

## Opioid-Sparing Perioperative Care



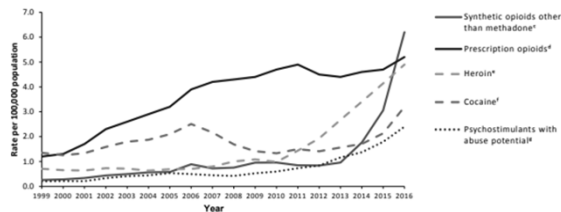
**Michelle Humeidan, MD, PhD**  
 Assistant Professor - Clinical  
 Department of Anesthesiology  
 The Ohio State University Wexner Medical Center

## Learning goals

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

## Impact of opioid abuse

Age-adjusted rates of drug overdose deaths by drug or drug class and year (USA 1999-2016)



CDC Annual Surveillance Report of Drug-related Risks and Outcomes (2018)  
[www.cdc.gov](http://www.cdc.gov)

## Impact of opioid abuse

There are many factors that impact America's drug overdose crisis.



### Short Term Use

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

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. Opioids that do not involve opioids may provide enough pain relief while avoiding the risks of opioids.

Opioids don't take away pain completely.

[www.cdc.gov](http://www.cdc.gov)

## Impact of surgery-related opioid use

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

**\*\*\*Physician behavior (historical prescribing patterns) dictate post-op opiate prescriptions more than patient needs/behavior!**  
Brandal et al. 2017

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

## Impact of surgery-related opioid use

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

A 10% ↓ in post-surgery opiate prescribing:  
could ↓ patients that become persistent users by 300K

save more than \$800 million in drug costs alone

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

## Impact of surgery-related opioid use

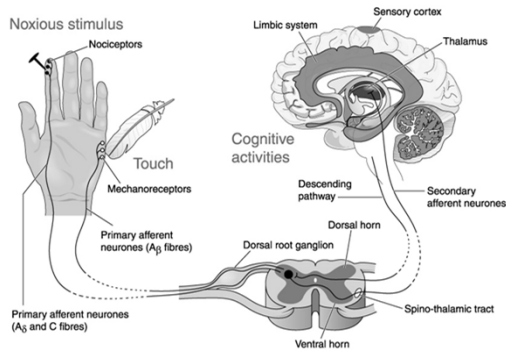
**Minimizing opiates in the perioperative period:**

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

## Learning goals

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

## Alternatives to opiate medication for surgical pain



## Alternatives to opiate medication for surgical pain

### 1. Medications:

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



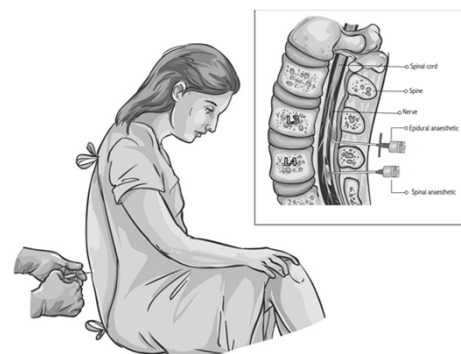
## Alternatives to opiate medication for surgical pain

### 2. Regional anesthesia

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



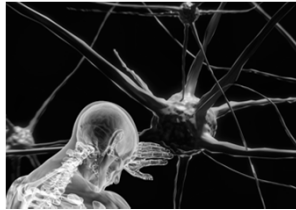
## Alternatives to opiate medication for surgical pain



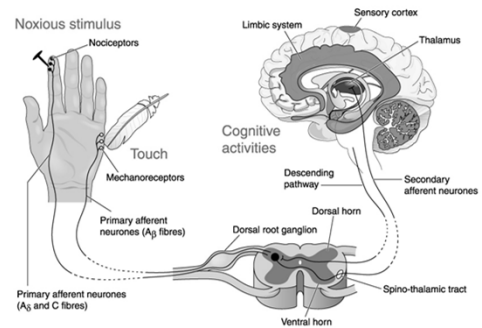
## Alternatives to opiate medication for surgical pain

### 3. Complimentary

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



## Alternatives to opiate medication for surgical pain



## Alternatives to opiate medication for surgical pain

**Enhanced Recovery After Surgery (ERAS)**  
Evidence-based multimodal perioperative pain management guidelines



aserhq.org

**ERAS<sup>®</sup> Society**

erassociety.org

## Learning goals

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

## 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

## Case #1

### Pre-operative analgesia

- Gabapentin (900 mg PO)
- Acetaminophen (975 mg PO)

## Case #1



### Intra-operative/PACU multimodal analgesia

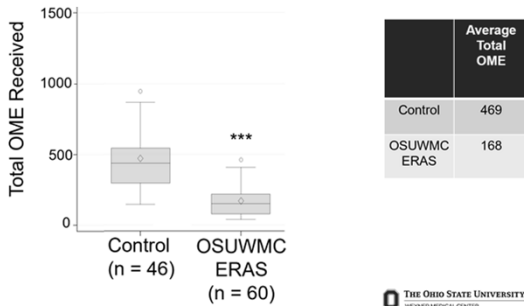
- Ketamine (0.25 mg/kg/hour IV)
- Avoid hydromorphone
- Give < 2-4 mcg/kg fentanyl IV for entire surgery
- On-Q catheter and pump with local anesthetic placed for incisional pain
- Ketorolac (15 mg – 30 mg IV)

## Case #1

### Post-operative multimodal analgesia

- Scheduled ibuprofen (800 mg PO TID x 6 doses)
- Scheduled PO acetaminophen (650 mg PO TID x 6 doses)
- Scheduled gabapentin (100 mg TID for 2 weeks)
- Continued On-Q pump (24-48 hours)
- Oxycodone 5-10 mg Q4 hours PRN
- Meditation

## Impact of multimodal analgesia on opiate use after breast reconstruction



OSU IRB 2017C0017

## 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

### Pre-operative analgesia

- Gabapentin (300 mg PO)
- Acetaminophen (975 mg PO)
- Low-thoracic epidural (local anesthetic and opiate) placed pre-operatively  
(other options include intrathecal morphine, transversus abdominis plane block, or IV lidocaine infusion 2 mg/kg/hour)

## Case #2



### Intra-operative/PACU multimodal analgesia

- Ketamine (0.25 mg/kg/hour IV)
- Avoid hydromorphone
- Give < 2-4 mcg/kg fentanyl IV for entire surgery
- Continuous epidural infusion (LA + opiate)

## Case #2

### Post-operative multimodal analgesia

- Scheduled ibuprofen (800 mg PO TID x 6 doses)
- Scheduled acetaminophen (650 mg PO TID x 6 doses)
- Scheduled gabapentin (100 mg TID until discharge)
- Continued epidural infusion (<72 hours)
- Oxycodone 5-10 mg Q4 hours PRN
- PCA with IV opiates if pain uncontrolled

## Case #3



60 year old female presents for TKA

She has a history of chronic pain and CAD (s/p stents x2 placed 5 years ago)

She takes oxycodone (60 daily oral morphine equivalents), and daily aspirin

## Sample management strategy for arthroplasty patients on pre-operative opiates

(Adapted from Devin, CJ 2014)

Low OME (1-39 mg/d)	Medium OME (40-79 mg/d)	High OME (80 mg/d or above)
Referral to PCP	Referral to PCP	Referral to Anesthesiology Chronic Pain
Educate patient on implications of opiate intake and postoperative recovery	Educate patient on implications of opiate intake and postoperative recovery	Educate patient on implications of opiate intake and postoperative recovery
Set goal of gradually eliminating opiate intake prior to surgery date	Set goal of 10-20% reduction per week prior to surgery.	Set goal of 10-20% reduction per week prior to surgery.
Clearly delineate amount of postop opiates to be provided	Discuss pain-related beliefs and provide non-opioid alternatives as appropriate	Screen patients for depression and anxiety and refer for cognitive behavioral evaluation as needed
Reinforce weaning during preoperative visits	Clearly delineate amount of postop opiates to be provided	Offer addiction counseling preop and ensure follow-up postoperatively.
	Reinforce target opioid intake goal	Encourage postoperative opiate independence
GOAL: OFF opioids prior to surgery	GOAL: < 40 OMEs prior to surgery	GOAL: < 80 OMEs prior to surgery

## Case #3

### Pre-operative analgesia

- Gabapentin (900 mg PO)
- Acetaminophen 1 g IV
- Celecoxib (400 mg PO)
- Oxycodone (10 mg PO)
- Femoral nerve or Adductor-canal block with catheter placed pre-operatively (local anesthetic)

## Case #3

### Intra-operative/PACU multimodal analgesia

- Continuous nerve block catheter infusion (local anesthetic)
- Ketorolac (15-30 mg IV)
- Hydromorphone boluses (0.75 mg = 10 mg oxycodone)

## Case #3

### Post-operative multimodal analgesia

- Scheduled ibuprofen (800 mg PO TID x 6 doses)
- Scheduled acetaminophen IV (1 g Q6 hours x 4 doses)
- Gabapentin (900 mg PO once 24 hours postop)
- Celecoxib (400 mg PO once 12 hours postop)
- Continue continuous nerve catheter (24-48 hours)
- Ice
- Hydromorphone and oxycodone PRN

## Learning goals

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

## Resources to guide pain management

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



## References

Kumar K, et al. A Review of Opioid-Sparing Modalities in Perioperative Pain Management: Methods to Decrease Opioid Use Postoperatively. *Anesth Analg.* 2017 125(5):1749-1760.

Beverly A, et al. Essential Elements of Multimodal Analgesia in Enhanced Recovery After Surgery (ERAS) Guidelines. *Anesthesiology Clinics*, 2017 35(2): 115-e143.

Devin CJ, et al. Approach to pain management in chronic opioid users undergoing orthopaedic surgery. *J Am Acad Orthop Surg.* 2014 22(10): 614-22.

Gandhi and Viscusi. Multimodal Pain Management Techniques in Hip and Knee Arthroplasty. *The Journal of NYSORA.* 2009 13: 2-10