

# Are opioids necessary

FOR THE MANAGEMENT OF PAIN  
FOLLOWING LIMB FRACTURE SURGERY  
OR EXTREMITY TRAUMA?

## The issue...

*The 'opioid crisis' has recently been reframed  
as a "public health emergency"*

(Gostin et al 2017)



## plus ...



**Postoperative prescription opioids  
are often unused, unlocked &  
undisposed**

(Bicket et al 2017)

**"Across all reports, 2 to 5 times more  
opioids are prescribed than consumed"**

(Gauger et al 2018)



## Recent evidence ...

**Non-opioid analgesia is as effective as  
opioid analgesia for acute extremity  
pain**

(Chang et al 2017)



**Combination non-opioids reduce  
opioid consumption post-operatively**

(Martinez et al 2017)

**"Multimodal analgesia is  
available and the evidence is  
strong to support its efficacy"**

(Wick et al 2017)



## The balancing act...

**Optimal pain  
management**



**Responsible  
prescribing**

## *Are opioids necessary for the management of pain following limb fracture surgery or extremity trauma?*

“Ever since the institution of pain as the fifth vital sign, there has been a rising opioid epidemic...surgeons are tasked with the duty of both managing patients’ pain in the perioperative period and following responsible prescribing behaviours”

Source: [Journal of Hand Surgery](#) 2018; 43(5): 470-479

### **Current evidence for non-opioid pain management**

**2018**

#### **A systematic review of opioid use after extremity trauma in orthopaedic surgery**

- “if pain is not controlled on day 1, pain intensity and satisfaction are less likely to be improved by narcotics”
- intraoperative multimodal drug injection and nerve blockade are viable alternatives for postoperative pain control
- “patients who consume more opioids communicate greater pain intensity and less satisfaction with pain control”
- Authors conclude: “orthopaedic surgeons should tailor their postoperative narcotic prescriptions to the individual patient and consider using alternative methods such as a block or a multimodal analgesic injection to decrease the need for postoperative systemic opioids”

Source: [Injury](#) 2018; 49(6): 1003-1007

#### **Opioid use after upper extremity surgery**

- this review article summarizes the available literature regarding opioid use after upper extremity surgery to provide the surgeon with additional information to make informed decisions regarding postoperative opioid prescription
- studies have found that, on average, surgeons prescribe 2 to 5 times more opioids than patients consume
- surgeons must be aware of patient risk factors that predispose them to opioid abuse, including prior history of substance abuse, younger age, and previous pain diagnosis.
- multimodal pain regimens can further help to decrease the amount of opioid pain medications that patients use after surgery, with no patient receiving opioids as the sole treatment for pain.

Source: [Journal of Hand Surgery](#) 2018; 43(5): 470-479

## 2017

### **Effect of a single dose of oral opioid and nonopioid analgesics on acute extremity pain in the emergency department: a randomized clinical trial**

- participants received 400 mg of ibuprofen and 1000 mg of acetaminophen; 5 mg of oxycodone and 325 mg of acetaminophen; 5 mg of hydrocodone and 300 mg of acetaminophen; or 30 mg of codeine and 300 mg of acetaminophen

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**“...for patients presenting to the ED with acute extremity pain, there were no statistically significant or clinically important differences in pain reduction at 2 hours among single-dose treatment with ibuprofen and acetaminophen or with 3 different opioid and acetaminophen combination analgesics.”**

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Source: [JAMA](#) 2017; 318(17): 1661-1667

(Further comments in: [AJN](#) 2018; 118(2):69-70 and [Evidence-Based Nursing](#) 2018; 21: 50)

### **Non-opioid analgesics in adults after major surgery: systematic review with network meta-analysis of randomized trials.**

Authors conducted a meta-analysis to investigate which analgesic other than morphine (AOM) provided the best efficacy-safety profile:

- “a combination of acetaminophen with either an NSAID or nefopam was superior to most AOM used alone, in reducing morphine consumption”
- for AOM used alone,  $\alpha$ -2 agonists, NSAIDs and COX-2 inhibitors demonstrated the best reduction in morphine use
- there was insufficient data reporting adverse events

Source: [British Journal of Anaesthesia](#) 2017; 118(1): 22-31

### **Premedication with oral gabapentin versus intravenous paracetamol for post-operative analgesia after tibial fracture surgery**

- study found that significant pain reduction was observed in the Gabapentin and IV paracetamol groups, compared to the placebo group
- no difference was found between the three groups in terms of mean opioid analgesic requirements
- authors concluded: Gabapentin and paracetamol had similar efficacies in post-operative analgesia after tibial fracture surgery

Source: [Advances in Human Biology](#) 2017; 7(3): 115-118

## **Multimodal analgesia**

### **Postoperative multimodal analgesia pain management with nonopioid analgesics and techniques: a review**

- “multimodal analgesia is readily available and the evidence is strong to support its efficacy”
- “surgeons should use this effective approach for patients both using and not using the ERAS pathway to reduce opioid consumption”

Source: [JAMA Surgery](#) 2017; 152(7): 691-697

### **Efficacy of surgical-site, multimodal drug injection following operative management of femoral fractures: a randomized controlled trial**

- “surgical-site injection with a multimodal analgesic cocktail provides improved pain control and reduces narcotic utilization over the first postoperative day”

Source: [The Journal of Bone and Joint Surgery](#) 2017; 99(6): 512–519

### **Effect of multimodal analgesia for postoperative pain on patients with lower limb fracture**

- “intravenous flurbiprofen and epidural sufentanil combined with patient controlled intravenous fentanyl after surgery has good analgesic effect on patients with lower limb fractures”
- there is “no unified ideal MMA modality” because pain levels can change with external stimuli, individual tolerance, psychology and other factors.
- “pain mechanisms and new therapeutic drugs need to be further studied”

Source: [Biomedical Research](#) 2014; 25(2)

## **Opioid consumption patterns**

### **Postoperative opioid prescribing: Getting it RIGHTT**

To minimize adverse events and maximize patient recovery, authors developed the mnemonic:

.....  
**RIGHTT: Risk for adverse event, Insight into pain, Going over  
pain plan, Halting opioids, Tossing unused opioids and  
Trouble identification**  
.....

Other highlights from this review include:

- opioid prescription drugs are commonly misused
- pre-operative discussion and development of a pain management plan may reduce adverse events with opioids
- opioid medication monotherapy for postoperative pain should be avoided
- more than half of the postoperative opioid pills prescribed go unused

Source: [American Journal of Surgery](#) 2018; 215(4): 707-711

### **Prescription opioid analgesics commonly unused after surgery: a systematic review**

- 67% - 92% of patients reported unused opioids from a cohort of 810 patients undergoing orthopaedic, thoracic, obstetric or general surgery
- “Postoperative prescription opioids often go unused, unlocked, and undisposed, suggesting an important reservoir of opioids contributing to nonmedical use of these products, which could cause injuries or even deaths.”

Source: [JAMA Surgery](#) 2017; 152(11): 1066-1071

### **A prospective evaluation of opioid utilization after upper-extremity surgical procedures: identifying consumption patterns and determining prescribing guidelines**

- authors recommend that surgeons carefully examine patients' opioid use
- evaluation found that patients are prescribed approximately 3 times more opioid medications than required following upper-extremity surgery
- consider customizing prescriptions on the basis of anatomic location and procedure type
- general prescribing guidelines are provided

Source: [Journal of Bone and Joint Surgery \(Am\)](#) 2016; 98(20): e89

### **Reframing the opioid epidemic as a national emergency**

- "although effective pain relief is a vital component of modern health care, the public health effects of opioid addiction have escalated sharply"
- in the US, opioid overdose deaths increased 156% between 2010 and 2015

Source: [JAMA](#) 2017; 318(16): 1539-1540

### **Further reading**

Crisologo, P. A., E. K. Monson and S. A. Atway (2018). "**Gabapentin as an adjunct to standard postoperative pain management protocol in lower extremity surgery.**" [J Foot Ankle Surg](#)  
<https://austin.on.worldcat.org/oclc/7584314459>

Chai, P. R., S. Carreiro, B. J. Innes, B. Chapman, K. L. Schreiber, R. R. Edwards, A. W. Carrico and E. W. Boyer (2017). "**Oxycodone ingestion patterns in acute fracture pain with digital pills.**" [Anesth Analg](#) 125(6): 2105-2112  
<http://www.ncbi.nlm.nih.gov/pubmed/29189367>

Finger, A., T. Teunis, M. G. Hageman, E. R. Ziady, D. Ring and M. Heng (2017). "**Association between opioid intake and disability after surgical management of ankle fractures.**" [J Am Acad Orthop Surg](#) 25(7): 519-526

Hah, J. M., B. T. Bateman, J. Ratliff, C. Curtin and E. Sun (2017). "**Chronic opioid use after surgery: Implications for perioperative management in the face of the opioid epidemic.**" [Anesth Analg](#) 125(5): 1733-1740  
<http://www.ncbi.nlm.nih.gov/pubmed/29049117>

Helmerhorst, G. T. T., R. Zwiers, D. Ring and P. Kloen (2017). "**Pain relief after operative treatment of an extremity fracture: A noninferiority randomized controlled trial.**" [J Bone Joint Surg Am](#) 99(22): 1908-1915  
<http://www.ncbi.nlm.nih.gov/pubmed/29135664>

Kormi, E., J. Snall, A. M. Koivusalo, A. L. Suominen, H. Thoren and J. Tornwall (2017). "**Analgesic effect of perioperative systemic dexamethasone on blowout fracture surgery.**" [J Oral Maxillofac Surg](#) 75(6): 1232-1237  
<http://www.ncbi.nlm.nih.gov/pubmed/27770628>

Kumar, K., M. A. Kirksey, S. Duong and C. L. Wu (2017). "**A review of opioid-sparing modalities in perioperative pain management: Methods to decrease opioid use postoperatively.**" [Anesth Analg](#) 125(5): 1749-1760  
<http://www.ncbi.nlm.nih.gov/pubmed/29049119>

O'Neil, J. T., M. L. Wang, N. Kim, M. Maltenfort and A. M. Ilyas (2017). "**Prospective evaluation of opioid consumption after distal radius fracture repair surgery.**" [Am J Orthop \(Belle Mead NJ\)](#) 46(1): E35-E40  
<http://www.ncbi.nlm.nih.gov/pubmed/28235120>

Richards, C. J., K. W. Graf, Jr. and R. P. Mashru (2017). "**The effect of opioids, alcohol, and nonsteroidal anti-inflammatory drugs on fracture union.**" [Orthop Clin North Am](#) 48(4): 433-443  
<http://www.ncbi.nlm.nih.gov/pubmed/28870304>

Savarese, J. J. and N. G. Tabler, Jr. (2017). "**Multimodal analgesia as an alternative to the risks of opioid monotherapy in surgical pain management.**" J Healthc Risk Manag 37(1): 24-30  
<http://www.ncbi.nlm.nih.gov/pubmed/28719091>