

Analgesics for Acute Pain in Adults: Practice Pearls

Updated February 2025

This chart reviews analgesics for acute pain. See **footnote a** for general information on acute pain and its treatment.

Interactive note: Roll over **blue text** to view additional information.

Preferred Analgesics for Acute Pain in Adults

<p>Simple Analgesics (i.e., acetaminophen, NSAIDs)</p>	<p>Consider first-line for: osteoarthritis,^{7*} dental pain (including surgery),^{2,8*} renal colic,^{9,18} low back pain (NSAIDs),¹⁰ fractures,^{11,19} musculoskeletal pain,^{2,12} tension headache,^{13,20} migraine headache,^{14,15} biliary colic (NSAIDs),¹⁶ abdominal surgery,² orthopedic surgery,² episiotomy,¹⁷ opioid-sparing effect.⁶ (*Asterisk denotes indications where NSAID may be more effective than APAP).</p> <p>Efficacy considerations:</p> <ul style="list-style-type: none"> • One in 2 to 3 patients (ibuprofen) or one in 3 to 4 patients (APAP 1,000 mg) has a 50% decrease in moderate-to-severe musculoskeletal pain over 4 to 6 hours.²¹ • Oral ibuprofen at doses of 400, 600, and 800 mg provide similar pain relief.²² APAP 1,000 mg may not relieve pain much more than 500 mg.^{21,31} • Ibuprofen 400 mg plus APAP 1,000 mg reduces moderate-to-severe musculoskeletal pain as well as many opioid/APAP combinations.¹² • Oral ketorolac has similar efficacy to other NSAIDs, but the risks associated with its use outweigh the possible benefits.^{2,23} • Injectable NSAIDs may not be more effective than oral. • Topical NSAIDs may work as well as oral NSAIDs for acute musculoskeletal pain (e.g., sprain).²⁹ See our chart, Topicals for Pain Relief <p>Safety considerations:</p> <ul style="list-style-type: none"> • Limit use to <15 days/months to reduce the risk of medication overuse headache.³⁰ APAP may post a higher risk than NSAIDs.³³ • In US labeling, NSAIDs are contraindicated for perioperative pain due to CABG. • In chronic liver impairment, limit the APAP total daily dose to 2 to 3 grams (instead of the usual 4 gram max adult daily dose).³² • For information on the use of NSAIDs in patients with kidney or CV disease, and mitigation of gastrointestinal risk, see our FAQ, Managing NSAID Risks.
<p>Strong oral opioids (e.g., hydrocodone, oxycodone)</p>	<p>Consider for: pain not relieved by nonopioids:^{1,6} or pain not expected to be relieved by non-opioids (e.g., invasive surgery [open abdominal surgery], major trauma [crush injuries, burns], assuming patient can take oral medications).^{1,3,6}</p> <p>Efficacy considerations:</p> <ul style="list-style-type: none"> • Not proven more effective than ibuprofen 400 mg at achieving 50% reduction in moderate to severe pain.²¹ • May be as effective as IV opioids, even after significant surgeries (e.g., cardiac surgery).³⁴ • Consider combining with nonopioids to provide better analgesia and minimize side effects (e.g., opioid-sparing effect).^{5,6} <p>Safety considerations (Also see our toolbox, Appropriate Opioid Use):</p> <ul style="list-style-type: none"> • Do NOT use extended-release opioids for acute pain.¹ • Meperidine is poorly effective orally and is neurotoxic; not preferred.⁷⁶ See footnote c regarding neurotoxicity and other safety concerns. • Use the lowest necessary dose for the shortest duration possible to prevent transition of acute use to chronic use.³⁵ • Advise patients to taper the opioid as pain resolves, being mindful of the APAP daily dose if weaning from an opioid/APAP combo to APAP.¹
<p>Parenteral opioids (IV, epidural, or spinal [intrathecal])</p>	<p>Consider for: pain not expected to be relieved by non-opioids (e.g., invasive surgery [open abdominal surgery], major trauma [e.g., crush injuries, burns]) in patients who cannot take oral medications;^{1,3,6} moderate to severe pain in patients with suspected malabsorption;⁶ moderate to severe pain requiring immediate relief or rapid dose titration;⁶ painful procedures (consider fentanyl),^{3,5,28} pain due to MI despite nitroglycerin and beta-blocker (IV morphine; may cause bradycardia or hypotension, or reduce preload in right ventricular MI).^{36,84,85}</p> <p>Efficacy considerations:</p> <ul style="list-style-type: none"> • IV opioids have a quicker onset of action than oral opioids, allowing for faster titration, but have more risks and shorter duration of action.⁶ • PCA improves patient satisfaction and perhaps analgesia, with side effects comparable to non-PCA opioid-based regimens.³⁷ <p>Safety considerations:</p> <ul style="list-style-type: none"> • Consider combining with nonopioids to provide better analgesia and minimize side effects (e.g., opioid-sparing effect).^{5,6} • Meperidine is neurotoxic; not preferred.⁷⁶ See footnote c regarding neurotoxicity and other safety concerns. • Follow policies to get pain service approval before adding a systemic opioid to a regional (e.g., epidural, spinal) opioid. • Kidney impairment: avoid morphine; fentanyl (with cautious dosing) or hydromorphone are preferred.^{3,28,38} Reduce hydromorphone starting dose for CrCl <60 mL/min.³⁸ • Fentanyl accumulates in fat with repeat dosing and may not be a good choice in obesity.^{3,37} Instead, consider intermittent IV morphine doses or PCA without the continuous infusion, with especially close monitoring if the patient has OSA.³⁷

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<p>Local anesthetics (e.g., bupivacaine, ropivacaine, lidocaine, mepivacaine).</p> <p>For information on lidocaine patches, see our chart, Topicals for Pain Relief.</p>	<p>Consider for: Opioid-sparing effect for patients at high risk from opioids (e.g., patients with lung disease, obstructive sleep apnea, morbid obesity, opioid tolerance, opioid misuse);^{39,40} intrathoracic, abdominal, or spinal surgery (e.g., epidural anesthesia);⁴¹ upper extremity/hand surgery (e.g., peripheral nerve block);⁴² lower extremity surgery (e.g., spinal or epidural anesthesia, peripheral nerve block);⁴² carotid endarterectomy (e.g., peripheral nerve block);⁴³ laceration repair (e.g., local infiltration, peripheral nerve block);⁴⁴ post-op pain (e.g., local anesthetics for surgical site pain; intravenous lidocaine).^{45,46}</p> <p>Efficacy considerations:</p> <ul style="list-style-type: none"> • Liposomal bupivacaine (Exparel [US]) can be used for local infiltration or for regional anesthesia (interscalene brachial plexus, sciatic nerve [popliteal fossa], or adductor canal block).⁴⁷ <ul style="list-style-type: none"> » Data do not demonstrate consistent, clinically important advantages of liposomal bupivacaine over other local anesthetics.^{49,50} • Bupivacaine/meloxicam extended-release (Zynrelef [US]) is applied to the surgical site prior to suturing.⁴⁸ <ul style="list-style-type: none"> » Compared to standard bupivacaine, bupivacaine/meloxicam extended-release reduces opioid use by ~5 to 10 mg of morphine in the first 24 hours, and pain score differences don't seem clinically significant after about 24 hours.⁴⁸ • Elastomeric pumps (e.g., On-Q) can provide continuous infusion of local anesthetics to the surgical site for ~4 days.⁵⁵ • Continuous IV lidocaine infusion may be an option when local or regional anesthesia is not possible.⁵¹ IV lidocaine may be most beneficial for patients undergoing abdominal surgeries, to reduce early post-op pain and opioid use.⁵² <p>Safety considerations (Also see our clinical resource, Safe Use of Local Anesthetics, for tips to minimize risks):</p> <ul style="list-style-type: none"> • For epidural administration, local anesthetics are often combined with an opioid to reduce the amount of local anesthetic needed.³ • Ensure safe antithrombotic management in patients receiving regional anesthesia. • Avoid repeat bupivacaine doses, or other local anesthetics, for at least 96 hours after administration of Exparel (liposomal bupivacaine [US]) or Zynrelef (bupivacaine/meloxicam [US]) due to persistence of bupivacaine in the systemic circulation and potential for overdose.^{47,48} • Lidocaine may not be appropriate for patients with heart disease, electrolyte disturbances, seizure disorders, or kidney or liver impairment.³⁸ Dose based on ideal body weight (unless actual body weight is less) and stop within 24 hours.³⁸ Monitor for signs of toxicity (e.g., ringing in the ears, lightheadedness, tingling around the mouth), and treat serious toxicity with 20% lipid infusion.³⁸ For details, see https://anaesthetists.org/Home/Resources-publications/Guidelines/Management-of-severe-local-anaesthetic-toxicity-2023.
<p>Ketamine (For information on use of ketamine in the ICU, see our chart, Meds for ICU Analgesia and Sedation.)</p>	<p>Consider for: surgery in which severe post-op pain is expected (e.g., abdominal, thoracic, orthopedic)(best evidence);⁵⁶ surgical patients who are opioid-tolerant;⁵⁶ surgical patients at high risk of respiratory depression caused by opioids (e.g., patients with sleep apnea);⁵⁶ as an opioid adjunct for sickle cell crisis;⁵⁶ acute pain in patients presenting to the ED in whom an opioid is undesirable (e.g., opioid-tolerant, history of opioid misuse, opioid-naïve, elderly, taking medication-assisted treatment for opioid use disorder).⁵⁷</p> <p>Efficacy considerations:</p> <ul style="list-style-type: none"> • Consider doses of ≤ 0.35 mg/kg bolus (e.g., 0.15 to 0.3 mg/kg), or an infusion of 0.1 to 0.3 mg/kg/hour (max 1 mg/kg/hour).^{56,65} • There is less evidence for nasal administration. Consider a dose of 0.7 to 1 mg/kg, with a maximum of 1 mL per nostril.⁶³ • Perioperative ketamine does not seem to benefit patients undergoing surgery not associated with moderate to severe pain.⁵⁶ <p>Safety considerations:</p> <ul style="list-style-type: none"> • Avoid ketamine in patients with psychosis, uncontrolled cardiovascular disease or hypertension, pregnancy, moderate to severe liver impairment, or increased intraocular or intracranial pressure.⁵⁶ • Ketamine at doses ≥ 0.3 mg/kg may be associated with more neuropsychiatric side effects compared to standard care (e.g., dizziness, drowsiness, emergence phenomena, dissociation, dysphoria, hallucinations, nightmares).^{57,58} • Examples of monitoring in the ED include continuous pulse oximetry, telemetry (or vitals every 10 minutes), and immediate availability of the ED physician for at least 30 min post-dose.^{62,64}

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NOT Preferred for Acute Pain	
Mixed agonist/antagonists (buprenorphine, butorphanol, nalbuphine)	<ul style="list-style-type: none"> Buprenorphine is a partial agonist (mu)/antagonist (kappa and delta), while butorphanol and nalbuphine are kappa agonists with poor mu activity.^{66,67} Analgesic effects of partial agonist/antagonists are limited by a dose ceiling.⁶⁷ Avoid in opioid-tolerant patients, as use may lead to withdrawal symptoms.²⁸ Agent-specific considerations <ul style="list-style-type: none"> » Buprenorphine: see our FAQ, Buprenorphine for Chronic Pain, for more on buprenorphine, including why sublingual, buccal, and transdermal buprenorphine products should NOT be used for acute pain, and drawbacks of parenteral buprenorphine. » Butorphanol use is often reserved for pain when other options are not effective, tolerated, or inadequate.⁶⁸ <ul style="list-style-type: none"> • Use may be limited by adverse effects (e.g., psychotomimetic effects) and prolonged respiratory depression at higher doses.⁶⁸ » Nalbuphine may be associated with less itching and less respiratory depression compared to morphine.⁶⁹ <ul style="list-style-type: none"> • Avoid doses greater than 20 mg/dose, especially in opiate-naive patients.²⁸
Codeine	Codeine is metabolized to morphine via CYP2D6. ⁷¹ Efficacy and toxicity are affected by genetics and CYP2D6 drug interactions. See footnote b for details.
Fentanyl transdermal (patch)	Do NOT use fentanyl patch for acute pain.¹
Gabapentinoids (gabapentin or pregabalin)	<ul style="list-style-type: none"> Mounting evidence suggests any benefit of pre-op gabapentin or pregabalin are marginal and likely don't outweigh risks, such as delirium, dizziness, respiratory depression, or visual disturbances.^{78,79} Avoid gabapentinoids in the elderly, patients with kidney impairment, and patients with sleep apnea.^{78,80} See our chart, Enhanced Recovery After Surgery: Developing an ERAS Protocol for dosing.
Muscle relaxants	See our chart, Muscle Relaxants .
Suzetrigine (Journavx)	<ul style="list-style-type: none"> Well-tolerated non-opioid (sodium channel blocker). As effective as hydrocodone 5 mg/acetaminophen 325 mg for post-op (bunionectomy, abdominoplasty) pain.⁸³ May not be more effective than ibuprofen/acetaminophen (no data).⁸³ Contraindicated with strong CYP3A4 inhibitors. Suzetrigine is a CYP3A4 inducer. Backup contraception is required during and for 28 days afterward in patients using hormonal contraception containing progestins other than levonorgestrel and norethindrone.⁸³
Tramadol	<ul style="list-style-type: none"> Less effective than NSAIDs or acetaminophen (1 in 8 patients with moderate to severe pain has 50% pain reduction over 4 to 6 hours with tramadol).²¹ Tramadol is an opioid with additional "baggage" (e.g., atypical adverse effects and withdrawal, genetic influence on efficacy and toxicity). Maximum adult daily dose is 300 mg or 400 mg, depending on product.²⁸ See product labeling for dosing in elderly patients, or in patients with renal or hepatic dysfunction. <ul style="list-style-type: none"> » In elderly patients with CrCl <30 mL/min., avoid extended-release tramadol products due to central nervous system adverse effects.⁷⁶

Abbreviations: APAP = acetaminophen; CABG = coronary artery bypass graft; CV = cardiovascular; ED = emergency department; IV = intravenous; MI = myocardial infarction; NSAID = nonsteroidal anti-inflammatory drug; OSA = obstructive sleep apnea; PCA = patient-controlled analgesia

Footnotes:

- Acute pain can result from acute illness (e.g., renal colic, sickle cell crisis), injury, or surgery.^{1,2} As opposed to chronic pain, its etiology and location is usually clear.³ Acute pain is self-limited, improving over hours to weeks as the injury heals.³ Treatment minimizes detrimental physiologic responses (e.g., tachycardia, shallow breathing, immobility, muscle spasms, ileus, impaired immune response), adverse psychological effects (e.g., anxiety, fear), and progression to chronic pain.⁴ Set realistic goals for pain relief and function (e.g., 33% to 50% decrease in pain).⁵ Some hospitals are developing ALternatives To Opioid (ALTO) or Enhanced Recovery After Surgery (ERAS) protocols. Perioperatively, different medications and routes are combined (i.e., a multimodal or balanced approach) to increase efficacy and decrease side effects.^{5,6}
- CYP2D6** is responsible for metabolism of codeine to morphine, and tramadol to its active metabolite.⁷¹ Therefore, genetic polymorphisms may result in poor response (in poor metabolizers) or toxicity (in ultrarapid metabolizers) with codeine or tramadol.⁷¹ In extensive metabolizers (i.e., most patients), efficacy is reduced by strong CYP2D6 inhibitors (e.g., bupropion, fluoxetine).⁷¹ Avoid codeine and tramadol in children and breastfeeding women.^{70,72,73} See our chart, [Keeping Pediatric Patients Safe](#) for information on codeine and tramadol in children.
- Meperidine safety concerns: Meperidine has a neurotoxic metabolite, normeperidine, that can cause anxiety, tremors, myoclonus, hallucinations, and seizures.⁸¹ Normeperidine can accumulate with repeated meperidine dosing, especially in patients with kidney or liver impairment and in the elderly.^{28,76,81} Meperidine poses a higher risk of postoperative delirium than other opioids.²⁸ Other side effects include confusion and dysphoria.²⁸ Naloxone is not effective for treating normeperidine toxicity, and in fact may worsen it.⁸² Meperidine's vagolytic activity can cause increased ventricular response in patients with supraventricular tachyarrhythmias.²⁸ Poses risk of serotonin syndrome with other serotonergic medications.²⁸

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New Drug

Suzetrigine (*Journavx*)

Why it matters:

Suzetrigine is the first medication in a new class of non-opioid analgesics to be approved in over 2 decades. It's an oral selective sodium channel blocker that prevents pain signals from reaching the brain. Unlike opioids, suzetrigine doesn't pose risks of abuse, misuse, etc.

What else to know:



Suzetrigine reduces acute pain significantly better and faster than placebo, and about as well as hydrocodone/acetaminophen, after a tummy tuck or bunion removal. It's too soon to say how well suzetrigine works for other types of pain (chronic, etc) or across a broad population.

Manufacturer	Vertex Pharmaceuticals Incorporated
Approved use	Treatment of moderate to severe acute pain in adults
Approval date	January 2025
Anticipated availability	March 2025
Dosage and administration	<ul style="list-style-type: none">• 100 mg (two 50 mg tablets) orally on an empty stomach as a loading dose, then 1 tablet every 12 hours with or without food• Dosage adjustments needed in patients who have liver impairment or who are taking moderate CYP3A inhibitors• Food or drink containing grapefruit should be avoided
Storage requirements	Store at room temperature between 68°F to 77°F (20°C to 25°C)
Prescribing information	<u>Journavx Manufacturer</u>



New Drug

Suzetrigine (*Journavx*)

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