Inpatient Pain Management for People Who Use Buprenorphine and Methadone

Jim Laidler, MD, PhD

Talia Kahn, MD, MPH

Introductions

Jim Laidler	Talia Kahn
Anesthesiologist PhD Microbiology and Molecular Biology Addiction medicine Hazelden Betty Ford Hooper Detox CODA Great Circle Recovery	Hospitalist at Portland VA Addiction medicine Hooper Detox Hazelden Betty Ford

Objectives

1. Understand how to manage acute patient in inpatients on buprenorphine
2. Understand how to manage acute patient in inpatients on methadone

Poll

How much experience do you have with patients on buprenorphine and/or methadone?

A) None
B) See them once a year
C) See them a few times a year
D) See them once a month
E) See them at least once a week

Case 1

- 62 y/o M with a history of chronic pain and osteoporosis is admitted to the hospital after suffering a femoral neck fracture from a mechanical fall.

- The orthopedics team calls you for a consult because he is on buprenorphine/naloxone 8mg/2mg BID as an outpatient for his chronic pain.

Poll

What do you do with his buprenorphine/naloxone?

A) Stop it
B) Reduce the dose to 8mg/2mg daily
C) Continue his home dose of 8mg/2mg BID

Buprenorphine Pharmacology

- Buprenorphine is an opioid with high affinity for the opioid receptors but is only a 25% agonist at the mu opioid receptor
  - It is a pure antagonist at delta and kappa opioid receptors
  - pKi = 8.8 *vs* 7.9 for morphine and 7.8 for oxycodone
  - Will cause precipitated withdrawal in opioid-dependent patients
  - Can block or interfere with other full-agonist opioids
- Because it is only a 25% agonist, it is not effective for more than moderate pain

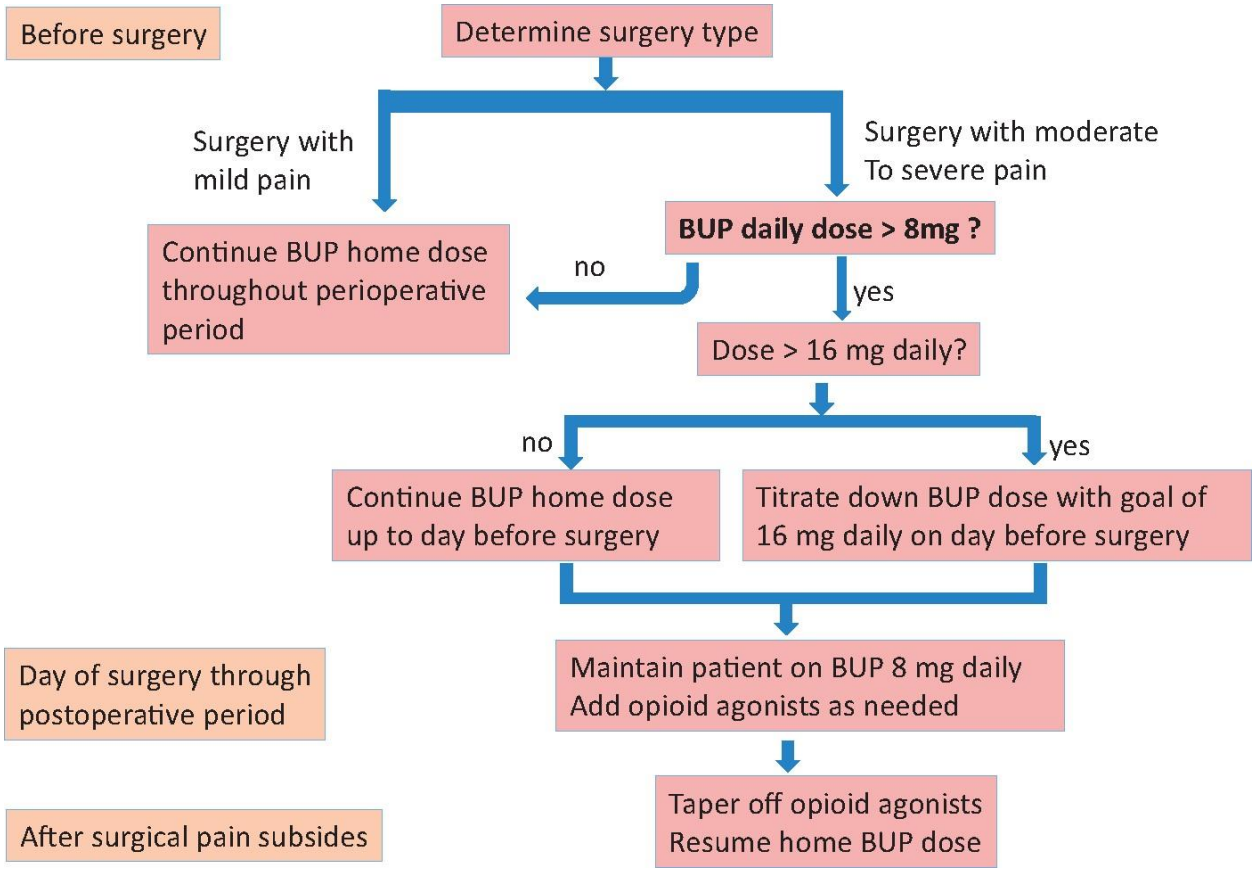
Acute Pain Management

(on buprenorphine)

- Discontinuation of buprenorphine in patients experiencing acute pain will increase the patient's requirement for acute analgesic relief
  - Withholding buprenorphine on the day after surgery significantly increased patient's requirement for PCA opioid compared with those who had received their daily dose

Macintyre PE et al. Pain relief and opioid requirements in the first 24 hours after surgery in patients taking buprenorphine and methadone opioid substitution therapy. Anaesth Intensive Care. 2013. 41(2):222-30.

American Academy of Pain Management

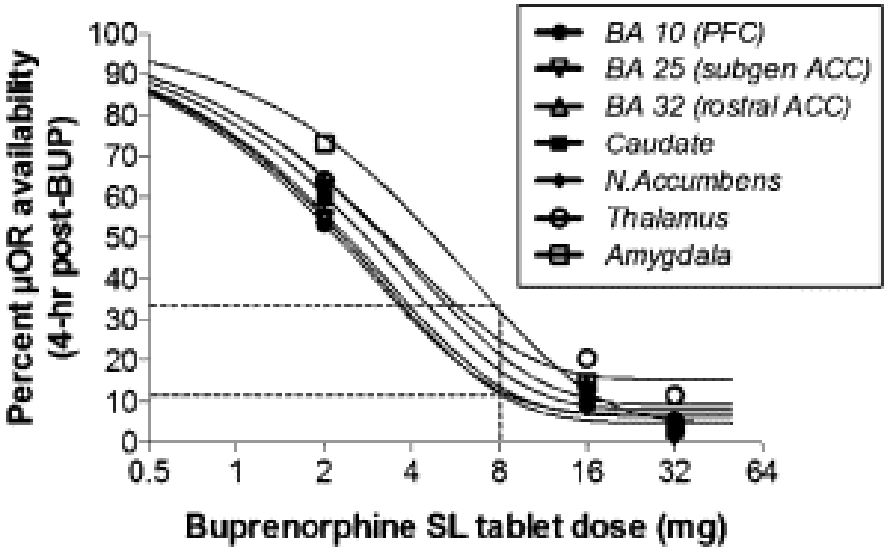


Quaye, AN and Zhang, Y, Perioperative Management of Buprenorphine: Solving the Conundrum. Pain Medicine. 2019. 20(7); 1395–1408.

Acute Pain Management

(on buprenorphine)

- Overcoming buprenorphine blockade
  - You must use an opioid with either a higher binding affinity (fentanyl, hydromorphone) or larger than usual doses of opioids with similar or lower affinities (oxycodone, morphine).



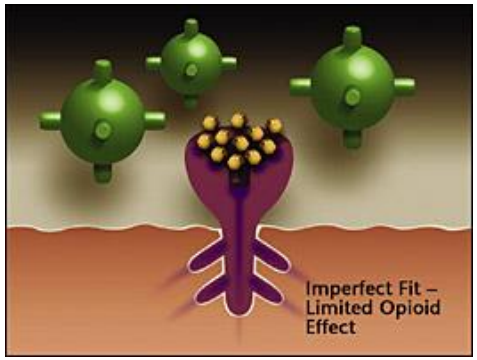
Buprenorphine dose (mg)	Receptors available
2	~50-75%
8	~15-35%
16	~10-20%
32	~5%

Greenwald M et al. Buprenorphine maintenance and *mu* -opioid receptor availability in the treatment of opioid use disorder: Implications for clinical use and policy. Drug and Alcohol Dependence. 2014. 144: 1-11.

Acute Pain Management

(on buprenorphine)

- Degree of opioid receptor blockade will vary from person to person
  - A good ballpark with lower affinity opioids would be to use 25-50% more and with the higher affinity opioids you can probably use your usual dose
- Start with the “typical” dose and add more as needed



Exactly how much are we talking?

- Lower affinity (use for peripheral abscess, dental procedures)
  - *Oxycodone*: May need 15-20mg to overcome FULL blockade, but would write for 10-15mg Q4h prn and reassess pain after each dose
  - *Morphine PO*: May need 30-45mg to overcome FULL blockade, but would write for 15-30mg Q4h prn and reassess pain after each dose
  - *Morphine IV*: May need 15mg to overcome FULL blockade, but would write for 4-10mg Q4h prn and reassess pain after each dose
  - Watch for “overshoot” as patients’ pain is controlled

Exactly how much are we talking?

- Higher affinity (use for any case going to the OR, epidural abscess, renal colic)
  - *Hydromorphone PO*: May need 4-6mg to overcome FULL blockade, but would write for 2-4mg Q4h prn and reassess pain after each dose
  - *Hydromorphone IV*: May need 1-2mg to overcome FULL blockade, but would write for 0.25mg q15min prn NTE 12mg in 24 hours to allow RN to titrate rapidly and reassess pain within an hour or two → Consider going with a hydromorphone PCA
  - *Fentanyl IV*: Start with typical doses of 50-100mcg and titrate in 10-25mcg increments q15-30min.

Case 1 continued

- You admit him to the floor and start a hydromorphone PCA: 0.25mg Q15min
- You decrease buprenorphine/naloxone to 8mg daily
- The patient goes to the OR and after surgery, his pain is pretty minimal. You prescribe acetaminophen 975mg QID and have oxycodone 5-10mg Q6h prn available for severe pain. You also increase his buprenorphine/naloxone back to 8mg/2mg BID.
- Prior to discharge, you contact his primary care provider who prescribes his buprenorphine to discuss his opioid prescriptions on discharge.

What if…?

- *The patient must be NPO?*
  - Buprenorphine can still be administered since the tablets/films dissolve in the mouth and the medication is absorbed through the oral mucosa.
  - NG suction is not a problem since any medication that makes it to the stomach is poorly absorbed, anyway.

- *The patient has severe nausea/vomiting?*
  - Buprenorphine is very bitter and can worsen nausea and trigger vomiting
  - May have to discontinue buprenorphine and transition to IV opioids for pain AND opioid withdrawal management.

Case 2

- 57 y/o M with history of hepatitis C and opioid use disorder presents with sepsis and AKI secondary to right forearm abscess and cellulitis.

- He reports that he is receiving methadone from a clinic downtown.

Acute Pain Management

(on methadone)

- Patients on a stable methadone maintenance dose
  - The methadone is preventing withdrawal symptoms and will not have significant effect on acute pain.
  - Because it is “fast on, slow off”, methadone is not a good choice for acute pain, which often fluctuates rapidly – so increasing the methadone dose isn’t a good plan (it also confuses the maintenance therapy “picture”).
  - Treat acute pain as a separate problem with separate medication – expect to use 25-50% more opioid than in an opioid-naïve patient. Titrate to effect.

Poll

What should you do if the patient is on 60mg of methadone daily and is still having opioid cravings?

A) Tell them to follow up with their Opioid Treatment Program on discharge
B) Increase their methadone by 5-10mg every 1-2 days
C) Split their methadone into 20mg TID dosing

Acute Pain Management

(on methadone)

- Patients on methadone but NOT at a stable dose
  - People who have recently started (42 CFR part 8 mandates 30mg start dose)
  - People who are “struggling”
- May consider titrating methadone dose upward
  - 5-10mg every 1-2 days
  - Be sure to let the methadone clinic know the dose was changed

What if…?

- The patient needs to be NPO (surgery, NG suction, etc.)
  - Can substitute IV opioids
  - Either continuous infusion (PCA, pump) or intermittent dosing
  - Methadone is roughly equipotent to morphine and is 50% absorbed orally so…
    - Morphine: administer 50% of the oral methadone dose divided over 24 hours
    - Hydromorphone: administer 10% of the oral methadone dose (since hydromorphone is roughly 5X more potent than morphine) divided over 24 hours
    - Fentanyl: administer 0.5% (5mcg for each 10mg of oral methadone) of the oral methadone dose divided over 24 hours.

Peculiarities of buprenorphine, methadone and fentanyl

- All three are highly lipid-soluble
  - N-octanol:water partition coefficients:
    - Morphine: ~1.2
    - Hydromorphone: 2.0
    - Heroin: 7.1
    - Methadone: 117
    - Fentanyl: 860
    - Buprenorphine: 1281
  - Highly lipid-soluble drugs appear short-acting with the first few doses because of redistribution; with prolonged use, lipids act as a reservoir.