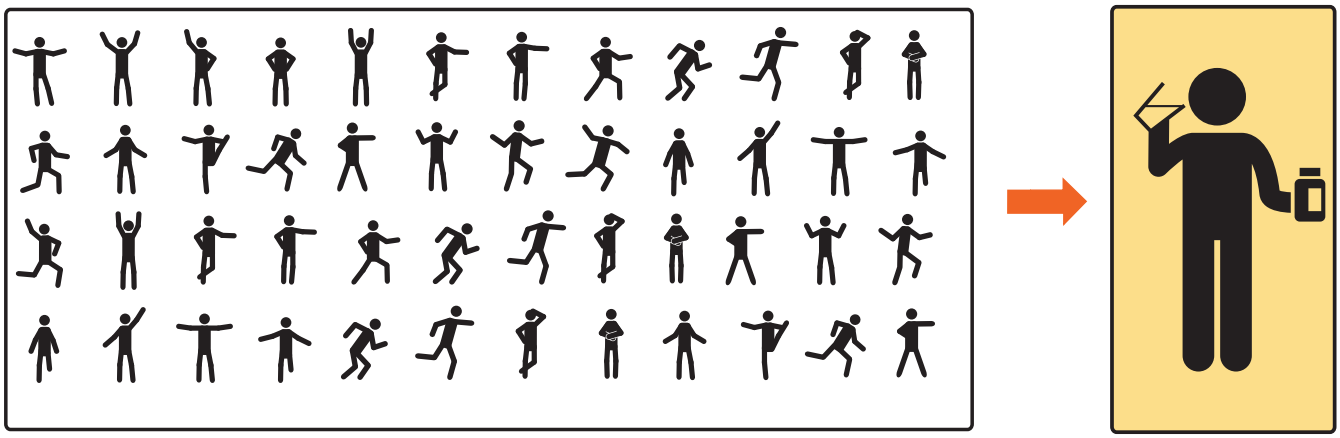


In 2015, overdoses involving opioids resulted in 33,091 deaths in the United States.[1]

Why is Treating Acute Pain with Opioids a Concern?

We need to stop acute opioid use from turning into chronic use with possible worsening pain and functional ability, and the risk of progressing to opioid use disorder. To further address the opioid epidemic, we need to address how opioids are prescribed for acute pain.

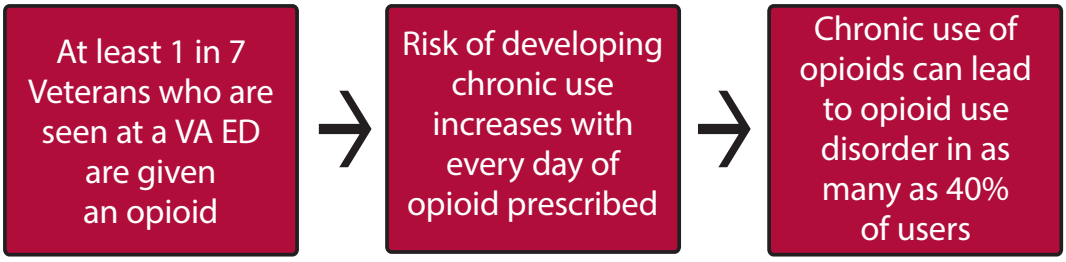
Figure 2. For every 48 patients prescribed a new opioid in the emergency department 1 will become a long-term user[3]



Retrospective analysis involving Medicare beneficiaries who had an index emergency department visit in the period from 2008 through 2011 and had not received prescriptions for opioids within 6 months before that visit. Sample consisted of 377,629 patients. Within individual hospitals, rates of opioid prescribing varied widely (7.3% vs. 24.1%). In addition, the providers who prescribed opioids the most had higher rates of patients continuing opioids long term compared to providers prescribing opioids at lower rates for acute pain.

The emergency department (ED) is a common place where opioid prescribing for acute pain occurs. In a review of ED prescribing in the Veterans Health Administration (VA) between 2009 and 2015, the overall VA ED opioid prescribing rate was 13.6%.[4] The most common opioid prescribed was hydrocodone/acetaminophen, followed by tramadol and oxycodone/acetaminophen. The average quantity prescribed for these three opioids was 41 pills.

Figure 3. What Does this Mean for a Veteran who Presents to the ED[3–9]



Acute Pain

Clinical evidence supports the use of opioids for severe pain conditions involving surgery and significant trauma; however, the key is to use opioids only when necessary and for a limited duration to prevent chronic use.

This needs to be done in all settings where acute pain is treated.

Acute pain is defined as pain lasting for less than 3 months

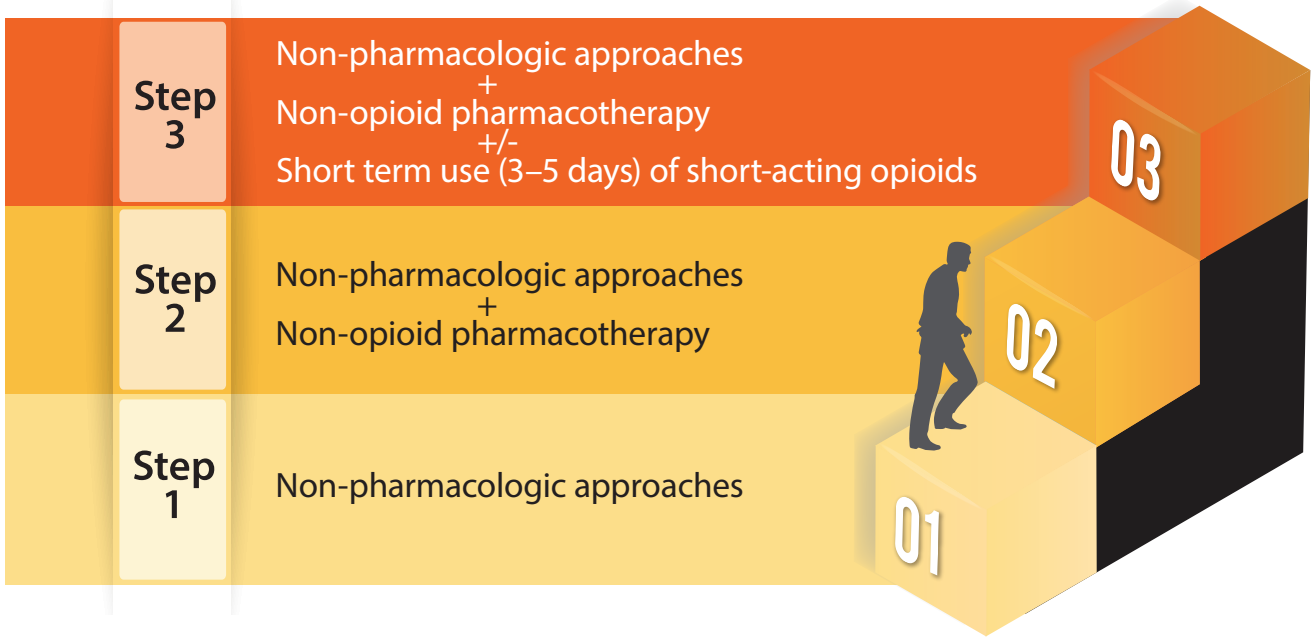
- ✓ Dental clinics
- ✓ Surgery
- ✓ Primary care
- ✓ Inpatient settings and at discharge
- ✓ Emergency department

Acute pain in many cases may be successfully managed with non-pharmacological treatments and/or non-opioid medications.

Managing Acute Pain Safely and Effectively[2]

To manage acute pain safely and effectively, first evaluate the severity of the pain based on the evaluation of the patient, diagnosis, and the patient's feedback about the pain and impact of the pain on their functioning.

Figure 4. Step-wise Approach to Acute Pain Management[2]



Step 1

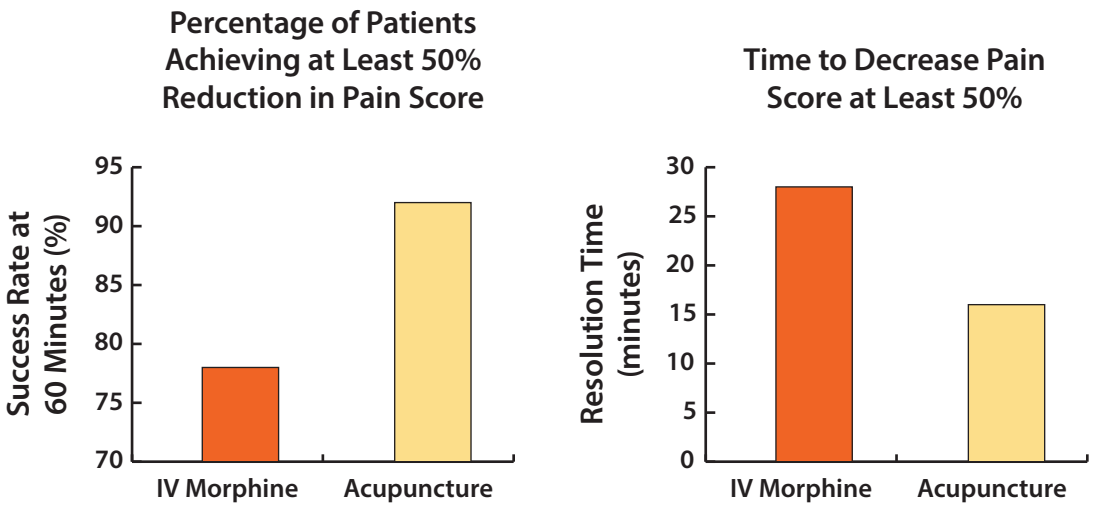
Start with Non-pharmacologic Approaches

Non-pharmacologic approaches should be considered first line for patients with acute pain. Since acute pain typically resolves over days to weeks, patients may only need these approaches for a short duration of time. Some treatments may be more appropriate immediately after an injury (e.g., ice, heat, stretching, and elevation), while others like physical therapy and exercise may be implemented once the patient is able to do more activities.

Figure 5: Non-pharmacologic Treatments Options for Acute Pain[2,10–15]

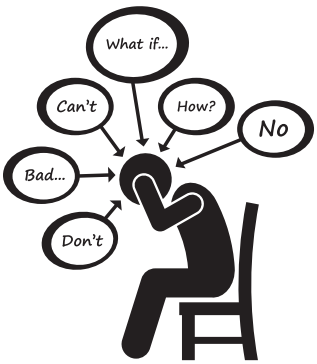
Self Care	Complementary and Integrative Therapies	Rehabilitation Therapies	Exercise
• Ice • Heat • Rest • Elevation of affected limb	• Acupuncture • Massage • Chiropractic therapy	• Physical therapy • Occupational therapy	• Stretching • Swimming • Walking • Tai chi • Yoga • Chair exercises

Figure 6. Acupuncture Was More Effective and Faster Acting than Intravenous Morphine in the Management of Acute Pain in the Emergency Department[16]



Prospective randomized trial of acupuncture versus morphine to treat acute onset moderate to severe pain in emergency department patients. Each group consisted of 150 patients with pain for <72 hours, pain intensity of >40 (on visual analog scale (VAS) 0–100) with acute musculoskeletal pain with no evidence of fracture or dislocation, including ankle and knee sprains, shoulder and elbow tendonitis, upper and lower limb pain, low back pain without neurologic deficit, acute abdominal pain with no urgent surgical intervention and acute primary headache. Success rate and resolution time were both statistically significantly different and favored acupuncture.

Psychosocial factors can predict the progression of acute pain to chronic pain and disability.[17,18] The three most common and influential factors include:



- Catastrophizing
  - Exaggerated and irrational thoughts about the pain the patient is experiencing
  - Viewing pain as a serious threat to the patient's health and functioning
- Fear avoidance
  - Patient will avoid physical activity and movement due to fear that it will cause progression of the injury and/or increased pain
- Depressed mood
  - Associated with increased pain, lower pain tolerance, and reduction in quality of life

Patients experiencing these psychosocial factors may benefit from psychology-based treatments including:[13–15,19–24]

- ✓ **Cognitive behavioral therapy (CBT)**
- ✓ **Acceptance and commitment therapy (ACT)**
- ✓ **Mindfulness-based stress reduction (MBSR)**

Step 2

Consider Non-opioid Pharmacotherapy

Non-opioid pharmacotherapy should be considered for all types of acute pain where non-pharmacologic treatments are not effective or would not be considered effective as monotherapy.

Figure 7. Types of Non-opioid Pharmacotherapy

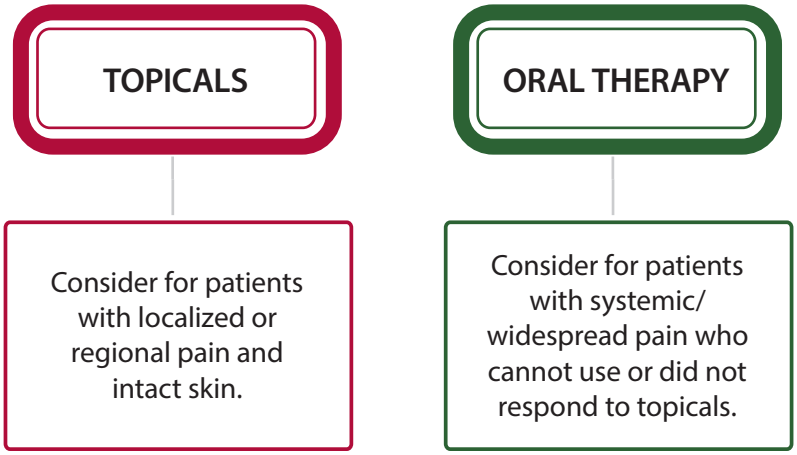
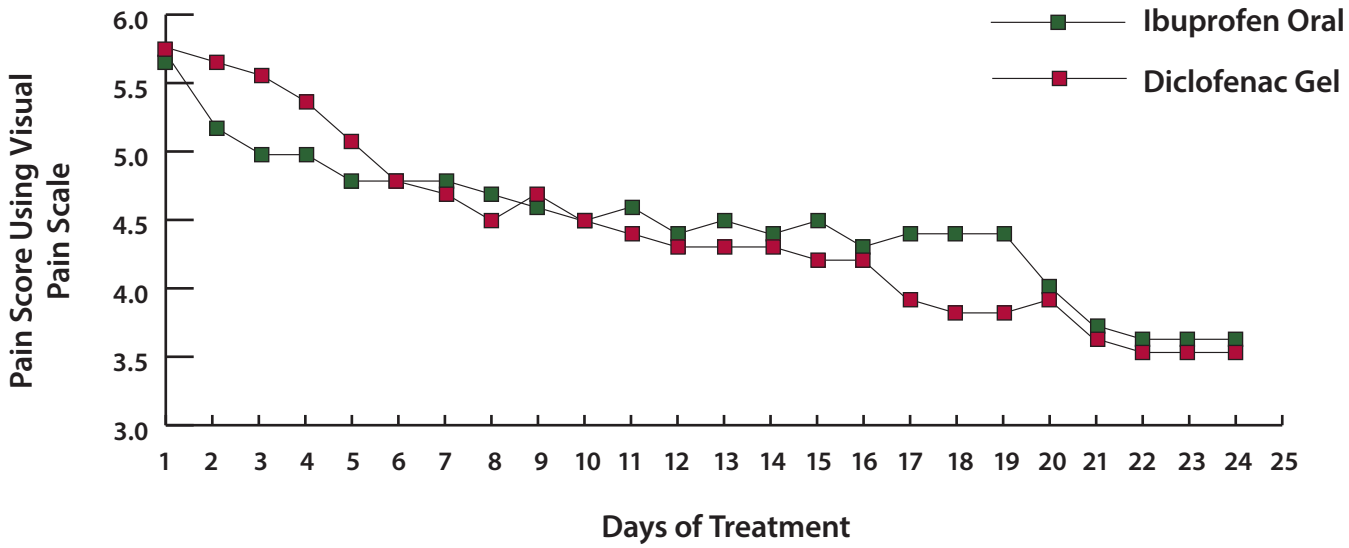


Figure 8. Topical Diclofenac Gel Provides Similar Reduction in Pain Compared to Oral Ibuprofen for Osteoarthritis of the Hand.[25]



Double-blind randomized study of patients with activated osteoarthritis of the finger joints showed that diclofenac gel 10 cm ribbon applied 4 times a day was as effective as oral ibuprofen dosed at 400 mg three times daily. Secondary parameters of disease activity, pain at rest, pain on movement, morning stiffness, grip strength and quality of life all showed comparable improvements.

Figure 9. Topical Therapy[26]

TOPICALS

NSAID	• Diclofenac formulations: gel, solution, or patch • Used for localized/regional pain in a joint area like the knee, ankle, shoulder and wrist - Produces localized anti-inflammatory effects - Evidence does not support use for low back pain. • Less systemic side effects compared to oral NSAIDs due to minimal systemic absorption - Safer to use in patients on oral anticoagulants
Lidocaine	• Lidocaine patch • Used for peripheral neuropathic pain • Blocks abnormal peripheral neuronal conduction - Provides local analgesia of painful skin where the medication is applied • Systemic absorption is very low when applied to intact skin
Methyl Salicylate	• Methyl salicylate formulations: cream, ointment, or patch - Can be combined with menthol and/or camphor • Used for local/regional effect for musculoskeletal pain • Counterirritant causing mild inflammation which results in deeper pain relief • Apply to intact skin
Capsaicin	• Capsaicin formulations: cream or ointment • Used for peripheral neuropathic pain and musculoskeletal pain • Depletes substance P with daily use leading to desensitization of sensory nerve fibers and resulting in less pain • Must use multiple times a day every day to maintain effect

Products are listed based on evidenced based recommendations. Not all products listed may be available on VA National Formulary and could require non-formulary request or prior authorization request. To view VA National Formulary: **https://www.pbm.va.gov/PBM/NationalFormulary.asp**.
NSAID = nonsteroidal anti-inflammatory drug.

Oral Therapy

Selection of non-opioid medications should be made based on individual patient characteristics (e.g., type of pain, other medications, comorbidities).

Figure 10. Oral Therapy[26–37]

ORAL THERAPY

Acetaminophen	• First line therapy for the treatment of osteoarthritis and musculoskeletal pain • Not associated with GI ulcer; no significant platelet or anti-inflammatory effect at doses <2000 mg/day • Maximum dosage 2000 mg daily in patients with liver disease and 4000 mg daily in patients without liver disease - Caution patients about acetaminophen in over-the-counter and combination products
NSAIDs	• First line agents for musculoskeletal pain and acute and chronic low back pain - May be more effective than acetaminophen, but are associated with more side effects (e.g., GI ulceration, CV effects including MI and stroke, and renal toxicity) • Trial more than one NSAID, since there can be variability in patient response • Black boxed warning to avoid perioperative use after CABG* • **Adding an NSAID to a pain regimen containing an opioid may have an opioid-sparing effect of approximately 20–35%**
Non-benzodiazepine Skeletal Muscle Relaxants (SMR)	• Use for acute or exacerbation of chronic low back or neck pain with muscle spasms, for short term use only (<7 days) • Drowsiness is common, avoid driving, operating heavy machinery, and alcohol • Recommend against using carisoprodol due to potential for abuse and/or misuse • Recommend against using benzodiazepines due to lack of benefit and higher risks

*Do not use perioperatively and avoid in the first 10–14 days after CABG surgery. CABG = coronary artery bypass graft; CV = cardiovascular; GI = gastrointestinal; MI = myocardial infarction; NSAID = nonsteroidal anti-inflammatory drug.

Concerns About Adverse Effects from NSAIDs

Gastrointestinal (GI) toxicity:

Figure 11. Gastrointestinal Toxicity—What are the Risks?[38,40,41]

- Approximately 25% of chronic NSAID users will develop GI ulcer disease; 2 to 4% will bleed or perforate
- Consider COX-2 selective NSAIDs like meloxicam and etodolac which have lower GI risks than other NSAIDs
- Celecoxib (COX-2 inhibitor) has a lower risk of GI events compared to naproxen and ibuprofen but provides similar pain reduction

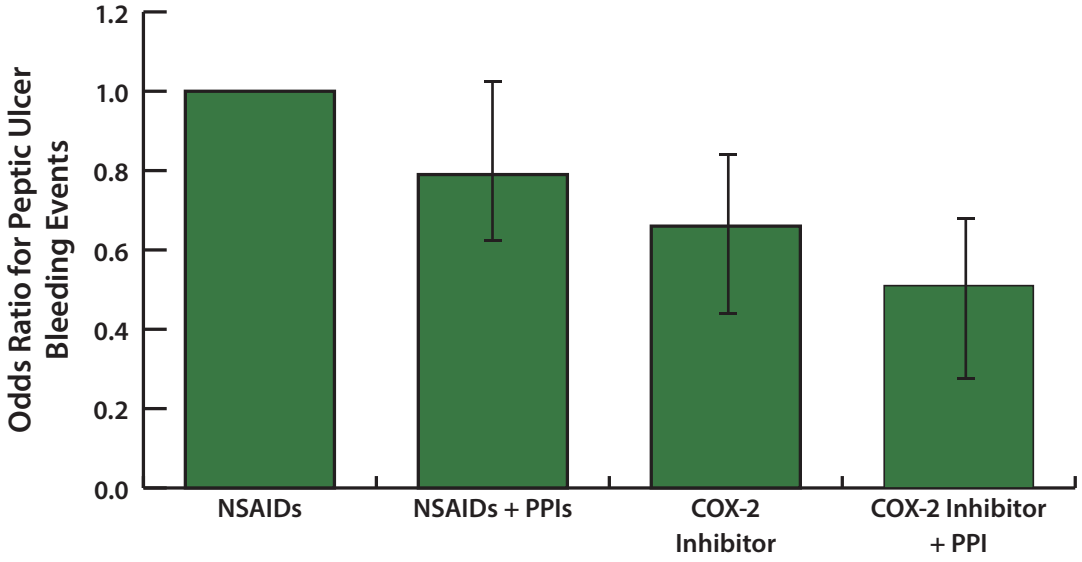
- Risk of GI ulcers reduces after the first few months of NSAID use but not completely
- Patients taking NSAIDs for <1 month had an increased risk for GI bleeding when compared to long term users
- Gastric ulcers and duodenal ulcers in 1 study were found to be more common in patients who had used NSAIDs for less than 3 month

Table 1. Prevention of NSAID Induced GI and CV Toxicity[38,39]

GI Risk Factor Assessment	Patients with GI Risk Factors Only	Patient with GI Risk Factors and High Cardiovascular Risk Requiring Low Dose Aspirin
High Risk • **History of previously complicated ulcer, especially recent** • **More than 2 risk factors** **1. Age >65 years** **2. High dose NSAID therapy** **3. Previous history of uncomplicated ulcer** **4. Concurrent use of aspirin (including low dose), corticosteroids or anticoagulants**	Alternative therapy or COX-2 inhibitor + PPI* or misoprostol	Avoid NSAIDs or COX-2 inhibitors. Use alternative therapy (e.g., acetaminophen)
Moderate Risk • **1–2 risk factors**	NSAID + PPI* or misoprostol	NSAID/COX-2 inhibitor** + PPI* or misoprostol
Low Risk • **No risk factors**	NSAID alone	NSAID/COX-2 inhibitor** + PPI* or misoprostol

*High dose and long-term use (>1 year) of PPIs has been linked to side effects including: osteoporosis, Clostridium difficile associated diarrhea, pneumonia, and decreased absorption of magnesium and Vitamin B12. **Consider NSAID or COX-2 inhibitor that may have lower CV risks like naproxen, ibuprofen, or moderate dose celecoxib.
COX-2 inhibitor = cyclooxygenase 2 inhibitor; CV = cardiovascular; PPI = proton pump inhibitor.

Figure 12. Peptic Ulcer Bleeding Events Were Similar Between Users of Conventional NSAIDs Combined with PPIs Compared with Selective COX-2 Inhibitors Alone or Combined with PPIs[42]



Case-control study from the Netherlands during the period of January 1998 to December 2012 in subjects who had ever used conventional NSAIDs and/or selective COX-2 inhibitors who were >18 years at first hospital admission with a primary discharge diagnosis of GI toxicity defined as peptic ulcer disease (PUD) in the GI tract. They identified 2,634 PUD cases and 5,074 age-matched controls that were current users of conventional NSAIDs or selective COX-2 inhibitors at the index date.

Cardiovascular Risks[38,43,44]

- NSAIDs and COX-2 inhibitors can increase cardiovascular risk
  - Hypertension, stroke, myocardial infarction, and heart failure
  - Avoid use in patients with a history of heart failure or recent myocardial infarction
- Diclofenac and indomethacin appear to have higher risks
- Naproxen, ibuprofen, and moderate dose celecoxib (100 mg twice daily) may have a lower risk[38]

Renal Risks[45]

- Both COX-2 selective and nonselective NSAIDs are associated with renal side effects and may result in acute and chronic renal failure.
- Risk factors include:
  - Elderly
  - Dehydrated state
  - Other comorbidities like congestive heart failure, diabetes, and cirrhosis

Use non-pharmacologic and non-opioid treatments first line for acute pain.

Step 3

Managing Severe Pain

Opioids have been shown to be effective for very short-term (3–5 days) treatment of severe acute pain (e.g., invasive surgery or significant trauma).[3,46]

Consider opioids for patients with severe acute pain if:

1) The pain is not responding to non-pharmacologic or non-opioid treatments.

OR

2) The pain is not expected to respond to non-pharmacologic and/or non-opioid treatments alone.

Table 2. Treating Surgical Pain[47–53]

Presurgical and Postsurgical Considerations for Managing Pain	
Preoperative Evaluation	• Substance use disorder (SUD) to include opioid use disorder, alcohol use disorder, and tobacco use disorder • Mental health comorbidities • Medical comorbidities
Recommend Preoperative Patient Education	• Expectations about pain and healing after surgery • Rehabilitation • Multimodal treatments options

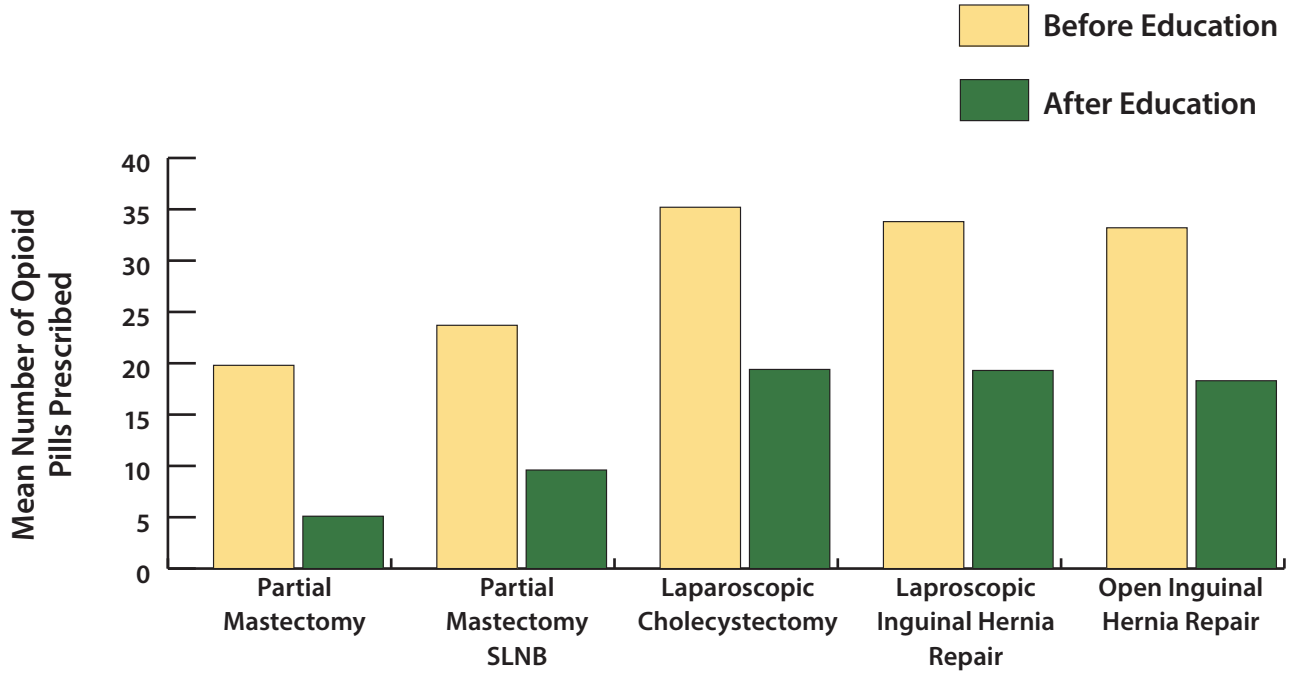
Table 2. Treating Surgical Pain[47–53] *(Cont.)*

Presurgical and Postsurgical Considerations for Managing Pain	

Multimodal Analgesia	• Non-pharmacologic
	  • Transcutaneous electrical nerve stimulation (TENS)
	  • Cognitive behavioral therapy to include guided imagery, relaxation methods, hypnosis, and intra-perioperative suggestions
	  • Possible benefit from acupuncture, massage, cold therapy, localized heat, and continuous passive motion
	• NSAIDs and/or acetaminophen
	  • Single dose of oral celecoxib 200–400 mg given 30–60 minutes prior to surgery is associated with lower opioid requirements after surgery
	  • Use NSAIDs and/or acetaminophen for pain after surgery
	  • NSAIDs contraindicated for perioperative pain in patients undergoing CABG surgery and for 14 days after CABG surgery due to increased risk of cardiovascular events
	• Consider gabapentin or pregabalin
	  • Associated with reduced opioid requirements after surgery
	  • Typical doses given 1–2 hours before surgery
	  • Gabapentin 600 to 1200 mg
	  • Pregabalin 150 or 300 mg

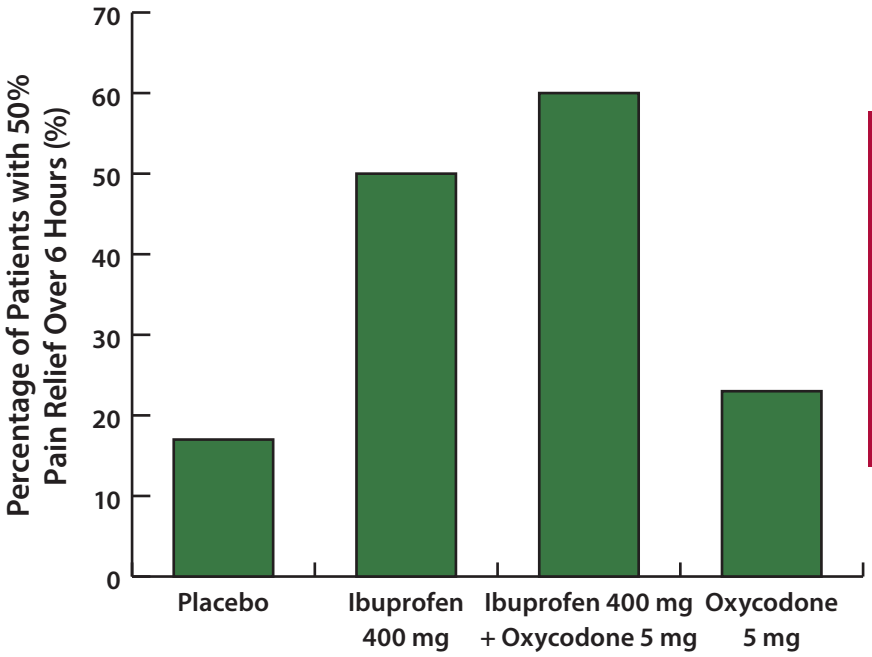
Patients on Long-Term Opioid Therapy (LTOT) Prior to Surgery	• Studies of abdominal surgery, joint arthroplasty, and spinal surgery have shown preoperative opioid use is a significant predictor of adverse patient-reported outcomes
	• Consider the following for patients on LTOT
	  • Evaluate preoperative opioid use and doses
	  • Provide education about use of opioids prior to surgery
	  • Postoperative opioid requirements may be greater and pain might be more difficult to control
	  • Consultation with pain specialist and in some cases behavior health/addiction specialist
	  • Consider tapering opioid medication prior to elective surgery

Figure 13. Providing Education About Opioid Risks to Surgeons and Patients Helps Reduce Opioid Use After Surgery by 53%[54]



Opioid prescribing by surgeons was evaluated at an institution for 5 common outpatient procedures where it was determined that opioids were overprescribed. Opioid prescribing guidelines were developed in an attempt to reduce the prescribing by 50% and also satisfy 80% of patients' opioid requirements after surgery. Education was provided to surgeons and patients with recommendations to use a nonsteroidal anti-inflammatory drug and acetaminophen before using opioids. An analysis was done to reevaluated 246 patients undergoing the same surgical procedures showing a 53% reduction in total number of opioid pills prescribed by surgeons and only 1 patient (0.4%) required a refill of the opioid. An NSAID or acetaminophen was used by 85% of patients.
SLNB = sentinel lymph node biopsy.

Figure 14. NSAIDs are More Effective than Opioids in Reducing Post-surgical Pain[55]



Ibuprofen 400 mg was more effective in reducing pain than oxycodone 5 mg. No statistically significant difference in pain reduction between ibuprofen and ibuprofen + oxycodone.

Review of three randomized, double-blind clinical trials of single dose, oral ibuprofen plus oxycodone compared to placebo or the same dose of ibuprofen alone or oxycodone alone for acute postoperative pain from wisdom teeth removal or after abdominal or pelvic surgery.

Educate patients on the effectiveness of NSAIDs and acetaminophen for post-surgical pain. If opioids are used, prescribe the smallest amount needed for the pain.

It is important to weigh the risks vs benefits even when considering opioids for short-term use. Proceed with caution even if benefits of short-term use appear to outweigh risks.

Factors that may increase the risk of acute opioid therapy extending to long-term opioid therapy:[56]

- Initiating long-acting opioids
- Initiating tramadol
  - >64% of patients started on tramadol for acute pain remained on tramadol after 1 year
  - ED visits associated with tramadol related adverse effects increased by 145% from 2005–2011[57]
  - Adverse effects increase when tramadol is combined with benzodiazepines, opioid pain medications and/or alcohol
- Duration of opioid; risk increases every day an opioid is used
- Providing a second prescription or refill
- Prescribing a cumulative dose of 700 mg morphine equivalent or higher for the acute pain episode
  - Examples of prescriptions that exceed 700 mg morphine equivalent
    - Oxycodone 5 mg take 2 tablets every 4 hours (90 mg MEDD)
      - 720 mg morphine equivalent after 8 days at prescribed dose
    - Hydrocodone 10 mg/acetaminophen 325 mg 1 tablet every 4 hours (60 mg MEDD)
      - 720 mg morphine equivalent after 12 days at prescribed dose

It only takes 3 days of opioid treatment to see an increase in the risk of acute therapy extending into long-term therapy.[56]

Figure 15: Any Use of Opioids for Acute Pain Increases the Probability of Chronic Opioid Use .[56]

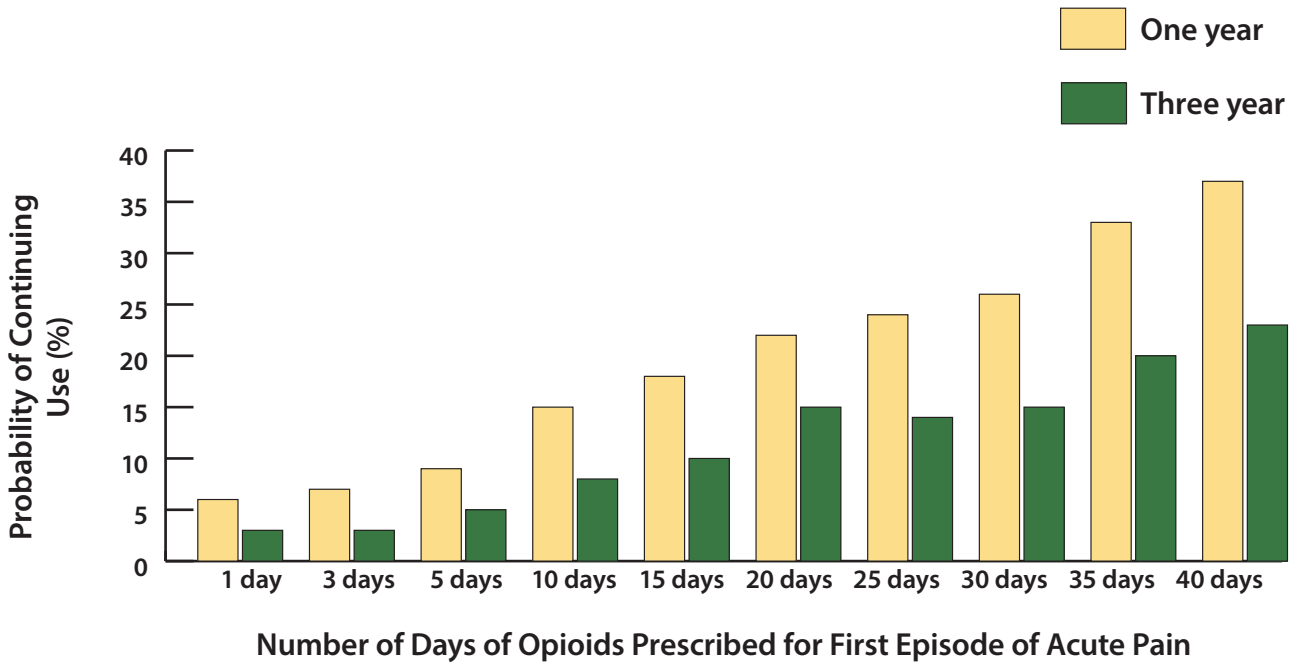
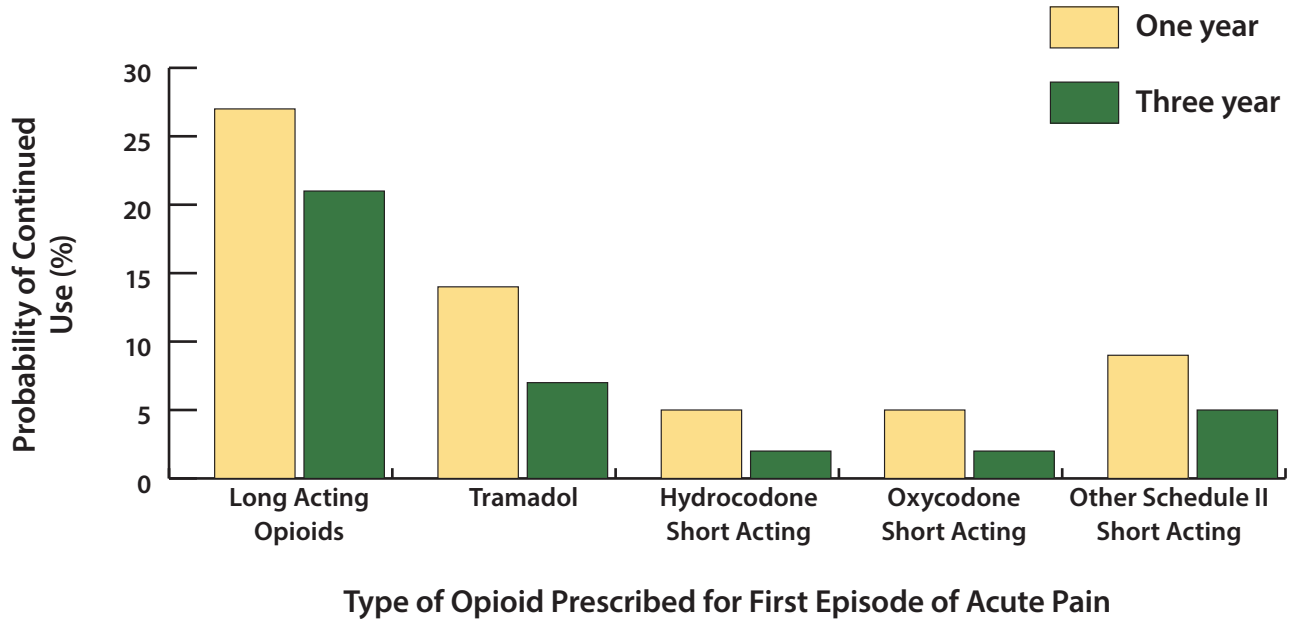


Figure 16. The Type of Opioid Prescribed for Acute Pain Can Increase the Probability of Developing Chronic Use[56]



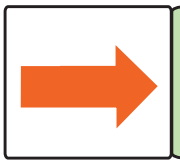
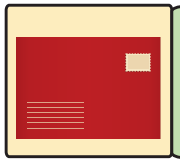
Records reviewed of patients >18 years of age who had at least one opioid prescription during June 1, 2006 – September 1, 2015 and >6 months of continuous enrollment without an opioid prescription before their first opioid prescription. A total of 1,294,247 patients met inclusion criteria, including 33,548 (2.6%) who continued opioid therapy for more than 1 year.

Not all patients with severe acute pain are good candidates for short-term opioid use.

Contraindications to using opioids[2,46]

- ✓ **True life-threatening allergy to opioids**
- ✓ **Actively prescribed and using benzodiazepine(s)**
- ✓ **Active substance use disorder (SUD)**
- ✓ **Elevated suicide risk**
- ➔ **Exception may be considered in patients with severe pain in an inpatient setting or controlled environment. Extra precautions will need to be taken to ensure patient safety.**

Figure 17. Tips to Consider When Prescribing Opioid Therapy for Acute Pain[2,5,46]

	Check prescription drug monitoring program (PDMP) prior to prescribing opioids
	Prescribe no more than a 3–5 day supply; reassess Veteran for the need for continued opioids
	Extend to 7 days if pain condition will take longer to improve*
	Only use short acting, immediate release (IR) formulations**
	Encourage patients to safely dispose of any left over opioid medications using take-back events or mail-back packages
	Provide patient education about opioid risks and alternatives to opioid therapy should be offered

*If treatment is needed for longer than 5 days, evaluate the patient before prescribing another opioid prescription. **Risk of overdose is higher when using sustained release opioids in patients who are opioid naïve.

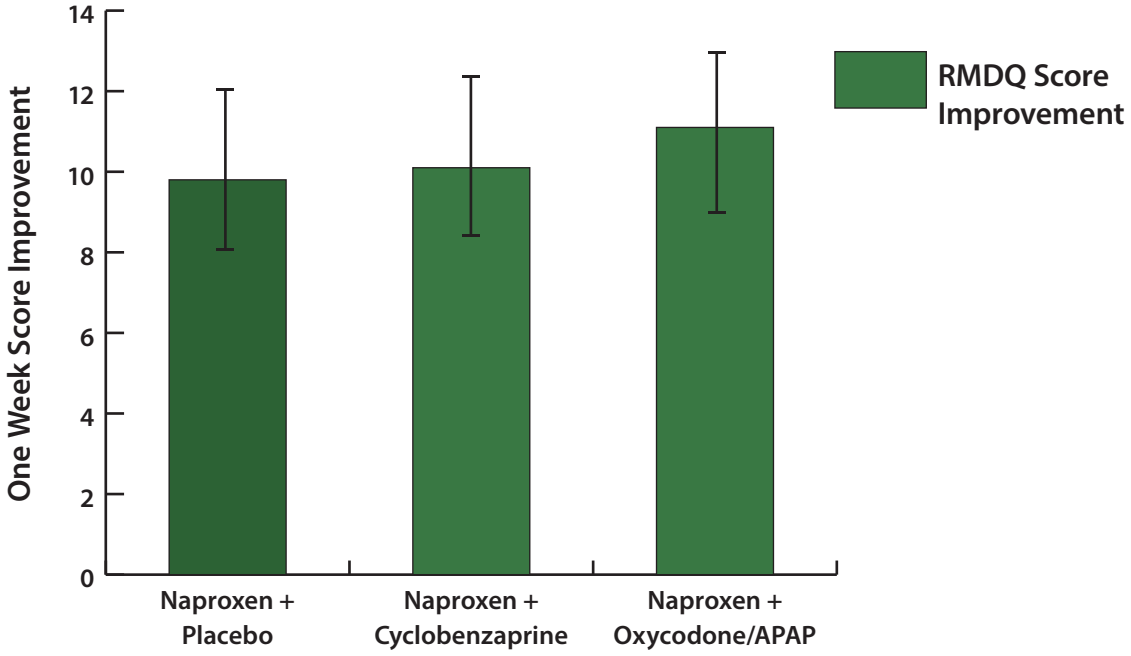
Reserve opioid medications for severe pain conditions and limit therapy to 5 days or less of an immediate acting opioid.

Using an NSAID as monotherapy is just as effective as a combination approach.

Low back pain is one of the most common reasons for people to see a provider with almost 25% of Americans reporting low back pain ≥1 day in the past 3 months.[58]

Patients are commonly prescribed an NSAID along with an opioid and/or a skeletal muscle relaxant, however there is very little evidence to support this type of combination therapy for acute low back pain.

Figure 18. No Statistically Significant Difference in Disability Score Improvement at One Week for the Treatment of Acute Low Back Pain[59]



Randomized double-blinded study in patients with acute, nontraumatic, nonradicular low back pain in the ED. Differences in RMDQ scores were not statistically significant. RMDQ = Roland-Morris Disability Questionaire. It is a 24-item questionnaire used to measure low back pain and related functional impairments. APAP = acetaminophen

Treatment of acute or subacute low back pain[11]

- **First line: Non-pharmacologic treatment**
- **Second line: Nonsteroidal anti-inflammatory drugs (NSAIDs) or short-term course of non-benzodiazepine skeletal muscle relaxants**
- **Pain improves over time regardless of treatment provided**

Managing Severe Acute Pain in Patients with Opioid Use Disorder (OUD)

Medication-assisted treatment (MAT) for OUD does not exclude a person from receiving treatment for acute pain, however it is still important to weigh the risks and benefits of pain management strategies.[60–62]

Medication assisted treatment (MAT) for patients with OUD

- ✓ **1st line: Buprenorphine/ naloxone or Methadone**
- ✓ **2nd line: Intramuscular Naltrexone**

Treatment of acute pain in patients with OUD on MAT should be done in coordination with a pain specialist and MAT prescriber.

Care coordination for perioperative pain management for patients on MAT is critical and should include at a minimum the MAT prescriber, anesthesiologist, and the surgeon.

Relapse Prevention in Patients with OUD

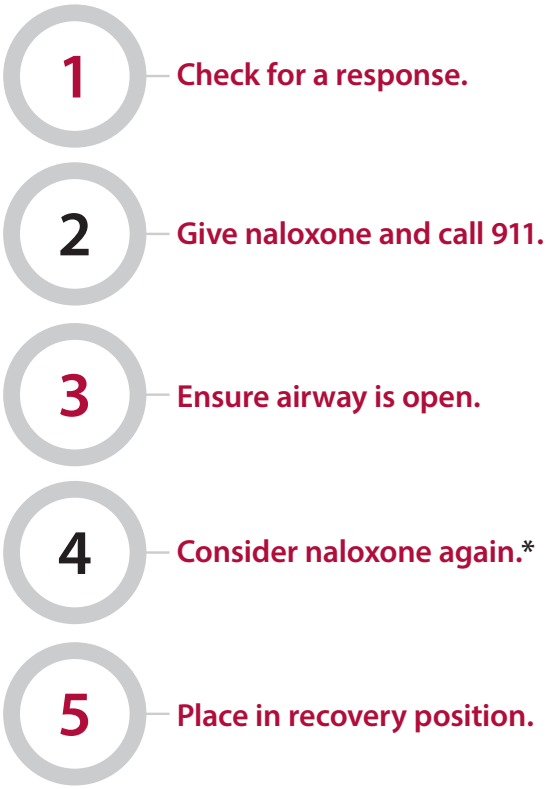
Patients with OUD in remission are at **very high risk for relapse** when taking opioids for the treatment of pain.[63–66]

- If relapse is identified, do not abruptly discontinue opioid treatment without providing addiction treatment
  - Abruptly discontinuing the opioid without addiction treatment in place sets the patient up for progression of an active disease
- Ensure Veteran has follow up with his/her provider who is monitoring the OUD therapy
- Provide overdose education and prescribe naloxone for patients to have at home

Opioid Overdose Education and Naloxone Distribution (OEND)[67]

- Education and training for patients, family members, housemates and significant others on how to prevent, recognize, and respond to an opioid overdose
- Naloxone is available for outpatient dispensing

Figure 19. Basic Steps for Responding to an Opioid Overdose



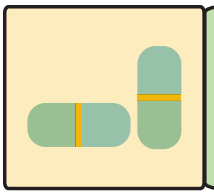
*If the person does not start breathing in 2–3 minutes, give the second dose of naloxone; naloxone wears off quickly so a second dose may also be needed if the person stops breathing again.

Patients with OUD have a high risk of overdose when taking opioid medication for pain. Provide naloxone to all Veterans with OUD.

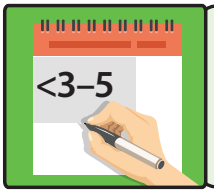
Summary

Opioids are no longer first line treatments for most types of acute pain.

Non-pharmacologic and non-opioid treatments should be used first line for most types of pain.



Reserve opioids for severe pain that is not expected to respond or has not responded to non-pharmacologic and non-opioid therapy.



When opioids are used, prescribe immediate release opioids for no more than 3 to 5 days. Reassess the patient before continuing opioids.

Treat acute pain in patients with opioid use disorder. If opioids need to be used, ensure follow-up to prevent relapses and provide naloxone.

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