

# Optimizing Control of Acute Postoperative Pain While Minimizing Opioid Use



National Hispanic Medical Association

**2019 Hispanic Health Conference**

**Hyatt Regency Crystal City April 11-14, 2019**



**The University of Texas**  
Health Science Center at Houston

**School of Dentistry**

# Dental Pain Model for Analgesic Research

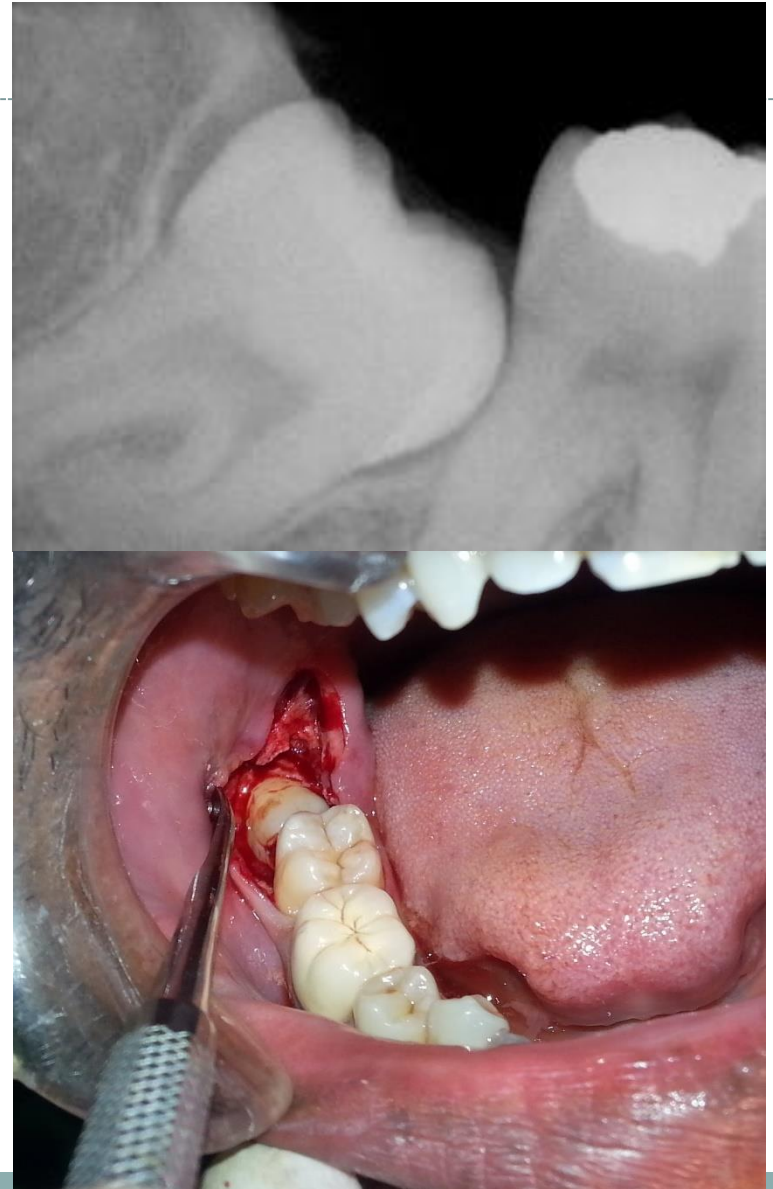
## **The Third-Molar Model**

**Very low placebo response rate (15%)**

**Young, healthy patients, ASA I**

**Surgical trauma includes both hard & soft tissues**

**Reliably & rapidly reaches severe pain level (short time)**



# Single Dose Oral Analgesics for Acute Postoperative Pain in Adults—an Overview of Cochrane Reviews (Review)



**MOORE RA, DERRY S,  
ALDINGTON D, WIFFEN PJ**

***Cochrane Database Syst. Rev.***

**2015, Issue 9**

**Art. No. CD008659**

**DOI: 10.1002/14651858.pub3**



**THE COCHRANE  
COLLABORATION®**

# NNTs Reported by Moore et al. 2015



- Ibuprofen/200 mg + acetaminophen/500 mg 1.6
- Ibuprofen/400 mg: 2.5

• **Long duration (>8hrs): difunisal/500 mg, acetaminophen/650 mg + oxycodone/10 mg, ibuprofen/400 mg + APAP/1,000 mg**

- No evidence for analgesia: aspirin/500 mg & oxycodone 5 mg (stand-alone)

• No systematic reviews of hydrocodone

# Time Horizons/ **Provider-Directed Analgesia**

- Tooth extraction:



**1-3 days**

- Endodontic therapy:

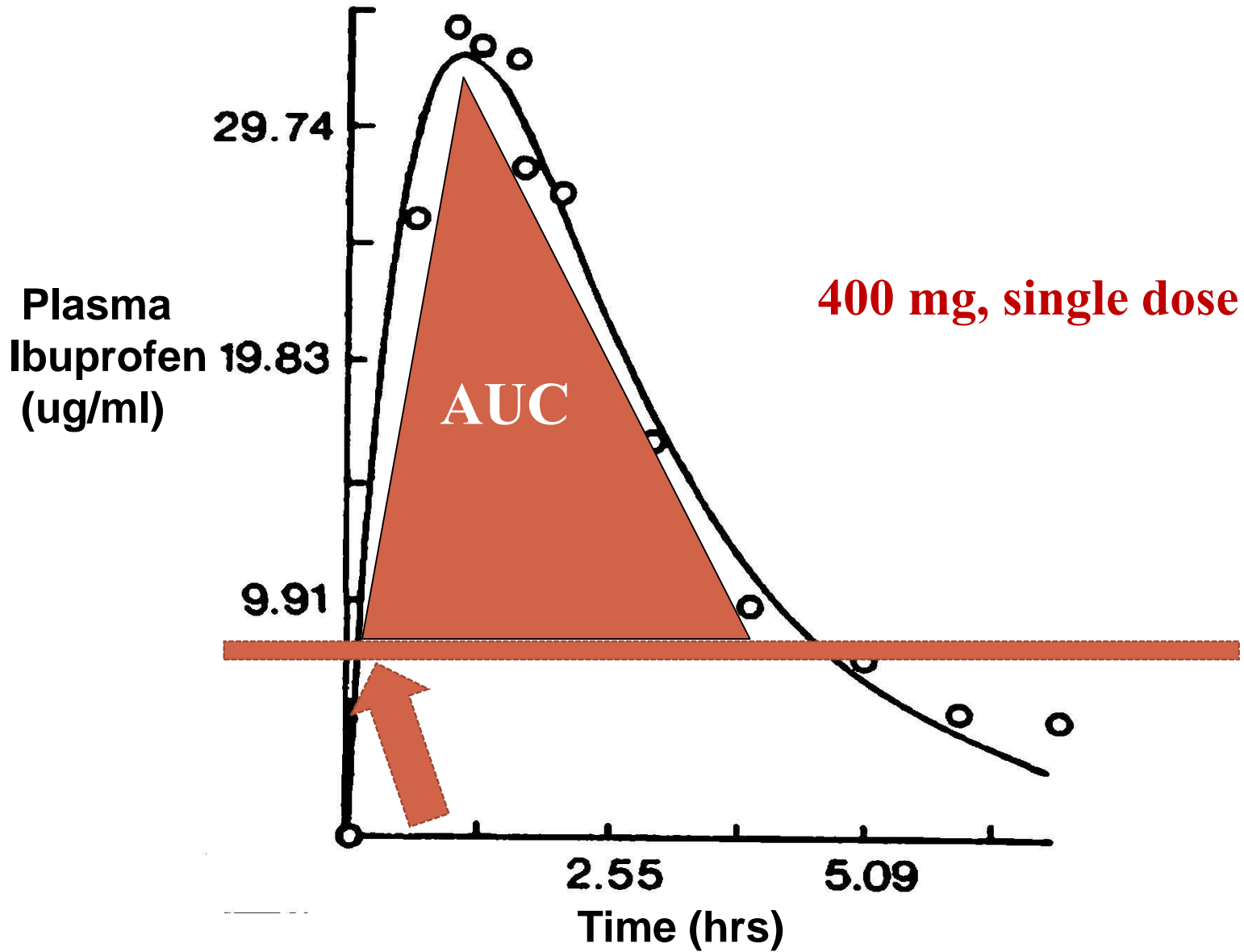


**1-7 days**

- Periodontal graft surgery:



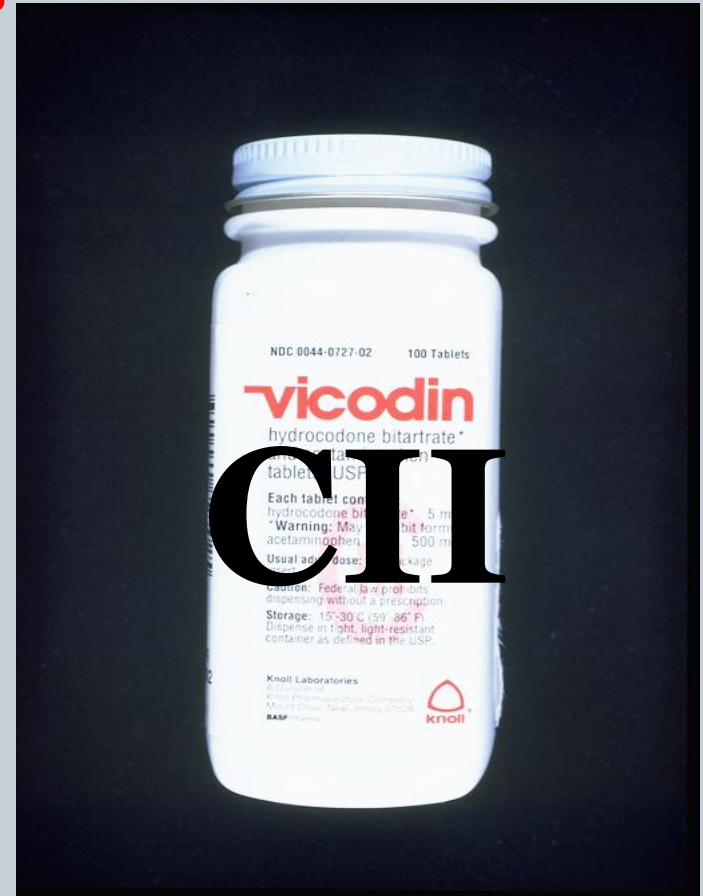
**7+ days**

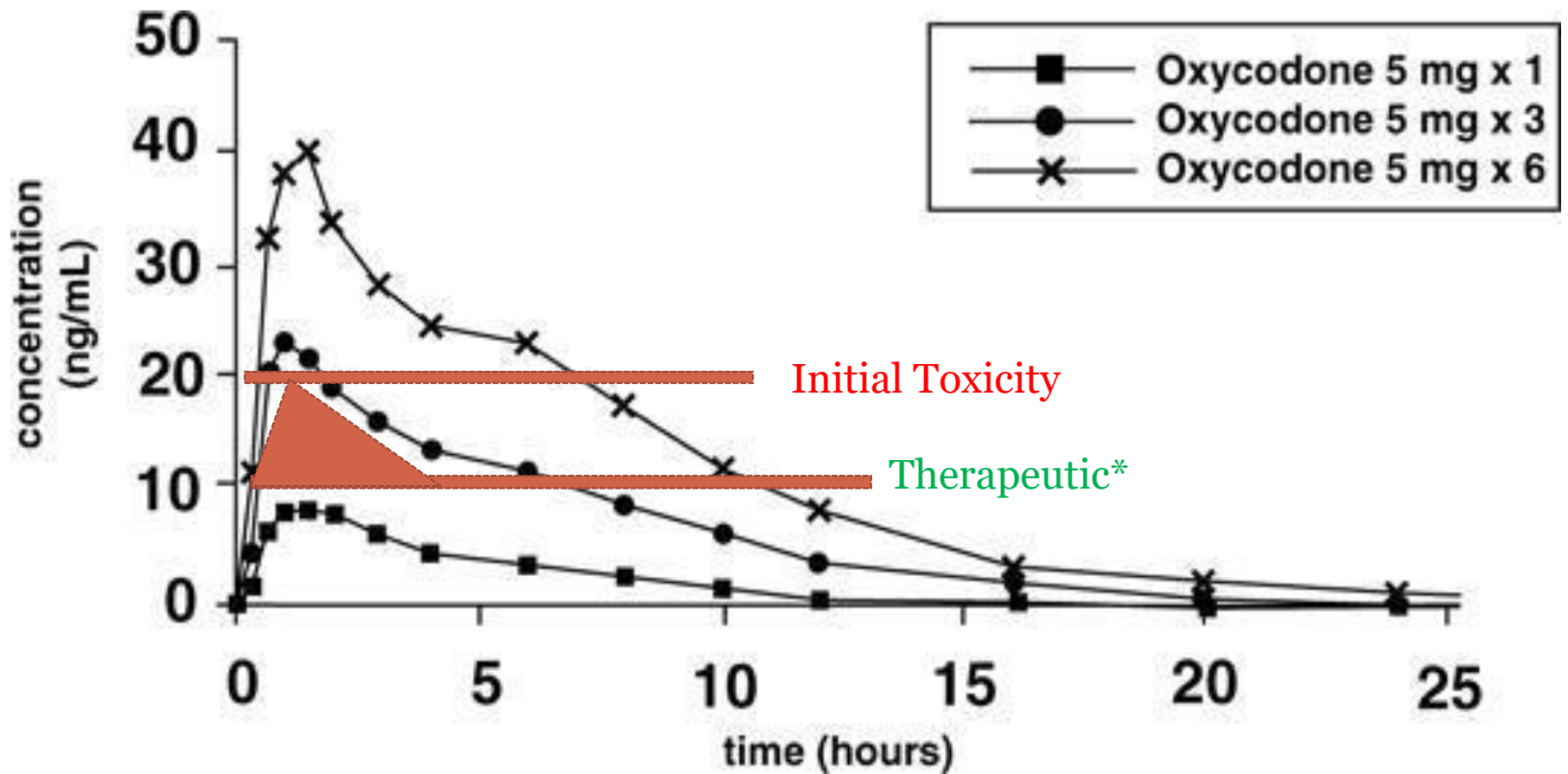


(modified from Collier et al., *Br. J. Clin. Pharmacol.* 1978;5:530)

# Opioids: Consistently Variable

- **Less efficacious than NSAIDs as single agents**
- **Subject to pharmacogenetic polymorphisms**
- **Nausea, vomiting**
- **Sedation**
- **Important alternatives (ASA allergy, NSAID intolerance, GI disease, coagulopathies)**



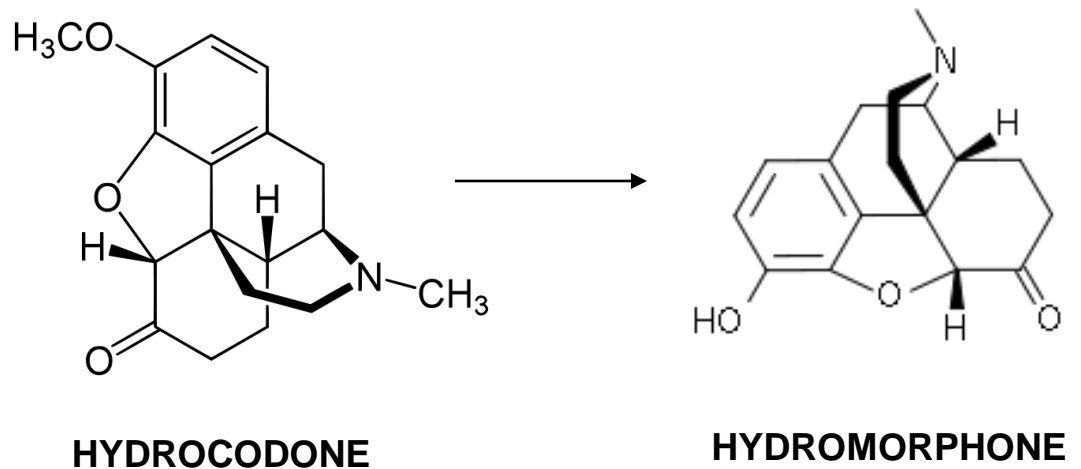
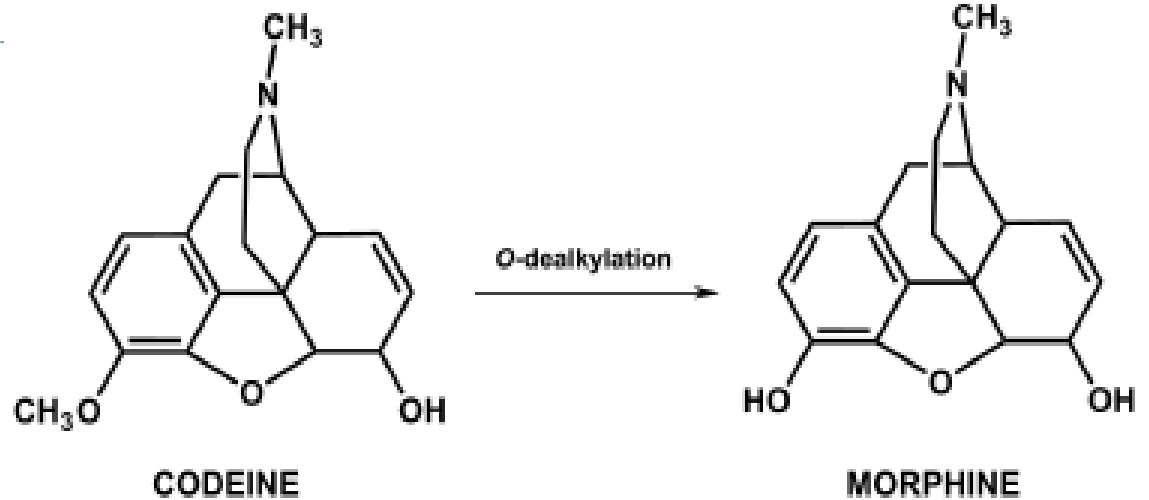
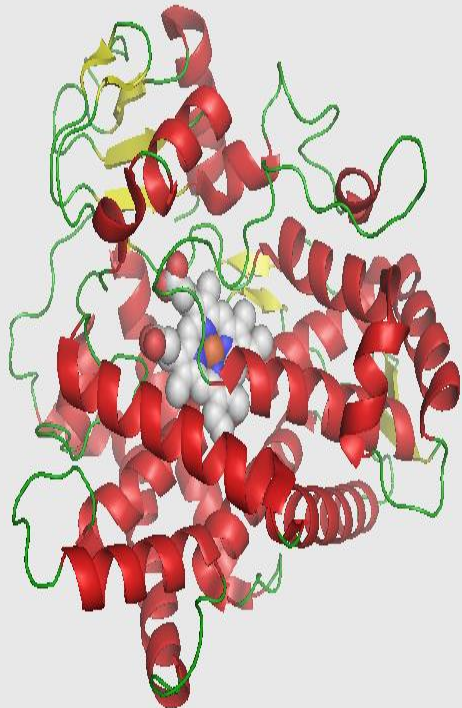


**Oxycodone blood level following single oral dose  
(manufacturer's data)**

\*Manufacturer's recommended dose = 5 to 15 mg q. 4 -6 hrs



# Pharmacogenetics & Analgesics



# Oxycodone vs. Hydrocodone



## Oxycodone

- Evaluated in systematic reviews/meta-analyses
- Adult dose range 5-15 mg
- $T_{1/2}$  =
- Phase I: CYP 3A4
- Protein binding:
- No combinations with APAP

## Hydrocodone

- Evaluated in limited number of RCTs
- Adult dose range 5-15 mg
- $T_{1/2}$  =
- Phase I: CYP 2D6
- Protein binding:
- Only available in combination with APAP

## Using the Evidence: OTC Drugs

**\*adult patient, ASA I, no contraindications**

For pain relief, take 400 mg ibuprofen (2 Advil) **with** 1,000 mg acetaminophen (2 Extra-Strength Tylenol) immediately, then every 8 hours as needed

**Using the Evidence: Rx Opioid Drugs**  
**\*adult patient, ASA I, no contraindications**

Rx

Oxycodone immediate-release, 5 mg tabs

Disp: 6 (six) tabs

Sig: Take 2 tabs **with** 1,000 mg

Acetaminophen (2 Extra-Strength Tylenol)  
immediately, then every 8 hours as  
needed, for dental pain.

Warnings: Do not drive, etc.

# Opioid Prescribing: Acute and Postoperative Pain Management (AAOMS White Paper 2017)

**Pre-emptive NSAIDs**

**Perioperative corticosteroid**

**Long-acting local anesthetic**

**Avoid long-acting/ER opioids**

**NSAIDs are “first-line” analgesics**

**NSAIDS+APAP work synergistically**

**Consider short-acting opioids for breakthrough pain**

**Use Rx monitoring programs**



# Trending NOW: Analgesics



## **Prostaglandin Receptor Antagonists.**

**AL-8810**

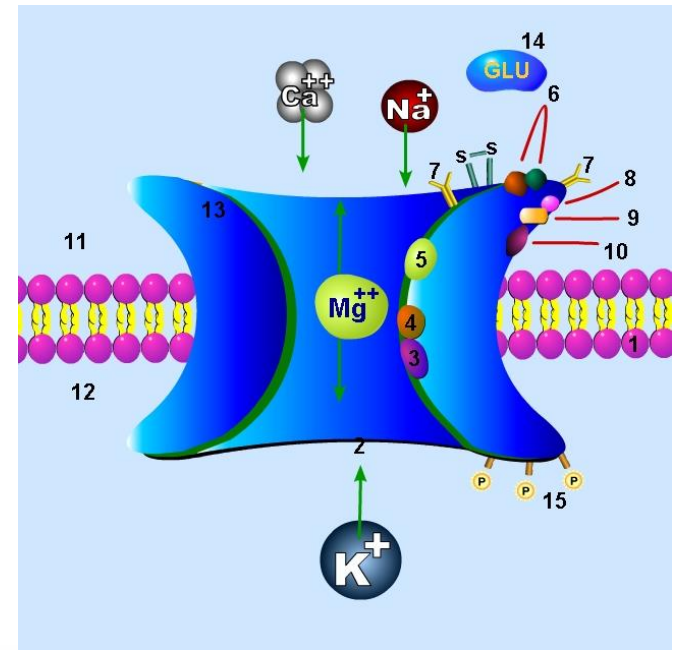
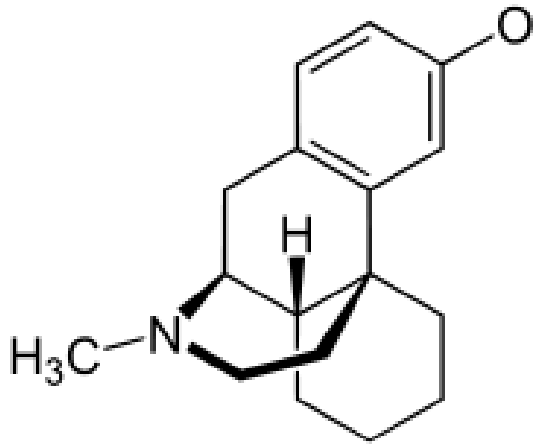
Sharif NA, Klimko PG. *Brit. J. Pharmacol.* 2018

## **Preemptive Analgesia/Perioperative Dextromethorphan**

King MR et al. Perioperative dextromethorphan as an adjunct for postoperative pain: a Meta-analysis of randomized controlled trials.

*Anesthesiol.* 2016;124(3):696-705

# Using the Evidence: Are NMDA Receptor Antagonists in Our Future?



# Using the Evidence: Corticosteroids

## Efficacy of Corticosteroids on Postoperative Endodontic Pain: A Systematic Review and Meta-analysis

Shamszadeh S et al. *J. Endod.* 2018;44(7):1057-1065

## Effect of Preoperative Corticosteroids in Patients With Symptomatic Pulpitis on Postoperative Pain After Single-Visit Root Canal Treatment: A Systematic Review and Meta-analysis

Suneelkumar C et al. *J. Endod.* 2018;44(9):1347-13554

