

This document is an excerpt from the **ICSI Perioperative Guideline**. The information in this excerpt addresses the use of opioids preop, and postop as well as intraoperative options for pain management to decrease opioid use. It also addresses acute use for patients using long term opioids and patients using medication assisted treatment as it relates to acute surgical pain management.

The complete document can be found at <https://www.icsi.org/guideline/perioperative-guideline/>

Annotations

3. Perioperative Opioid Management

Preoperative Opioid Management

Preoperative Patient Education

Preoperatively, patients should receive education about pain and opioids before the surgical procedure. The education should include multimodal pain management options, including opioids, and consistent messaging that the pain is an anticipated part of the postoperative course. Additionally, patient care goals and expectations in regard to pain during surgery should be understood to manage their expectations for surgical outcomes. Unrealistic goals jeopardize the patients' participation in their care and could lead to disengagement. Any common misconceptions that patients may have about opioids should be understood and addressed.

To support the discussion between provider and patient on care goals and expectations, shared decision-making process may be used (See [ICSI Shared Decision-Making Model](#) for more information on how to have these discussions). This approach takes into consideration patients' role in creating goals for pain and surgical outcomes, allows patients to have a clear understanding of their individual risk profile, and the risks and benefits associated with potential of opioid use during surgery, as well as exploration of their values and preferences. Additionally, within this process, patients should be well aware of the recommended guidelines for opioid prescribing in regard to duration and dosage.

Preoperative Opioid Risk Assessment and Mitigation

Providers performing preoperative health screening and assessment should be aware of the following to help optimize the management of perioperative pain in their patients:

- Have a standard approach or checklist to assess for risk of adverse events (including risk for chronic opioid use and opioid use disorder) in patients for whom opioids are considered for pain control perioperatively.
- Assess preoperatively for appropriateness of nonopioid modalities for the treatment of perioperative pain.
- For complex patients (e.g., patients with chronic pain, long-term opioid use, or opioid use disorder), a multidisciplinary team that includes the primary care provider, pain management specialist, and surgical team (including postoperative opioid prescriber) may be needed prior to surgery to coordinate a plan of care. This approach incorporates biopsychosocial effects of the medical condition (*Gatchel, 2014; Gatchel, 2007*) and has shown to reduce pain severity, improve mood and overall quality of life for patients with chronic pain. (*Oslund, 2009; Gatchel, 2007; Gatchel, 2006*)
- Communication regarding opioids is needed among the primary care provider, surgical team (including postoperative opioid prescriber), pain specialist and hospitalist.

It is critical that the results of preoperative exam are documented in the chart.

To mitigate the risk of adverse effects due to opioid use perioperatively, it is important that a provider doing preoperative health screening and assessment performs and documents these findings on the preoperative exam:

- Directed physical examination
- Directed pain history
- Any patient care goals and preferences regarding pain control
- Review of PMP*

*Prescription Monitoring Program (PMP) provides information about the patient's exposure to opioids and other controlled substances, as well as whether patients receive opioids from other prescribers. A PMP query may affect the surgical team's decision-making on postoperative opioid prescribing. In a study looking at opioid prescribing behavior before and after a PMP query, a high proportion of prescribing decisions were changed in light of the information the PMP query provided. (*Gugelmann, 2011*) It is helpful to document the results of the PMP in the medical record, both to demonstrate the diligence in decision-making, and to capture outside information in the medical chart for future review.

Risk Assessment and Mitigation

Opioid problems
 Psychiatric comorbidities
 Elimination of drug
 Respiratory compromise
 Adverse reactions
 Trouble (high-risk) medications
 Early mobility and falls
 Delirium

Prior to surgery, all patients should have an individualized assessment of risk(s) of adverse events of opioid use and risk(s) to be mitigated. This will help to more realistically counsel the patient, may guide choice of opioids and may improve the outcome(s) of surgery.

Opioid Problems

What is the risk that a patient develops a new opioid use disorder (addiction) after surgery?

Opioid use disorder (OUD) should be recognized, diagnosed and charted in a timely manner. OUD carries great morbidity and mortality but also has effective treatments. (*Pierce, 2016; Volkow, 2014*) It is challenging to discuss OUD with patients. Counseling patients on possible outcomes of opioid prescriptions requires that the provider him or herself review the diagnostic criteria of OUD. (*Hasin, 2013*) OUD is also a challenging outcome to study. A recent study attempted to measure OUD in opioid-naïve patients exposed to opioids after surgery. The incidence of OUD was 0.2% postoperatively. The most important risk for OUD was duration of opioids; with each additional week of opioids, the risk of OUD increased 20%. (*Brat, 2018*) Preexisting substance use and mental health disorders also increased the risk of OUD. A timely discontinuation of postoperative opioids is the most likely way to mitigate risk of OUD.

Standard risk tools such as the Opioid Risk Tool (ORT) are used to predict opioid misuse, but poorly predict OUD itself. (*Klimas, 2019; Volkow, 2016*) Risk assessment tools should not be used to determine the indication or dose of opioids; rather, these tools inform the intensity of monitoring required. Risk tools may also facilitate shared decision-making with the patient. Note that the prevalence of OUD in the community is 1%, and it is often not disclosed or recognized in the preoperative visit. (*Han, 2018*) The TAPS tool for diagnosis of OUD may help recognize it in an outpatient setting. (*McNeely, 2016*)

How do I predict if my patient will overdose from opioids?

Past overdose is powerful predictor of future overdoses. Many patients who are hospitalized with a nonfatal overdose resume opioids, and this puts them at elevated risk of fatal overdose and increased all-cause mortality.

(*Olfson, 2018; Larochelle, 2016*) A new screening tool to predict opioid overdose may prove useful. The Risk Index for Overdose or Serious Opioid-induced Respiratory Depression, or RIOSORD, accounts for medical and psychiatric comorbidities and prescription characteristics to generate a risk score that predicts chance of overdose. (*Zedler, 2018*) This tool can be incorporated into the preoperative assessment with prescription recommendations to avoid adding further risk. An additional safeguard is provision of a naloxone rescue kit to the patient with instructions; however, state laws governing naloxone prescriptions vary.

How do I prepare my patients with an established diagnosis of opioid use disorder for surgery?

Patients with OUD have a wide spectrum of clinical stability; they may be stable and in long-term remission, possibly on medication, or may be unstable and actively using intravenous drugs. This difference may affect the postoperative use of opioids. It is important to first ascertain if the patient is in treatment. Obtain a release of information and contact the treatment provider. Medications are an important component of recovery in OUD and should be carefully managed in the perioperative period. (*Alford, 2006*) Consider obtaining a urine drug screen, or reviewing the urine drug screen record with the addiction provider. It is critical to assess for recent IV drug use in OUD patients in the preoperative interview. Active IV drug use may require the surgery to be postponed. A focused addiction consultation may help assess the preoperative risk of drug use, and may help manage postoperative opioid use. See the “[Perioperative Considerations for Patients with Opioid Use Disorder](#)” section for more detailed information on medications and risk mitigation for these patients.

What is the patient’s risk of continuing on opioids long-term after a surgery?

Opioid-naïve patients who receive opioid prescriptions after a cataract removal remain on opioids one year later 7.7% of the time; patients receiving an opioid prescription within seven days of surgery were 44% more likely to become long-term opioid users within one year compared with those who received no such prescription. (*Alam, 2012*) Healthy adolescents prescribed opioids for minor procedures, such as dental extractions, have a 30% increased relative risk of misusing opioids. (*Miech, 2015*) The presence of unused opioids in the home is itself a risk factor for someone in the household using opioids illicitly. (*Seamans, 2018*) Many patients have unused opioids after surgery. (*Bedard, 2018; Bates, 2011*) Therefore, in any instance where opioids are not routinely needed after a surgery, they should not be prescribed.

Postoperative short-term prescriptions may lead to chronic opioid use in patients who were opioid naïve prior to the surgery. These patients do not meet criteria for opioid addiction. The likelihood of chronic opioid use after an acute pain episode is linearly dose-dependent on the opioid exposure. (*Shah, 2017*) The opioid exposure that predicts chronic use is the sum of the total opioids in the course of acute pain treatment (called total morphine milligram equivalent [MME]). Mental health comorbidities increase the risk of ongoing opioid use: depression and anxiety, use of antidepressants and benzodiazepines, substance use disorders, tobacco use. Average rates of ongoing opioid use after surgery is 6% at three months after the surgery and 1.5% one year after the surgery. (*Brummett, 2017; Sun, 2016; Carroll, 2012*) An article by Sun et al, 2016 provides relative risks associated with ongoing opioid use that can be used to individualize an assessment and incorporated in the preoperative evaluation (e.g., the relative risk for ongoing opioid use is 1.8 for patients also prescribed benzodiazepine). (*Sun, 2016*)

Psychiatric Comorbidities

Providers need to be aware of any psychiatric comorbidities that could affect pain management and of any medications patients are currently taking. If conditions are under poor control, therapies should be initiated prior to surgery if possible.

Certain mental health disorders pose a higher risk when initiating opioids. (*Davis, 2017; Volkow, 2016*) Patients with post-traumatic stress disorder or adverse childhood experiences are at very high risk for opioid misuse and addiction. Patients with eating disorders and obsessive-compulsive disorders are similarly at high risk but less studied.

Elimination

Renal impairment is an important limiting factor when choosing an opioid. Most opioids are cleared at least in part by the kidneys. In anyone other than young healthy patients, providers should have a recent measurement of renal function before prescribing an opioid. If the glomerular filtration rate is less than 60, consult a pharmacist before deciding on an opioid. (*Dean, 2004*)

Respiratory Compromise (and Immunocompromise)

Opioids suppress dyspnea, decrease ventilation, relax the muscles of the upper airway and reduce the gag reflex, and therefore cause a number of respiratory effects important in the perioperative period. Opioids in an opioid-naïve patient will worsen sleep apnea, hypoventilation syndromes and oxygenation in any patient predisposed to these issues. (*Mador, 2014*) Unrecognized obstructive sleep apnea increases the risk of death and heart failure after noncardiac surgeries, possibly related to opioid exposure. (*Chan, 2019*) Observation in the postoperative period may reveal apneic episodes in patients without an established sleep apnea diagnosis. Initiating opioids in an opioid-naïve patient with COPD doubles the mortality from pulmonary causes. (*Levine, 2017; Vozoris, 2016*) Opioids are associated with an increased risk of pneumonia, including invasive pneumococcal disease, and opioid prescriptions are overrepresented in deaths from pneumonia. (*Wiese, 2018; Hall, 2018*) The cause of the increase in pneumonia risk is not known but may be due to immunosuppression or aspiration. (*Wiese, 2019*) Patients hospitalized after a surgery can easily be observed for respiratory complications. However, outpatient surgeries for opioid-naïve patients with a respiratory illness may require educating the patient and family, and provision of a naloxone kit. It should be emphasized that the relative risks of respiratory events due to postoperative opioids may be large, but the absolute risk remains small.

Adverse Reactions

Urinary retention is a common and underestimated adverse effect of opioids, especially given the risk of urinary tract infection postoperatively and the importance of minimizing unneeded urinary catheters. (*Benyamin, 2008*) Patients with preexisting urinary retention may particularly struggle.

Opioid-induced constipation results from decreased bowel motility and decreased mucosal secretions. Colace or fiber is not adequate treatment or prevention of opioid induced constipation. Senna may help situate the bowel but is often not sufficient if the stool is dry. Polyethylene glycol is a good agent to treat opioid-induced constipation. (*Swegle, 2006*)

Patients will often become nauseated when receiving opioids. This can be easily diagnosed and treated with traditional antiemetics as long as the provider is aware. (*Swegle, 2006*)

Patients will often develop pruritis on opioids. Antihistamines may reduce the pruritus, but some antihistamines have an anticholinergic effect that may interact with the sedating effect of the opioids. (*Ganesh, 2007*) Consider loratadine or cetirizine or fexofenadine before agents such as diphenhydramine. (*Swegle, 2006*)

It is important to distinguish true allergic reaction from adverse reaction when choosing opioid therapy for patients. If a true, IgE-mediated allergic reaction (hives, anaphylaxis) is documented, patients might tolerate opioid therapy from a different structural class. (*Powell, 2019*) Expected adverse reactions to opioids are common and can be managed with a variety of medications.

Trouble (High Risk) Medications: Tramadol, Meperidine, Methadone, Codeine, Long Acting Opioids and Benzodiazepines

Tramadol, tapentadol and meperidine lower seizure threshold. (*Manninen, 1997*) This epileptogenic effect is exaggerated in renal failure (*Pham, 2017*) and for those with preexisting seizure disorder. (*Boostani, 2012*) In such patients these medications should be avoided. Postoperatively, tramadol carries an increased risk of ongoing opioid use compared to other opioids. (*Thiels, 2019*) There is a black box warning against

use of tramadol in children under 12 years of age and in breastfeeding women (<https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-restricts-use-prescription-codeine-pain-and-cough-medicines-and>). Meperidine may increase the risk of serotonin syndrome according to case reports. (Tissot, 2003) The Food and Drug Administration (FDA) released a statement in 2016 about several safety issues regarding the entire class of opioid medications, including the risk of serotonin syndrome. (FDA, 2016)

Many opioids prolong the QT interval, and in some instances, arrhythmias result. Methadone, even at low doses, has a high risk of QT prolongation. Oxycodone and tramadol show intermediate risk, but other opioids such as morphine and buprenorphine are considered low risk. (Behzadi, 2018) QT prolongation is multifactorial, typically resulting from other medications, electrolyte abnormalities, bradycardia, and individual susceptibility. (Behzadi, 2018) For patients with a long QT interval, consult with a pharmacist before initiating opioids, to avoid exacerbating the risk. (Tisdale, 2016)

The Food and Drug Administration has issued a black box warning against using codeine in children of any age after surgery, specifically after tonsillectomy and/or adenoidectomy, and against use in breastfeeding women. (FDA, 2018) This is due to the fact that many people are ultra rapid metabolizers of codeine, leading to the rapid buildup of the active metabolite, and therefore unexpected respiratory suppression. This effect is not unique to children; any patient may have respiratory suppression from codeine from this mechanism. (Dean, 2012)

Long-acting opioids should not be initiated for acute pain. Even in chronic pain, long-acting opioids are associated with increased mortality, including increased cardiovascular and pulmonary mortality. (Ray, 2016)

Benzodiazepines add risk of overdose, addiction, and ongoing use, and should be used sparingly and cautiously in combination with opioids in the postoperative period. (Hozack, 2019)

Early Mobility and Falls

Opioids are associated with a 4.5-fold increase risk of falls and double the mortality in elderly patient compared to NSAIDs. (Solomon, 2010) Generally, for elderly patients, for the first two weeks after initiating opioid therapy, but not thereafter, short-acting opioids are associated with a greater risk of fracture than are long-acting opioids. (Miller, 2011) The highest risk opioid to cause falls is codeine; the lowest risk opioid to cause falls is tramadol. (Buckeridge, 2010)

Early mobilization is critical. For hospitalized patients, a physical therapist should be able to assess safety and should do so aware of the relationship of the assessment to the most recent opioid dose; the patient's safety assessment may change after he or she has taken an opioid. For outpatient surgeries, careful explanation of the risk of falls is important, and planning to minimize fall risk could help.

Delirium

Delirium is a possible outcome after any surgery and is usually multifactorial. Postoperative delirium occurs in 16-35% of patients. (Leung, 2009; Morrison, 2003) Pain can be an important contributor to delirium; patients receiving very low doses of opioids after hip replacement are at significant increased risk of delirium. Yet opioids themselves also contribute to delirium. (Swart, 2017; Clegg, 2010; Morrison, 2003) Meperidine and tramadol may be more associated with postoperative delirium than other opioids. (Swart, 2017) To further minimize the risk of delirium, polypharmacy and excessive sedation should be avoided, particularly by not starting benzodiazepines or not using anticholinergic antihistamines. (Clegg, 2010) Medical causes of delirium should be ruled out. Postoperative delirium will never be completely eliminated. However, by treating pain prudently, while minimizing unneeded opioids, avoiding benzodiazepines and anticholinergic medications, the risk and severity of postoperative delirium may be reduced.

Preoperative Opioid Use

When looking at evidence in the postoperative outcomes of patients on preoperative opioids, the definition of preoperative opioid use varied across studies. The definitions ranged from any documented opioid use prior to surgery to more specific time frames defined by each study. Because of this broad definition of preoperative opioid use, it is hard to draw definitive conclusions. Additionally, there is variation among studies on inclusion of medical and mental health comorbidities (mood, anxiety), personality disorders, trauma and substance use disorders comorbidities (some studies looked at impact of this and others did not).

In general, available systematic review and observational studies, mostly comprising of patients undergoing orthopedic surgeries (e.g., primary total knee or hip arthroplasty), show that compared to opioid-naïve patients, patients with preoperative opioid use have worse postoperative outcomes. Those outcomes include physical and mental health outcomes including higher pain and function scores, higher likelihood of long-term opioid use, increased discharges to rehabilitation facility vs. home, greater length of stay, higher readmission rates, and higher rates of surgical site infections and revisions. (*Blevins Peratikos, 2019; Bonner, 2019; Goplen, 2019; Berglund, 2018; Bell, 2018; Politzer, 2018; Rozell, 2017; Zarling, 2017*) The results remained true after controlling for certain medical and mental health comorbidities.

Studies of other types of orthopedic surgery (spine, lumbar fusion and cervical fusion) followed similar outcomes as did studies of abdominal surgery. (*Cron, 2017; Faour, 2017; Tye, 2017; Waljee, 2017; Issa, 2014; Lee, 2014*)

Chronic Opioid Use

Studies that specifically looked at outcomes for patients with preoperative chronic opioid use differed on the definition of chronic opioid use. Also, the total body of literature is smaller compared to general preoperative opioid use and comprised mostly patients undergoing orthopedic surgeries such as total knee, shoulder arthroplasty, cervical spine fusion and lumbar spine fusion. None of the studies included patients with opioid addiction. Overall, these drawbacks limit the conclusions that may be drawn on patients on chronic opioids preoperatively.

Evidence shows that compared to patients who are opioid-naïve or not chronic opioid users, those who are chronic opioid users preoperatively have higher likelihood of long-term opioid use postoperatively, increased risk of complications (e.g., wounds, infections and constipation), ED visits, and revision surgery. (*Kalakoti, 2019; Jain, 2018a; Jain, 2018b*) Other findings show longer length of stay, continued and persistent chronic opioid use postoperatively, and higher MED consumption in chronic opioid users. (*Kim, 2019; Kim, 2018; Cheah, 2017; Aasvang, 2016; Zarling, 2016*) These studies have also found that patients with medical and mental health comorbidities (e.g., mood, anxiety) are more likely to be chronic opioid users preoperatively. The studies varied on which comorbidities were included.

Preoperative Opioid Tapering

Consensus Recommendation
<p>An individualized approach for tapering in patients who are on opioids preoperatively (including patients with chronic opioid use) should be taken.</p> <p>A decision on whether to taper preoperatively needs to be made well in advance of surgery. However, if a significant medical concern about opioid use is recognized closer to the surgery date <i>which could be made safe with a taper</i>, the patient, the provider and the surgical team should discuss whether delaying the surgery in order to treat the underlying condition is appropriate.</p>
<p>Benefit: Small body of available evidence shows that postoperative outcomes (reduced risk of adverse events, reduced likelihood of revision surgery, reduced morphine equivalent dose (MED), and improved pain scores and patient-reported scores on physical and mental health outcomes) in tapered patients are comparable to the outcomes for opioid-naïve patients.</p> <p>Harm: Given that evidence on harms of tapering is not available and harms are unknown, there is a potential risk that a patient could experience adverse effects from opioid tapering.</p> <p>Benefit-Harms Assessment: Given the small body of evidence on perioperative outcomes for patients who are tapered from opioids preoperatively and unknown harms from it, primary care providers performing preoperative health screening and assessment should take an individualized approach to tapering as stated in the recommendation.</p>
<p>Relevant Resources: <i>Jain, 2019 (Observational Study); Nguyen, 2016 (Randomized Controlled Trial); Hassamal, 2016 (Case Series)</i></p>

There is only a small body of emerging evidence on tapering opioids prior to surgery. The largest study (n=58,082) found that stopping opioids three months before surgery for patients on opioids longer than six months reduced the risk of pain-related ED visits, readmissions, infections and revision surgery within one year, particularly in patients undergoing hip surgery and lumbar fusion. (*Jain, 2019*) One study of 41 patients who regularly used opioids and successfully tapered their morphine equivalent dose by 50% prior to a total knee or hip arthroplasty had greater improvements in physical health outcomes than patients who did not taper. Outcomes in the tapered group were also comparable to those of opioid-naïve patients. (*Nguyen, 2016*) A case series study of six spine surgery patients who underwent preoperative opioid reduction program for about six to eight weeks found a decrease in daily morphine equivalent dose (MED), and in pain score in five patients, and a surgery-related complication in one patient. All six patients had improvements in mental health outcomes such as depression, anxiety and fatigue. Most patients had improved physical functioning, disturbances in sleep and satisfaction with participation in social roles. (*Hassamal, 2016*) The tapering protocols varied between the studies. None of these studies identified potential harms from stopping opioids or tapering.

Given the lack of uniformity in the literature on the standard definitions of preoperative or chronic opioid use and lack of more expansive literature looking at efficacy and/or harms of tapering prior to surgery, **the ICSI Perioperative Opioid Management Subgroup consensus is to take an individualized approach for tapering in patients on opioids preoperatively.** A decision on whether to taper preoperatively needs to be made well in advance of surgery. However, if a significant medical concern about opioid use is recognized closer to the surgery date *which could be made safe with a taper*, the patient, the provider and surgical team should discuss whether delaying the surgery in order to treat the underlying condition is appropriate.

The individualized approach should take into consideration the following:

- Individual patient risk factors for adverse events of continued opioid use post surgery
- Individual patient risk factors for adverse events due stopping or tapering opioids prior to surgery
- Shared decision-making discussions between providers and patients on the risks of continued opioid use preoperatively, which include patient education on postoperative pain expectations
- Multidisciplinary approach that focuses on opioid management and communication between primary care providers and the surgical team both preoperatively and postoperatively
- Goals of an opioid taper (how much to taper and over what period of time) prior to surgery
- Follow-up and support for patients managing pain and changes to their medication regimens

Links to additional resources that provide specific guidance on opioid tapering (MN Health Collaborative Demystifying Opioids and U.S. Department of Health and Human Services guide on tapering) are available in “Implementation Tools and Resource Table” section of this guideline.

Intraoperative Pain Management

An intraoperative plan of care should incorporate the results of preoperative health screening and assessment, optimize periprocedural regional analgesia/anesthesia techniques to reduce the need for opioid use postoperatively where possible. Additionally, the plan should emphasize use of multimodal analgesia (e.g., NSAIDs, Cox-2 inhibitors (COXIBs), or acetaminophen) when possible. This approach provides superior pain relief and decreases the need for supplemental opioid use compared to a unimodal analgesia approach, which in turn means that patients may only require nonpharmacologic modalities postoperatively. (*Apfelbaum, 2012a*)

The following table provides a summary of intraoperative approaches prior to incision vs. postincision during the surgical procedure. It is informed by the American Society of Anesthesiologists Task Force on Acute Pain Management Practice Guidelines for Acute Pain Management in the Perioperative Setting. (*Apfelbaum, 2012a*)

Pre-Incision Medications and Techniques	Post-Incision Medications and Techniques
<p>Acetaminophen*</p> <p>NSAIDs (COX-2 inhibitor)</p> <p>Gabapentinoids (gabapentin, pregabalin)</p> <p>Regional anesthesia</p> <ul style="list-style-type: none"> • Neuraxial blockade <ul style="list-style-type: none"> - Continuous epidural analgesia Single-injection spinal opiates - Paravertebral • Peripheral nerve blockade (single injection or continuous) <ul style="list-style-type: none"> - Upper extremity <ul style="list-style-type: none"> • Interscalene block • Suprascapular nerve block • Supraclavicular block • Infraclavicular block • Axillary block - Lower extremity <ul style="list-style-type: none"> • Lumbar plexus/fascia iliaca block • Femoral nerve block • Distal femoral triangle block • Adductor canal block • Sciatic nerve block • Popliteal (sciatic) nerve block • Selective tibial nerve block • Ankle block • iPACK block • Truncal/fascial plane blockade (single injection or continuous) <ul style="list-style-type: none"> - Erector spinae plane (ESP) block - PECS I, II blocks - Serratus plane block - TAP block - Rectus sheath block - Quadratus lumborum block 	<p>Acetaminophen*</p> <p>NSAIDS (ketorolac, ibuprofen)</p> <p>Dexamethasone</p> <p>Regional/local anesthesia</p> <ul style="list-style-type: none"> • See pre-incision regional techniques • Surgeon-administered incision infiltration • Surgeon-administered fascial plane blocks <p>Lidocaine, bolus plus infusion</p> <p>Ketamine, bolus plus infusion</p> <p>Dexmedetomidine, bolus plus infusion</p> <p>Magnesium infusion</p>

*A note on acetaminophen: There is some early evidence showing positive preventive effect of acetaminophen given within one hour of anesthesia vs. postincision; however, more evidence is needed to draw definitive conclusions. A 2015 systematic review and meta-analysis of seven randomized controlled trials with 544 patients aged 16 years and older including all types of surgeries looked at the relationship between acetaminophen as preventive analgesia and postoperative outcomes. Acetaminophen given preventively (defined as within one hour before induction of anesthesia) was compared to acetaminophen given after incision (any time between postincision and within 30 minutes from the end of surgery). The review found a reduction in 24-hour opioid consumption, lower pain scores at one hour and two hours, and a lower incidence of postoperative vomiting in the preventive acetaminophen group. (Doleman, 2015)

Postoperative Opioid Management

Postoperative Opioid Prescribing

In general, multimodal pain management strategies that include use of medications from multiple therapeutic classes prioritizing nonopioid medications before administering opioid medications should be used whenever appropriate. These include, a scheduled regimen of NSAIDs, COXIBs or acetaminophen, when appropriate, and regional blockade with local anesthetics, when appropriate. (Apfelbaum, 2012a) These modalities may reduce pain enough to save opioids for extreme or break-through pain.

The surgical team should consider reviewing the following when determining individual patient postdischarge pain management plan with the goal of improving function and control pain:

- The results of preoperative health screening and assessment to understand the patient’s history with pain management and medications
- Any plan of care that was set by a patient and the provider

If considering opioid prescribing postoperatively, review:

- Individual patient factors such as age, prior exposure to opioids, mental status, and pain management history
- Patient’s pre-existing health conditions that increase the risk of adverse effects and addiction due to opioid use (see “[Preoperative Opioid Risk Assessment and Mitigation](#)”)
 - This information should be available from preoperative health screening and assessment. If not available, the surgical team (including postoperative opioid prescribers) should assess.
- PMP
 - Findings should have been documented during the preoperative exam. If this was not done, the surgical team should query because it provides information about the patients’ exposure to opioids and other controlled substances, as well as whether patients receive opioids from other prescribers.

Consensus Recommendation
The postoperative prescribed opioid doses at discharge should be the lowest effective dose of short-acting opioids.
<p>Benefit:</p> <ul style="list-style-type: none"> • Provides optimal pain control, reduces potential for unused opioids in the community and maintains patient satisfaction. • Initiation of long-acting opioids can harm the patient by increasing the risk of overdose or death. <p>Harm:</p> <ul style="list-style-type: none"> • Risks include overdose and death. <p>Benefit-Harms Assessment:</p> <p>Opioids carry the risk of potential overdose and death. In order to mitigate for this risk, it is important that if opioids are prescribed postoperatively at discharge that the lowest effective dose of short-acting opioid is prescribed.</p>
<p>Relevant Resources:</p> <p>Hill, 2018 (Observational Study); Koehler, 2018 (Systematic Review); Mark, 2018 (Observational Study); Bicket, 2017 (Systematic Review); Osmundson, 2017 (Observational Study); Thiels, 2017 (Observational Study); Ray, 2016 (Observational Study); Miller, 2015 (Observational Study); Dhalla, 2009 (Observational Study)</p>

The higher total morphine milligram equivalent (MME) dose and a longer duration of opioids prescribed postoperatively during the inpatient stay are associated with many undesirable outcomes: longer hospital stays, increased readmission rate, mortality rate, chance of health care facility disposition and total cost of care. (Shafi, 2018) There is growing body of literature looking at patterns of opioid use postoperatively to determine the amount needed on discharge, if any at all. (Hill, 2018; Mark, 2018) Each patient is unique, and there is growing evidence that using a procedure-specific, patient-centered approach to guide the use of postoperative opioids provides optimal pain control, reduces unused opioids in the community, and maintains patient satisfaction. (Bicket, 2017; Osmundson, 2017; Thiels, 2017) Studies have also found that more than 80% of patients report unused opioids and 42-71% of pills dispensed went unused after surgery. (Feinberg, 2018; Tan, 2018; Batemen, 2017; Bates, 2011; Bicket, 2017; Osmundson, 2017)

Given the available evidence, it is the consensus of this work group that the postoperative prescribed opioid doses at discharge should be the lowest effective dose of short-acting opioids.

Other considerations for postoperative opioid prescribing at discharge for all patients include:

- Prescribed opioid doses should be individualized based on the risk of adverse events due to opioid use to each patient. It is out of scope of this document to address procedure-specific dosing. For information on procedure specific postoperative opioid prescribing at discharge, refer to the [MN Health Collaborative Call to Action](#) on standards for opioid prescribing based on the type of surgery.
- Avoid long-acting opioids. Initiation of long-acting opioids can harm the patient by increasing the risk of overdose or death. (Ray, 2016; Miller, 2015; Dhalla, 2009)
- Provide following information to patients on:
 - Expectations on length of time they would be on opioids for surgical-related pain
 - Risks of overdose and death (including the risk if opioids are taken with alcohol or illicit drugs)
 - The potential risk to other person/child, or pet, specifically if taken with alcohol or illegal drugs
 - Safe storage of the medications, preferably in a lockbox and with safe disposal instructions
 - Information on opioids and driving
 - Naloxone kit to high-risk surgical patients and/or their close contacts (e.g., family, friends, caretaker)

Additional considerations for patients with chronic opioid use preoperatively:

- Preoperatively, the patient should be educated that any new higher dosing of opioids for postoperative pain *is not* the new normal. The objective is to treat surgical-related pain, not chronic pain.
- Patients may not need their preoperative opioid dose after surgical healing, particularly if the surgery was done to help improve the issue for which opioids were initially prescribed.
- The surgical team and primary opioid prescriber should have clear communication on who is the active opioid prescriber at all times.
- Patients on chronic opioids preoperatively may be enrolled in a controlled substance agreement with the provider who prescribes their chronic opioids. While this should not preclude another provider from prescribing opioids in an acute setting, good communication is needed between care teams and with the patient.

Postoperative Patient Education

For patients who are prescribed opioids postoperatively, include information on potential of adverse effects of opioids and what to do if experiencing any adverse effects. Refer to “[Preoperative Opioid Risk Assessment and Mitigation](#)” section for detail on adverse effects.

For patients who are prescribed opioids postoperatively, PRN instructions on opioid prescriptions may not be sufficient for patients to understand when they should take opioids. Therefore, the providers may want to consider including clear prescription instructions on all opioid prescriptions for patients on how and when to decrease dose and to increase the interval between doses as pain subsides.

Naloxone

Naloxone is a medication that can reverse the sedating effects of opioids. Serious side effects from naloxone use are rare, but benefits during an overdose far exceed the risks. The reversal effect of naloxone may not outlast the sedating effect of many opioids, so it is recommended to activate the emergency services whenever it is used. (CDC, 2018; Hooten, 2017)

Administration can be intranasally, intramuscularly or subcutaneously. Anyone can administer it if received education on how to do it (free online or community training course are available; check for availability in your area).

Opioids Storage and Disposal

Proper storage and disposal of opioids can reduce diversion, accidental misuse and overdose. (Hooten, 2017) All patients should be instructed to store their opioids in a location, ideally locked, that is unreachable by family or house guests. Patients should be instructed to dispose of their unused medications promptly at the end of a pain episode.

Disposal options in the order of preferred method (see the “Implementation Resources Table” for more information):

- Medication take-back is the preferred method per the FDA. The U.S. DEA may periodically host prescription take-back events at temporary collection sites. Authorized collection sites in the community are also available and include local law enforcement facilities, retail pharmacies, hospital or clinic pharmacies.
- The second preferred option (if no take-back programs are available) is pharmaceutical disposal bags with activated charcoal, which can be purchased for at-home disposal.
- The third preferred method is flushing down the toilet. The FDA and DEA allow for opioids to be flushed down the toilet; however, this method is not endorsed by the EPA.

Opioids and Driving

The sedating effects of opioids may impair one’s ability to operate a motor vehicle or carry out tasks that require wakefulness and reaction time. (Hooten, 2017). Therefore, it is important to warn patients about the risk to themselves and others while performing potentially dangerous tasks while on opioids.

Nontolerant opioid users will likely experience greater impairment. (Hooten, 2017) Alcohol and other CNS depressants may increase these effects and should be avoided while a patient is on opioid medications. (Hooten, 2017) When a patient has developed tolerance to the sedating effects of opioids, patients may safely operate a motor vehicle. (Hooten, 2017) Determining when the patient has developed enough tolerance is a judgment call, and prescribers should err on the side of caution.

There may also be legal implications for patients who drive while taking opioids, which can vary state to state. Local law may vary on what meets the definition of “driving under the influence” of a controlled substance, and prescribers should understand and follow local laws.

Perioperative Considerations for Patients with Opioid Use Disorder (OUD)

Patients on Medication-Assisted Treatment (MAT)

Patients with opioid use disorder (OUD) are at high risk of opioid overdose and relapse if using opioids for management of acute pain. (SAMHSA, 2018) Thus, these patients may be at risk of having their acute pain underestimated or undertreated. (Mehta, 2006) Patients who are on medication-assisted therapy (MAT) should be carefully managed in the perioperative period if opioids are prescribed to manage acute pain. (Alford, 2006)

There is a lack of high-quality evidence on perioperative opioid management of patients with OUD on MAT. The evidence consists mostly of low-quality studies including case studies, retrospective studies and expert opinion. The specific protocols for perioperative MAT and acute pain management with opioids vary in the literature based on different expert consensus groups.

Given the complexities of acute pain management with opioids in OUD patients on MAT, the patient's provider and surgical team may consider a consult with addiction medicine and/or pharmacist to provide guidance on MAT and opioid management perioperatively.

Currently, three agents are used for MAT in OUD:

Methadone: A synthetic, long-acting opioid, approved for treatment of OUD in 1972. The dose generally ranges from 60-120 mg and is available for treatment of OUD only via methadone clinic.

Buprenorphine: A partial mu agonist, kappa antagonist and long acting. It was approved for office-based treatment of OUD in 2002.

Naltrexone: Opioid antagonist with a 28-day extended release formulation. Also available in PO formulation.

Patient Education

In addition to information in the "Preoperative Patient Education" section, a few additional considerations for patients with OUD who are currently on MAT undergoing surgery should include:

- Discussion of expectations of pain from surgery and expectations about opioids for pain from surgery
- *Reassurance* to patients regarding pain expectations and more specifically, their addiction history will not prevent adequate pain management. (Alford, 2006) Discuss and document previous experiences and utilize shared decision-making in discussions regarding decisions for opioids for pain management.
- Discussion of risk of relapse
- Discussion of risk of overdose
- Discussion of identifying triggers/cravings
- Discussion of availability and access to naloxone to patients and/or family members and training
- Discussion of storage/disposal/lockbox

Perioperative Pain Management

In general, pain management should use strategies that both provide effective analgesia and prevent withdrawal symptoms, with those being two separate goals. (Quinlan, 2017) Therefore, initially the goal is to maximize nonpharmacological options and nonopioid pharmacology. (Quinlan, 2017; Mehta, 2006) However, opioids may still be prescribed as part of multimodal pain management because OUD patients

are likely to be opioid tolerant, but are often pain intolerant. (*Harrison, 2018*) If opioids are prescribed, there should be careful considerations for preoperative and postoperative management of MAT. The next section includes more specific considerations for each MAT agent.

Additional considerations include:

- Using regional anesthesia (*Quinlan, 2017*)
- Early recognition and treatment of symptoms and behavioral changes that might indicate withdrawal (*Quinlan, 2017*)
- Avoid use of mixed agonist and antagonist opioids because they may precipitate an acute withdrawal syndrome (*Alford, 2006*)
- Avoiding prescribing benzodiazepines and carisoprodol (*Quinlan, 2017*)
- Using tamper-proof and secure analgesia administration procedures
- Notifying the patient's MAT provider regarding the patient's discharge and confirming the time and amount of the last maintenance opioid dose (*Alford, 2006*)

Risk mitigation of adverse effects of postoperative opioid use in patients with OUD on MAT (regardless of agent) should include:

- Implementing risk mitigation rules: high frequency visits to closely monitor use of postoperative opioids, pill counts, checking of PMP, urine drug screening for alcohol/drug use
- No early refills
- No replacement of lost prescriptions
- Prescription only with visit
- Verifying availability of naloxone at home and patient/family member training on how to administer it

If Opioids are Prescribed, Specific Considerations by Each MAT Agent:

Methadone

Preoperative Management

- Verify patients' outpatient methadone dose with their methadone clinic.
- Verify availability of naloxone in hospital/at home.
- Continue daily dose preoperatively, understanding this dose is not adequate to treat postoperative, acute pain. (*Harrison, 2018*)
 - Example: Think of methadone as patients' basal needs, like basal insulin, and short-acting opioids as their acute needs, like mealtime insulin.
 - If unable to take PO, give IV and reduce dose by one-half to two-thirds and split three times a day (TID). (*Harrison, 2018*)
- Patients with OUD are more likely to exhibit hypersensitivity symptoms and high tolerance. (*Jamison et al., 2000; Barry 2009*)
 - Hypersensitivity and pain intolerance are common among those with OUD. This means that they feel pain more intensely and may require higher doses of opioids to feel the same relief.

Annotations

- Relapse risk is high and worse with inadequate pain control. (*Ti, 2015; Voon 2018*)
 - The risk of in-hospital illicit opioid use is higher among patients with OUD and inadequate pain control, especially if they are denied pain medication. (*Ti, 2015*)
 - Focus groups involving 83 self-identified drug using patients, illustrated how restrictive policies regarding use of opioid pain medications for acute pain, serve as a risk factor for drug use. (*Voon, 2018*)
- Be aware of pharmacological properties. Avoid partial agonists (butorphanol, buprenorphine, nalbuphine). Giving a partial agonist with a full agonist (methadone) has the potential to displace the full agonist and cause precipitated withdrawal. (*Walsh, 2003; Clark, 2002; Strain, 1995; Walsh, 1995; Strain, 1993*)
- Communicate following information to methadone clinic:
 - Inform them the patient will undergo a procedure, and the hospital will administer methadone until discharge, and potential discharge date.
 - If patients are not hospitalized or in a TCU, they will need to get their methadone from the methadone clinic. The methadone clinic decides if the patient is eligible for take-home doses.

Postoperative Management

- Continue the daily dose throughout perioperative period, understanding this dose may not be adequate to treat postoperative, acute pain. (*Harrison, 2018*)
- Discuss postoperative opioid management plans with support person or OTP.
- Beware of high frequency visits/prescriptions (closely monitor use of postoperative opioids).
- Taper postoperative opioids in similar time frame for opioid-naïve patients. (*Expert Consensus*)

Buprenorphine

Preoperative Management

In general, the preferred method is to either continue patient's current dose of buprenorphine or continue a lowered dose prior to surgery. (*Harrison, 2018, Quaye, 2018*) Discontinuation is not preferred due to high risk of inadequate pain relief, relapse and overdose. (*Lembke, 2018; Quaye, 2018; Sen, 2016; Bentzley, 2015; Sigmon, 2013; Volpe, 2011; Ling, 2009; Breen, 2003*)

1. Continuing current dose buprenorphine (**preferred method**)

- The most prominent risk is inadequate pain relief. Buprenorphine is a partial mu agonist with high affinity, meaning it will block most other opioids from accessing the receptor. To overcome that blockade, higher doses and/or higher potency opioids may be needed. (*Expert Consensus*)
- The risk of relapse with this method would be related to undertreated pain. If pain is undertreated, the risk of relapse increases (*Ti, 2015; Voon, 2018*) because patients are likely to seek illicit sources to treat pain.
- Overdose risk is low with the combination of buprenorphine and short-acting opioids in a controlled and appropriate fashion.

2. Continue lowered-dose buprenorphine (**preferred method**)

- The risk of inadequate pain relief is lessened with this method, because as the dose of buprenorphine is lowered, the receptor availability is increased, and therefore the patient can feel the effects of short-acting opioids. (*Greenwald, 2014; Greenwald, 2007*)
- The risk of relapse may be increased with a lowered dose of buprenorphine (*Expert Consensus*) given that maintenance buprenorphine doses are titrated to cravings, but there is evidence that pain control is manageable when the buprenorphine is continued. (*Vilkins, 2017; Hansen, 2016; Macintyre, 2013; Kornfeld, 2010; Meyer, 2010; Jones, 2009*)

Continuing current dose vs. lowering dose

Whether to continue the patient's current dose of buprenorphine or taper to a lower dose but not off, to provide more mu receptor availability, has not been studied. (*Lembke, 2018*) The decision of whether to continue the current dose of buprenorphine versus decreasing the dose of buprenorphine should be a shared decision between the provider and the patient that takes into consideration preoperative buprenorphine dose, previous patient experiences and OUD relapse risk.

***See table at the end of buprenorphine section for an example of buprenorphine perioperative management plan.**

3. Discontinuation of buprenorphine (**not preferred method**)

- A high risk of inadequate pain relief. Buprenorphine has a very high potency; 1 mg morphine is equivalent to 15-35 mcg of buprenorphine, so patients usually have a very high opioid tolerance. Attempting to treat their baseline opioid needs plus their acute pain needs requires astronomical doses of regular opioids. (*Volpe, 2011*)
 - Example: A patient on 8 mg buprenorphine, which is the equivalent of about 600 mg morphine, or 400 mg oxycodone, which is just their baseline need and wouldn't treat their acute pain.
- A very high risk of relapse. Because the patient is no longer on buprenorphine, he or she has no blockade of mu opioid receptors and thus can feel the full effects of all opioids. Discontinuation has been associated with increased risk of illicit opioid use. (*Quaye, 2018; Sen, 2016; Bentzley, 2015; Sigmon, 2013; Ling, 2009; Breen, 2003*)
- Because the risk of relapse is higher, the risk of overdose is also higher. (*Lembke, 2018*)

Postoperative Management

1. If continued current dose buprenorphine (*Expert Consensus*):

- Use higher potency opioids, e.g., oxycodone as opposed to hydrocodone.
 - If the initial dose set by the surgeon is not controlling the pain, it may be because the buprenorphine is blocking the effect of the opioid. Options:
 - i. Increase the dose of the opioid or change to a higher potency opioid.
 - ii. Decrease the dose of the buprenorphine, to increase receptor availability.
 - iii. Increase and split the dose of the buprenorphine to TID, to achieve better pain relief. The peak pain relief of buprenorphine is at about 8 hours. (*Alford, 2006*)
- Taper postoperative opioids in similar time frame as for opioid-naïve.

Annotations

- If cravings or illicit opioid use occurs:
 - If undertreated pain is the cause, consider the above options.
 - Alternatively, if buprenorphine was lowered postoperatively, return to previous dose, or increase dose to TID.
 - iv. Attempt to treat the postoperative pain with only buprenorphine.
- 2. If continued lowered-dose buprenorphine (*Expert Consensus*):
 - Use higher potency opioids, e.g., oxycodone as opposed to hydrocodone
 - If the initial dose set by the surgeon is not controlling the pain, it may be because the buprenorphine is blocking the effect of the opioid. Options:
 - i. Increase the dose of the opioid or change to a higher potency opioid.
 - ii. Decrease the dose of the buprenorphine to increase receptor availability.
 - iii. Increase and split the dose of the buprenorphine to TID, to achieve better pain relief. The peak pain relief of buprenorphine is at about eight hours. (*Alford, 2006*)
 - Taper postoperative opioids in similar time frame as for opioid-naïve.
 - While tapering off the postoperative opioids, simultaneously increase the buprenorphine back to the previous dose.
 - If cravings or illicit opioid use occurs:
 - If undertreated pain is the cause, consider the above options.
 - Alternatively, increase to previous buprenorphine dose, or higher and to TID.
 - iv. Attempt to treat the postoperative pain with only buprenorphine.
- 3. If discontinued buprenorphine (*Expert Consensus*):
 - Will likely need higher potency opioids because the patient will have a high tolerance, but the pain management will likely be incredibly difficult
 - Attempt to taper the postoperative opioids in a similar time frame as opioid-naïve.
 - This will likely be difficult because the patient is not used to being on zero opioids and, he or she has a baseline tolerance, so getting to zero is very difficult.
 - After the postoperative opioids are completed, the patients still needs to get back on their buprenorphine, which requires a re-induction. They need to come completely off all opioids for a period of 12-24 hours (*SAMHSA, 2019*), depending on the opioid, to restart the buprenorphine to prevent precipitated withdrawal. This is incredibly difficult for most patients.
 - If severe cravings or illicit opioid use occurs, stop all postoperative opioids for 12-24 hours (*SAMHSA, 2019*), re-induct on buprenorphine and attempt to treat as above (see 1 and 2).

***Buprenorphine Perioperative Management Plan Example** (Adapted from Quaye, 2018)

	Low Pain Level	Moderate–Severe Pain Level + <8mg Buprenorphine	Moderate–Severe Pain Level + 9mg–15mg Buprenorphine	Moderate–Severe Pain Level + >16mg Buprenorphine
Pre-op Management	Continue current dose buprenorphine	Continue current dose buprenorphine	Consider tapering buprenorphine to 8mg over 1-4 weeks Discuss relapse risk with patient; if high, continue current dose and use higher potency or higher dose opioids postop	Taper to <16mg over 1-4 weeks, then to 8 the day prior to surgery Discuss relapse risk with patient; if high, continue current dose and use higher potency or higher dose opioids postop, ideally get to 16 mg or less
Post-op Management	Consider buprenorphine dividing dose to TID Consider very short-term postop opioids	Consider buprenorphine dividing dose to TID Postop opioids - Length same as opioid-naïve - Need higher potency opioid	Consider buprenorphine dividing dose to TID Postop opioids - Length same as opioid-naïve - Need higher potency opioid	Consider buprenorphine dividing dose to TID Postop opioids - Length same as opioid-naïve - Need higher potency opioid

Naltrexone IM/PO

Preoperative Management

1. Planned procedures: able to discontinue IM naltrexone >4 weeks prior to surgery (48-72 hours for PO) (*Expert Consensus*)

- Naltrexone works by antagonizing the opioid receptor, so it must be stopped and metabolized/eliminated before opioids will be fully able to access the opioid receptors. However, the patient still has an opioid use disorder, the “safety net” is being removed and a drug of choice given after the surgery; therefore, the risk of relapse and accidental overdose is high.
- Because patients still have OUD, they likely still have pain intolerance and hypersensitivity (*Jamison, 2000*) and may require higher doses or potency opioids. However, depending on how long it has been since they stopped using illicit opioids, they do not have the same tolerance to the respiratory depressant effects of opioids that they once had, so while they may not feel the pain relief, their risk of respiratory depression and overdose is back to baseline.

2. Unplanned procedures: Unable to discontinue naltrexone (*Expert Consensus*)

- Naltrexone works by antagonizing the opioid receptor, so it must be stopped and metabolized/eliminated before opioids will be fully able to access the opioid receptors.
- The naltrexone will need to be stopped as soon as possible and “override” the blockade with very potent and higher doses opioids.

Annotations

- For PO naltrexone, elimination half-life is about 13-14 hours, so to fully remove the drug from the system requires 50-60 hours. (*SAMHSA, 2009*)
- For IM naltrexone, depending on when the injection occurred, it may take weeks for elimination.
- If high potency and high dose opioids are used to “override” the blockade, as the naltrexone is eliminated, the blockade will become less and less powerful and the opioids may become too potent, causing respiratory depression/overdose.
- The risk of inadequate pain relief is therefore very high, and thus the risk of illicit opioid use is very high. The patient may try to overcome the blockade with illicit opioids. (*Ti, 2015; Kunoe, 2010; Vickers, 2006*)
- Plan on using nonopioid medications aggressively; involve pain and/or addiction medicine consult teams.

Postoperative Management

1. For planned procedures where naltrexone was discontinued (*Expert Consensus*):
 - Naltrexone works by antagonizing the opioid receptor, so a patient cannot be on both an opioid agonist and an opioid antagonist (naltrexone) at the same time.
 - Attempt to taper the postoperative opioids in a similar time frame as opioid-naïve.
 - Restart the IM or PO naltrexone after 7-10 days off all opioids (naltrexone medication package insert).
 - If illicit opioid use is suspected, consider options with patient:
 - Discontinue all opioids and restart naltrexone as soon as possible.
 - Consider buprenorphine induction; follow instructions above for postoperative pain management on buprenorphine.
2. For unplanned procedures where naltrexone was *not* discontinued. (*Expert Consensus*) **Do this in coordination with addiction specialist and/or pharmacist.**
 - Naltrexone works by antagonizing the opioid receptor, so a patient cannot be on both an opioid agonist and an opioid antagonist (naltrexone) at the same time.
 - Pain management in this situation is very difficult; involve addiction medicine or pain consultants or pharmacy whenever possible.
 - If high potency and high dose opioids are used to “override” the blockade, as the naltrexone is eliminated, the blockade will become less and less powerful and the opioids may become too potent, causing respiratory depression/overdose.
 - This occurs after 50-60 hours with PO naltrexone and 1-4 weeks with IM naltrexone. (*SAMHSA, 2009*)
 - The provider will need to know when the patient had their last injection, to understand when the injection will start to wear off.
 - Start to wean opioids to less potent/lower doses as the date the injection wears off approaches.
 - Attempt to taper the postoperative opioids in a similar time frame as opioid-naïve.

Annotations

- Restart the IM or PO naltrexone after 7-10 days off all opioids (naltrexone medication package insert).
- If illicit opioid use is suspected, consider these options with patient:
 - Discontinue all opioids and restart PO naltrexone as soon as possible. (If IM, and injection is still active, discontinue just opioids.)
 - Consider buprenorphine induction, follow instructions above for postoperative pain management on buprenorphine.

Patients Not on Medication-Assisted Treatment (MAT)

Patients with opioid use disorder currently using opioids should not undergo a procedure unless it is urgent or emergent. Treatment of the substance use disorder should take priority. Once the patient is on MAT, the procedure can take place.

If a procedure is urgent or emergent, every effort should be made to start MAT before the procedure takes place. A consult with an addiction medicine or pain specialist is recommended.

If that is not possible, the management plan should include maximizing nonpharmacological intervention, maximizing nonopioid pharmacology, and a consultation with an addiction medicine or pain specialist as soon as possible to initiate MAT after the surgical procedure. Opioid management of the acute pain may still be needed, but should be monitored carefully. Refer to the [MN Health Collaborative Algorithm for Screening and Treatment of Opioid Use Disorder \(OUD\)](#) for more information on how to address patients with OUD and not on MAT.