



Opiate-sparing Perioperative Care

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 **THE OHIO STATE UNIVERSITY**
WEXNER MEDICAL CENTER

Learning goals

1. Understand impact of surgery-related opiate use
2. Understand alternatives to opiate medication for surgical pain
3. Case Reports in perioperative pain management
4. Review resources to guide pain management and the patient-perioperative physician relationship

Phases of the Opioid Epidemic

Phase 1:

- Began in the 1990s
- Overdose deaths largely due to prescription drugs

Phase 2:

- Began 2010
- Overdose deaths largely due to heroin

Phase 3:

- Began in 2013
- Overdose deaths due to synthetic opiates (fentanyl)

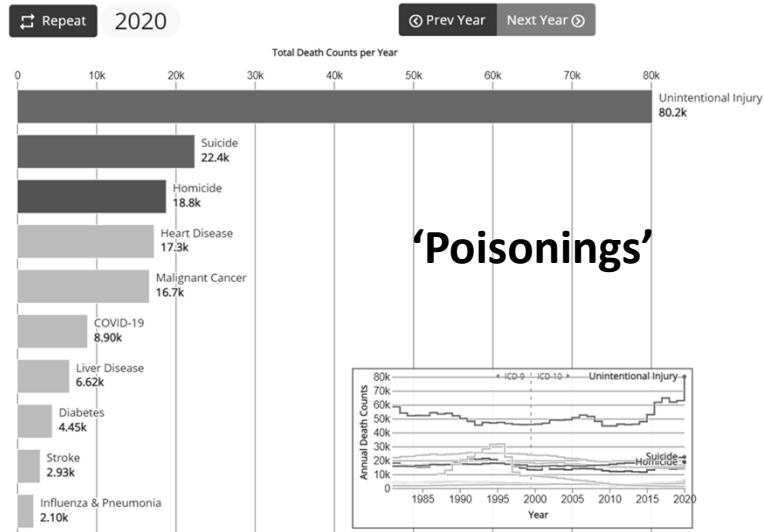
Opioid Epidemic

Nearly 841,000 people have died since 1999
from a drug overdose.

In 2017:
58 opioid prescriptions for every 100 Americans
(>40 Milligram Morphine Equiv. per day x 18 days on average)

1. Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2020. Available at <http://wonder.cdc.gov>.

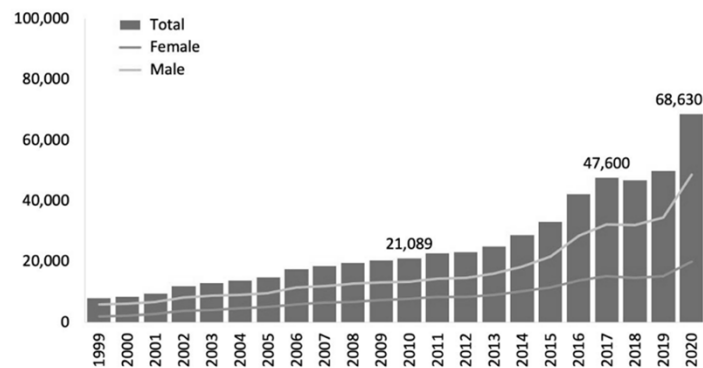
Unintentional injuries = #1 cause of death for Americans aged 1-44 years



WISQARS fatal injury data come from the National Vital Statistics System multiple-cause-of-death database. Available at <http://cdc.gov>.

Impact of the Opioid Epidemic

Figure 3. National Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2020



*Among deaths with drug overdose as the underlying cause, the any opioid subcategory was determined by the following ICD-10 multiple cause-of-death codes: natural and semi-synthetic opioids (T40.2), methadone (T40.3), other synthetic opioids (other than methadone) (T40.4), or heroin (T40.1). Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2020 on CDC WONDER Online Database, released 12/2021.

SOURCE: National Institute on Drug Abuse, <https://nida.nih.gov>

Impact of the Opioid Epidemic

The Centers for Disease Control and Prevention (CDC) estimates total "economic burden" of prescription opioid misuse in the US is **\$78.5 billion a year**

(costs of healthcare, lost productivity, addiction treatment, criminal justice involvement)

Wide-ranging online data for epidemiologic research (WONDER). Atlanta, GA: CDC, National Center for Health Statistics; 2020. Available at <http://wonder.cdc.gov>.

Surgery-related Opioid Use

51 million Americans undergo inpatient surgery every year

>80% of patients receive opioids after low-risk surgery
(mostly oxycodone or hydrocodone, the most prescribed opioids implicated in drug overdose deaths)

Wunsch H, et al. JAMA. 2016;315:1654-1657
Hah JM et al. A&A 2017;125:1773-1740

Impact of Surgery-related Opioid Use

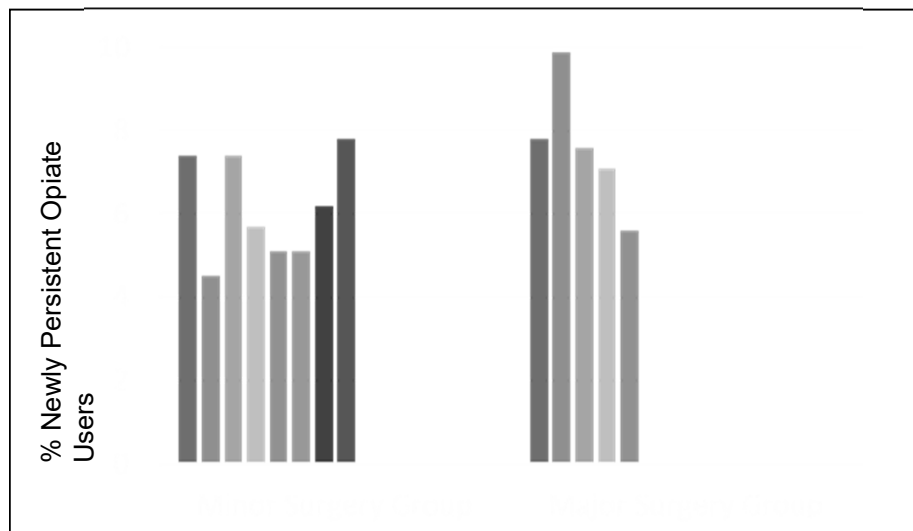


Of patients surveyed in outpatient neurosurgery or orthopedic clinics of a tertiary academic medical center, *14.7% reported using opioids without a prescription in greater amounts, or longer than prescribed*

This far exceeds the national prevalence of opioid misuse of 1.9% among US adults

Wunsch H, et al. JAMA. 2016;315:1654-1657
Hah JM et al. A&A 2017;125:1773-1740

Surgery ↑ risk of opiate misuse



Brummett CM et al. JAMA Surg. 2017 Jun 21;152(6):e170504.

Surgery ↑ risk of opiate misuse

Procedure	Average opiate pills prescribed for postop pain	Newly-persistent users (>6 months use) (%)
Hysterectomy	45	7.5
Hernia	63	7.2
Colectomy	65	17.6
Rotator cuff	95	10.2
Hip replacement	119	9.9
Knee replacement	130	16.7
Sleeve gastrectomy	194	8.5

<https://www.planagainstpain.com/>

Impact of Surgery-related Opioid Use



Physician behavior (historical prescribing patterns)
dictate post-op opiate prescriptions
more than patient needs/behavior!

Brandal D et al. Anesth Analg. 2017 Nov;125(5):1784-1792.

Impact of Surgery-related Opioid Use



Opioid prescribing in surgery patients >>> pain control needs

Variability is great!

(inguinal hernia postop opiate pills prescribed = 15 – 120)

67% - 92% of patients report unused opiates after surgery
Overall proportion of unused tablets ranges from 42% - 71%

Neuman, Mark D et al. Lancet vol. 393,10180 (2019): 1547-1557

Impact of Surgery-related Opioid Use



With growing awareness, from 2010-2016
opiate prescriptions have had a national downturn,
however,

surgical, dental, and emergency care providers have
continued to ↑ *prescribing*

Surgery average total MME ↑ nearly 70%!

Upp LA et al. Clinics in Plastic Surgery, 2020. 47(2), 181-190

Impact of Surgery-related Opioid Use



Surgery-related overprescribing → >3 billion un-used pills available for diversion and misuse

A 10% ↓ in post-surgery opiate prescribing could:

1. ↓ patients that become persistent users by 300K
2. save more than \$800 million in drug costs alone

<https://www.planagainstpain.com/>

Impact of Surgery-related Opioid Use



For Seniors:

1 of 4 may avoid surgery due to concerns about opiates

4 of 5 desire more non-opiate options for pain control

<https://www.planagainstpain.com/>

Impact of Surgery-related Opioid Use



Less opiates = better surgical recovery:

- ↓ sedation
- ↓ respiratory depression
- ↓ nausea/vomiting
- ↓ ileus/constipation
- ↓ pruritus
- ↓ urinary retention
- ↓ chronic pain syndromes
- ↓ risk for opiate misuse disorders

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9 of 10 patients say postsurgical pain is
mild or gone by 4 days

SOURCE: American College of Surgeons, <https://www.facs.org/>

Short Term Use

FACT

After taking opioids for just 5 days in a row, a person becomes more likely to take them long-term.¹

Opioids can be addictive even if only taken for a short period of time.



Level of Pain Relief

FACT

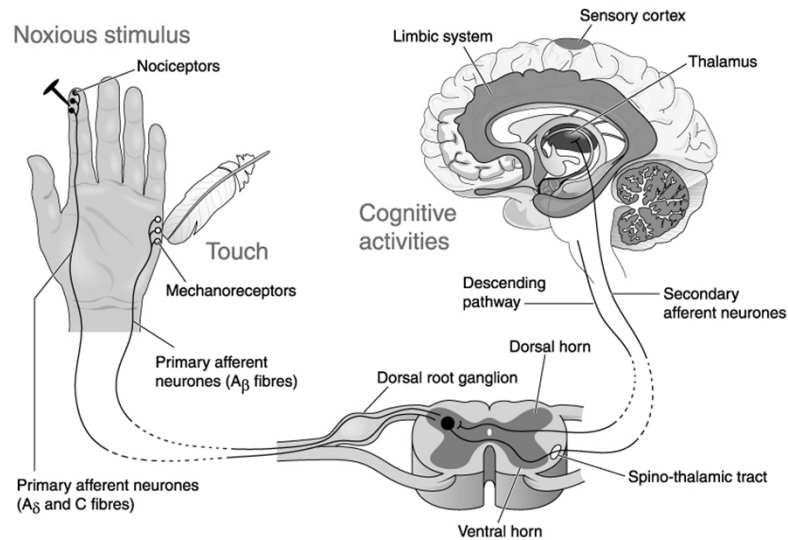
Opioids provide an average of 20-30% pain relief when used for pain lasting less than three months. Options that do not involve opioids may provide enough pain relief while avoiding the risks of opioids.²

Opioids don't take away pain completely.



www.cdc.gov

Alternatives to opiates for surgical pain



Alternatives to opiates for surgical pain

1. Medications:

- Local anesthetic (IV, infiltration)
- NSAIDs, COX-2 \emptyset , Acetaminophen
- Anti-convulsants
- Anti-depressants
- Anti-spasmodics
- NMDA-receptor \emptyset
- α -2 receptor +
- Sympatholytics



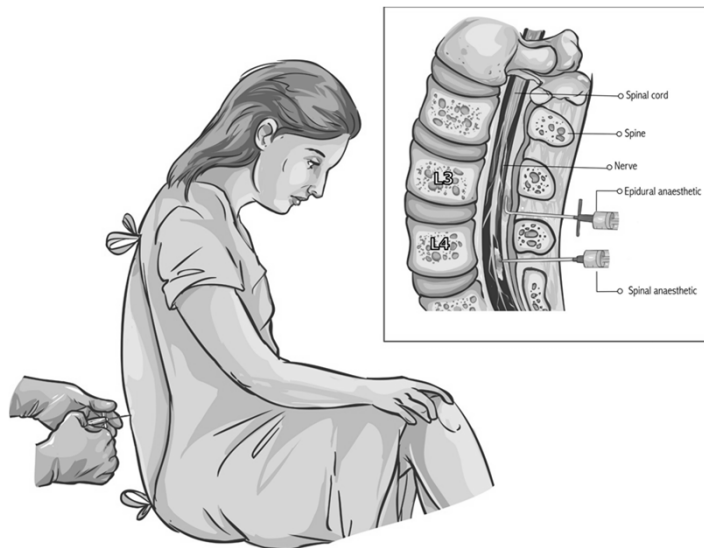
Alternatives to opiates for surgical pain

2. Regional anesthesia

- Nerve blocks (single shot, continuous)
- Neuraxial (continuous epidural, spinal)
- Field block, Infiltration



Alternatives to opiates for surgical pain



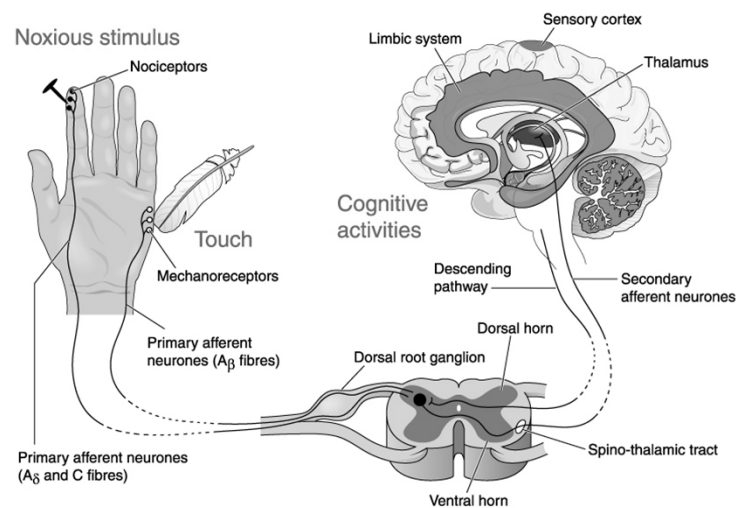
Alternatives to opiates for surgical pain

3. Complimentary

- Heat/Ice
- Meditation
- Massage
- Acupuncture
- TENS



Alternatives to opiates for surgical pain



Alternatives to opiates for surgical pain

**Safe and Effective Pain Control
After Surgery**

facs.org/safepaincontrol



AMERICAN SOCIETY FOR ENHANCED RECOVERY

aserhq.org

ERAS[®] Society

erassociety.org

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Case #1

45-year-old female presents for bilateral mastectomy and flap reconstruction for breast cancer

She is otherwise healthy, and takes ibuprofen occasionally for headaches

She is very nervous about using opiates but doesn't want to be in pain after surgery

How can the perioperative clinician develop a basic plan?

Case #1

NEWS

February 24, 2021



American Society of
Anesthesiologists

14 Medical Specialty Organizations Achieve Pathway to Collaborative Guide for Acute Surgical Pain

Landmark pain summit results in agreement to publish resource for all clinicians

Foundational principles of forthcoming practice guideline:

1. Conduct a preop eval: medical and psychological conditions, concomitant medications, history of chronic pain, substance abuse, and previous postoperative treatment regimens and responses
2. Provide patient and family-centered, individually tailored education for managing postoperative pain. Document the plan and goals.

NEWS
February 24, 2021



14 Medical Specialty Organizations Achieve Pathway to Collaborative Guide for Acute Surgical Pain

Landmark pain summit results in agreement to publish resource for all clinicians

Foundational principles of forthcoming practice guideline:

3. Offer multimodal analgesia
4. Provide education on proper storage and disposal of opioids and tapering of analgesics after hospital discharge

NEWS
February 24, 2021



14 Medical Specialty Organizations Achieve Pathway to Collaborative Guide for Acute Surgical Pain

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Foundational principles of forthcoming practice guideline:

Assure the patient you will,

5. Use a validated pain assessment tool to track responses to postoperative pain treatments and adjust plans accordingly
6. Follow-up and adjust the pain management plan based on adequacy of pain relief and presence of adverse events.
7. Have access to consultation with a pain specialist

NEWS
February 24, 2021



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Case #1

Safe and Effective Pain Control After Surgery

facs.org/safepaincontrol



How will my pain be controlled after my surgery?

- Your surgical team will put together a pain plan for you. The plan tells you how much and when you should take each medication. It will also include:^{1,2}
 - **Screening** for current opioid use and risk for misuse.
 - Tell your surgeon if you have chronic pain, depression, ADHD, substance use disorder (SUD) (by you or a family member), or take opioids.³ These can increase your risk of long-term opioid use and your surgeon will adjust your pain plan to make it safer.
 - **Education** to
 - Use non-opioids first, like ibuprofen (Motrin, Aleve) and acetaminophen (Tylenol)
 - Take the lowest doses of opioids for the shortest time for severe pain
 - Safely store and dispose of any unused opioids

SOURCE: American College of Surgeons, 'For Patients'
www.facs.org/for-patients/safe-pain-control/

Pain Control After Surgery Guide: For Adults⁸⁻⁹

	How Intense Is My Pain?	What Can I Take to Feel Better?
Mild Pain	<ul style="list-style-type: none"> I hardly notice my pain, and it does not interfere with my activities. I notice my pain and it distracts me, but I can still do activities (sitting up, walking, standing). 	Non-medication therapies + Non-opioid, oral medications You may take these to control mild to moderate pain when needed
Moderate Pain	<ul style="list-style-type: none"> My pain is hard to ignore and is more noticeable even when I rest. My pain interferes with my usual activities. 	Non-medication therapies + Non-opioid medications You may be told to take them regularly throughout the day rather than as needed
Severe Pain	<ul style="list-style-type: none"> I am focused on my pain, and I am not doing my daily activities. I am groaning in pain, and I cannot sleep. I am unable to do anything. My pain is as bad as it could be, and nothing else matters. 	Non-medication therapies + Around-the-clock non-opioid medications + Short-acting opioids (for a few days) Call your surgeon if your pain continues

SOURCE: American College of Surgeons 'For Patients'
www.facs.org/for-patients/safe-pain-control/

Non-Medication Therapies

	Therapy	Description
Mild Pain	Ice and elevation	As directed, ice and elevation can decrease swelling
	Complementary therapies	Meditation ¹¹ , guided imagery ¹² , acupuncture ¹³⁻¹⁴ , massage ¹⁵ , and music
	Rehabilitation therapies	Occupational and physical therapy
	Exercise	Stretching, walking, and mild exercise

Non-Opioid, Oral Medications

	Medication	Common Side Effects*
Mild to Moderate Pain	Acetaminophen (Tylenol^{®16}): Decreases pain and fever	Nausea, vomiting, headache, and insomnia Liver damage may occur at high doses (greater than 4,000 mg in 24 hours) ¹⁶⁻¹⁷
	Non-steroidal anti-inflammatory drugs (NSAIDs): Decrease swelling and fever Aspirin Ibuprofen (Advil ^{®18} , Motrin ^{®19}) Naproxen (Aleve ^{®20}) Celecoxib (Celebrex ^{®21})	Upset stomach Serious risks: Stomach bleeding or ulcers, heart attack, and stroke Celecoxib has a lower risk of stomach bleeding and/or ulcer formation over the short term ²¹
	Nerve pain medications: Reduce pain from sensitive nerves Gabapentin (Neurontin ^{®22}) Pregabalin (Lyrica ^{®23})	Dizziness, drowsiness, suicidal thoughts, swelling in the hands and feet, weight gain, and blurred vision Risks increase if you have kidney, liver, or heart disease; or have suicidal thoughts

SOURCE: American College of Surgeons 'For Patients'
www.facs.org/for-patients/safe-pain-control/



Prescribing Recommendations

Procedure	Oxycodone* 5mg Tablets
Dental Extraction	0
Thyroidectomy	0 - 5
Laparoscopic Anti-reflux (Nissen)	0 - 10
Appendectomy – Lap or Open	0 - 10
Laparoscopic Donor Nephrectomy	0 - 10
Hernia Repair – Minor or Major	0 - 10
Sleeve Gastrectomy	0 - 10
Laparoscopic Cholecystectomy	0 - 10
Open Cholecystectomy	0 - 15

<https://www.cdc.gov/acute-pain/postsurgical-pain/index.html>
Michigan Open Prescribing Network (OPEN)

Case #2

75 year old male presents for open total colectomy
for diverticulitis

He has a history of HTN, afib, IDDM, 25 pack-years of
smoking and OSA (compliant with CPAP)

He takes HCTZ, coumadin, insulin and a statin

Case #2

What opiate-sparing pain options will you use to manage this patient?

Case #2

- Preoperative Pain Management Selections

- ☐ Acetaminophen – *DO NOT ORDER IF PATIENT HAS SEVERE ACTIVE LIVER DISEASE*
 - ☒ 975mg tablet PO x 1 dose, Administer 2 hours prior to surgery. Do not administer if patient has severe active liver disease.
- OR**
- ☐ Acetaminophen 975mg suppository PR x 1 dose, Administer 2 hour prior to surgery. Do not administer if patient has severe active liver disease.
- ☐ GABAPENTIN- *DO NOT ORDER IF PATIENT HAS H/O OBSTRUCTIVE SLEEP APNEA*
 - ☐ For age <75 yo- Gabapentin 300mg PO capsule PO x 1 dose, Administer 2 hours prior to surgery
 - ☐ For age >= 75 yo- No gabapentin- Request that order set not even make this drug option for these patients
- ☐ Oxycodone 5mg tablet PO x1 dose
- ☐ NSAID- Select only one. *Order with caution for patients with history of cardiovascular disease, gastroduodenal ulcers, renal dysfunction or hepatic dysfunction*
 - ☐ Ibuprofen 400mg tablet PO x 1 dose, Administer 20 minutes prior to surgery.
 - ☐ Naproxen 500mg tablet PO x 1 dose, Administer 20 minutes prior to surgery.
 - ☐ Celecoxib 400mg capsule PO x 1 dose, Administer 20 minutes prior to surgery.
 - ☐ Meloxicam 15mg PO tablet x1 dose, Administer 20 minutes prior to surgery.

Case #2

Procedures for analgesia

- Low-thoracic epidural (local anesthetic and opiate) placed pre-operatively (assuming anticoag held)

other options:

intrathecal morphine,
transversus abdominis plane block

Case #2



Intra-operative/PACU multimodal analgesia

- Ketamine (0.25 mg/kg/hour IV) or
- IV lidocaine infusion (2 mg/kg/hour)
- Epidural infusion
- Opiates for breakthrough

Case #2

- Postoperative Pain Management Selections

- ☐ **Acetaminophen- Do not order for patients with severe active liver disease**
 - ☒ Acetaminophen 975mg tablet PO TID
 - ☐ In patients with chronic cirrhosis or chronic liver disease: Acetaminophen 650mg tablet PO TID
- ☐ **NSAID options (Do not order patients with Coronary Artery Disease & Renal Disease) Select only one:**
 - ☐ Ketorolac- *Avoid ketorolac in patients > or = 65 years old* (request to not have this present if >=65yo)
 - ☐ Ketorolac 15mg IVP Q6H x ____ doses (request to not have this present if >=65yo)
 - ☐ Celecoxib 200mg capsule PO BID
 - ☒ Ibuprofen 600mg tablet PO TID
- ☐ **Gabapentin (Do not order in patients with Obstructive Sleep Apnea)**
 - ☐ Gabapentin 100mg PO TID
 - ☐ In patients on intermittent hemodialysis: Gabapentin 100mg PO QHS
- ☐ **Opioid Medications** Note: Oral therapy is preferred over IV therapy. IVP is preferred over PCA
 - ☐ Age < 65 years:
 - ☐ Oxycodone VARIABLE DOSE 5mg-10mg tablet PO Q3Hprn, mild pain, moderate pain
 - ☐ Hydromorphone VARIABLE DOSE 0.5m-1mg IVP Q3Hprn, severe pain
 - ☒ Age >= 65 years:
 - ☐ Oxycodone VARIABLE DOSE 2.5mg-5mg tablet PO Q4Hprn, mild pain, moderate pain
 - ☐ Hydromorphone VARIABLE DOSE 0.2mg – 0.5mg/IVP Q3Hprn, severe pain

Case #2

- **Optional Post-Op Pain Medications:**

- ☐ **Skeletal Muscle Relaxants (select only one)**
 - ☐ Cyclobenzaprine 5mg tablet PO TID
 - ☐ Cyclobenzaprine 5mg tablet PO TIDprn
 - ☐ Methocarbamol 500mg IVPB TID- Order only if complete NPO
 - ☐ Diazepam 5mg PO Q6hprn (Use only if patient continues to experience muscle spasm after attempting other agents)
- ☐ **Other Pharmacologic Options**
 - ☐ Lidocaine Patch 5% transdermal every 24 hours. Administer over 12 hours. Apply to ***.
 - ☐ Methyl salicylate (ANALGESIC BALM) ointment. 1 application prn. Apply to ***.

Case #2

Patient does great with very little need for opiate breakthrough medication.

He is ready for discharge on day 4.

How will you decide how much opiate, if any, to prescribe at discharge?



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Summary of Treatment Recommendations

Michigan Opioid Prescribing Engagement Network (OPEN)

[Michigan OPEN Prescribing Recommendations](#) and [Acute Care Opioid Treatment and Prescribing Recommendations: Summary of Selected Best Practices, Surgical Department](#)

"For patients discharged from surgical department with an opioid prescription:

- Non-opioid therapies should be encouraged as a primary treatment for pain management (e.g., acetaminophen, ibuprofen).
- Non-pharmacologic therapies should be encouraged (e.g., ice, elevation, physical therapy).
- Do NOT prescribe opioids with other sedative medications (e.g., benzodiazepines).
- Short-acting opioids should be prescribed for no more than 3-5-day courses (e.g., hydrocodone, oxycodone).
- Fentanyl or long-acting opioids such as methadone [and] OxyContin ... should NOT be prescribed to opioid naïve patients."

[Michigan OPEN surgery-specific opioid prescribing recommendations](#) are regularly updated based on clinical data on opioid use.

<https://www.cdc.gov/acute-pain/postsurgical-pain/index.html>



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Bree Collaborative and Washington State Agency Medical Directors' Group
[Prescribing Opioids for Postoperative Pain – Supplemental Guidance](#) (2018)

"Evidence-Based Duration of Opioid Prescriptions on Discharge Following Surgery (select guidance; please refer to the guideline for its complete recommendations)"

Type I – Expected rapid recovery (procedures such as laparoscopic appendectomy, inguinal hernia repair, carpal tunnel release, thyroidectomy, among other surgeries)

- Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy.
- If opioids are necessary, prescribe ≤3 days (e.g., 8 to 12 pills) of short-acting opioids in combination with an NSAID or acetaminophen for severe pain. Prescribe the lowest effective dose strength.

Type II – Expected medium term recovery (procedures such as anterior cruciate ligament [ACL] repair, rotator cuff repair, discectomy, laminectomy, open or laparoscopic colectomy, among other surgeries)

- Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy.
- Prescribe ≤7 days (e.g., up to 42 pills) of short-acting opioids for severe pain. Prescribe the lowest effective dose strength.
- For those exceptional cases that warrant more than 7 days of opioid treatment, the surgeon should re-evaluate the patient before a third prescription and taper off opioids within 6 weeks after surgery.

Type III – Expected longer term recovery (procedures such as lumbar fusion, knee replacement, hip replacement, abdominal hysterectomy, axillary lymph node resection, among other surgeries)

- Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy.
- Prescribe ≤14 days of short-acting opioids for severe pain. Prescribe the lowest effective dose strength.
- For those exceptional cases that warrant more than 14 days of opioid treatment, the surgeon should re-evaluate the patient before refilling opioids and taper off opioids within 6 weeks after surgery."

<https://www.cdc.gov/acute-pain/postsurgical-pain/index.html>

Case #2

OSUWMC Enhanced Surgical Recovery

Medications

- Tailor to inpatient use. Patients on pre-op opioids may have different needs
- Opioid prescription at discharge (Prescription for up to **20 pills** based on patient use day prior to discharge):
 - If 0 opioid pills taken, No prescription
 - If 1-3 opioid pills taken, prescribe 15 pills
 - If ≥ 4 opioid pills taken, prescribe 20 opioid pills
 - If discharged on POD#1, prescribe no more than 10 pills
- Can continue multimodal pain medications at discharge for up to 14 days

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Resources to guide the patient- perioperative physician relationship

The screenshot displays the CDC Opioids page, which is part of the CDC 24/7 Saving Lives, Protecting People™ initiative. The page is titled "Opioids" and includes a search bar and a navigation menu. The main content area is titled "Clinical Tools for Primary Care Providers" and features several resources:

- Guideline for Prescribing Opioids for Chronic Pain:** A resource intended to help providers determine when and how to prescribe opioids for chronic pain, and also how to use nonopioid and nonpharmacologic options that are effective with less risk. The clinical tools below have been developed with you, the primary care provider, in mind, to help you carry out the complex task of balancing pain management with the potential risks that prescription opioids pose.
- Quick Reference for Healthcare Providers:** A PDF document providing a quick reference for healthcare providers.
- Urine Drug Testing:** A PDF document providing information on urine drug testing.
- Mobile App:** A mobile app for the Opioid Prescribing Guideline.
- Talk with Patients:** A resource for talking with patients about their pain management options and risks of opioid treatments using Conversation Starters.

The page also includes a sidebar with links to various resources, including Opioid Basics, Overdose Prevention, Framework for Response, MOUD Study, Opioid Rapid Response Program (ORRP), Data, Information for Patients, Healthcare Providers, and Opioid Prescribing Guideline Resources.

Resources to guide the patient- perioperative physician relationship

CDC Provider Resources

[Guideline for Prescribing Opioids for Chronic Pain](#)

[Guideline Resources: Clinical Tools](#)

[Calculating Daily Dose of Opioids, and Morphine
Milligram Equivalents \(MME\)](#)

[More Training for Healthcare Providers](#)

[More Resources on Acute Pain](#)

CDC Patient Resources

[Preventing An Opioid Overdose \(Tip Card\)](#)

[Opioids for Acute Pain: Get the Facts](#)

[Opioids for Acute Pain: What You Need to Know](#)

[Conversation Starter: Recently Injured](#)

Resources to guide the patient- perioperative physician relationship

**Safe and Effective Pain Control
After Surgery**

facs.org/safepaincontrol



Resources to guide the patient- perioperative physician relationship

PROSPECT

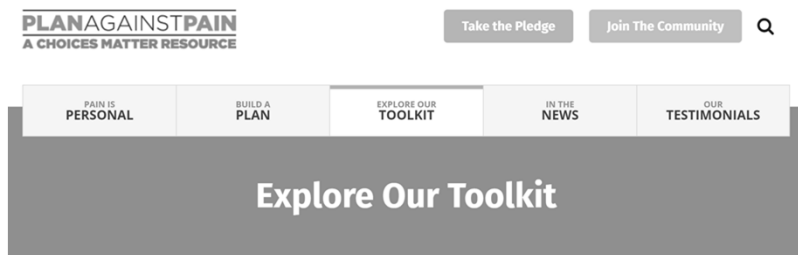
(Procedure Specific Postoperative Pain Management Workgroup)

American Pain Society

American Society of Regional Anesthesia and Pain Medicine

American Society of Anesthesiologists'
Committee on Regional Anesthesia Recommendations

Resources to guide the patient- perioperative physician relationship



planagainstpain.com

References

1. Kumar K, et al. Anesth Analg. 2017 125(5):1749-1760.
2. Brummett CM et al. JAMA Surg. 2017 Jun 21;152(6):e170504.
3. Wunsch H, et al. JAMA. 2016;315:1654–1657
4. Hah JM et al. A&A 2017;125:1773-1740
5. Brandal D, et al. Anesth Analg. 2017 Nov;125(5):1784-1792
6. www.planagainstpain.com (Pacira Pharmaceuticals, American Society for Enhanced Recovery, Shatter Proof)
7. www.cdc.gov (Centers for Disease Control)
8. National Institute on Drug Abuse, <https://nida.nih.gov>
9. American College of Surgeons 'For Patients' www.facs.org/for-patients/safe-pain-control
10. Upp LA et al. Clinics in Plastic Surgery, 2020. 47(2), 181-190