# Management of Acute Pain in Patients with Opioid Use Disorder

Doug Burgess, MD
Assistant Professor of Psychiatry, UMKC
Medical Director of Addiction Services, Truman Medical Centers

# Individualized Treatment is Key

- Treatment will vary depending on many factors:
  - Medication used to treat OUD
    - Methadone v. buprenorphine v. naltrexone (long v. short acting)
  - Patient specific factors
    - Substance use history, psychiatric symptoms, trauma history, anxiety about procedure etc.
  - Anticipated v. emergent procedure
  - Severity of pain anticipated
  - Resources available where pain is being managed
- Planning, communication and patient involvement are all key to a successful outcome

# General Guidelines

- Include the patient in planning
  - They have expertise in their lives
  - Helps to reduce anxiety- clarity and confidence goes a long way
  - Enable them to advocate for themselves (Provide written plan)
- Coordinate in advance with all treatment providers
- Patients will often require opioid tolerant doses
  - Patients may use on average 3x higher morphine equivalents in the first 24 hours after surgery (Rapp 1995)
  - Evidence of opioid induced hyperalgesia (Huxtable 2011, Wachholtz 2014)
  - Consideration given to using products without acetaminophen
- Undertreated pain is a risk factor for relapse
- Multimodal analgesia (Rational Approach)
  - Maximize non-opioid analgesia (Scheduled v As Needed)
    - NSAIDs, Nerve blocks/epidurals, Ketamine
    - Heat/ice, Massage, physical therapy, relaxation strategies
  - Transition to oral opioids as soon as possible
  - Avoid medications that have been misused (if possible)

# Methadone and Acute Pain Management

- Maximize non-opioid pain management strategies
- Split home dosing into q 8h
  - Analgesia less than ½ life
  - Verify outpatient dosage and adherence
    - Consider sublingual methadone or IV in patients who are NPO. May need to reduce dosage by 50% due to 1st pass metabolism
  - Be aware of “stacking” effect
  - Adding agents with potential for QTc prolongation
- Add full agonist opioids
  - May require opioid tolerant doses

# Naltrexone and acute pain management

- Planned Procedures
  - Maximize non-opioid analgesics
  - Use opioids for shortest period clinically indicated and titrate to effect (tolerance may still be increased)
  - Oral Naltrexone
    - Stop 72 hours prior to surgery
    - Maximize non-opioid analgesics
    - Use opioids for shortest period clinically indicated and titrate to effect (Tolerance may still be increased)
  - Depot Naltrexone
    - Stop 1 month prior to surgery

# Naltrexone and acute pain management

- Unplanned procedures
  - Oral Naltrexone
    - Naltrexone efficacy may begin to wear off after about 6 hours (opioids may have some reduced effect)
    - Regional anesthesia (nerve blocks, epidurals)
  - Depot naltrexone
    - First 14 days- highly efficacious
    - 15 days-28 days efficacy is decreasing
      - May be increased role for opioids

# Ketamine

- Mechanism of action is varied
  - NMDA antagonist
  - Effects on μ opioid receptors, muscarinic receptors, monoaminergic receptors, GABA receptors
    - Analgesic, anti-inflammatory and anti-hyperalgesic
  - Available IV and orally
    - Oral form undergoes extensive first pass metabolism to norketamine
  - Caution in patients with CVD, hepatic impairment, uncontrolled psychiatric conditions

| | Dosing for Pain | Dosing for Anesthesia |
|---|---|---|
| IV Bolus | 0.3-0.5 mg/kg bolus | 1-4.5 mg/kg bolus |
| IV continuous | 0.1-0.2 mg/kg/hour | 0.5-4.5 mg/kg/hr |
| Oral | 10 mg po TID or<br>1 mg/kg divided q8 hour | N/A |

# Lidocaine Infusion

- Mechanism of Action
  - Attenuates pain sensitization via Na+ Chanel blockade
  - Decreases NMDA receptor mediated postsynaptic depolarization
    - Effects: analgesic, anti-inflammatory and anti-hyperalgesia
- Dosing:
  - 1-2 mg/kg bolus followed by 0.5-3 mg/kg/hour
- Avoid in patients with arrhythmias, 1$^{st}$ or 2$^{nd}$ degree heart blocks, alpha agonists or beta blockers and patients with congestive heart failure

# Buprenorphine and acute pain

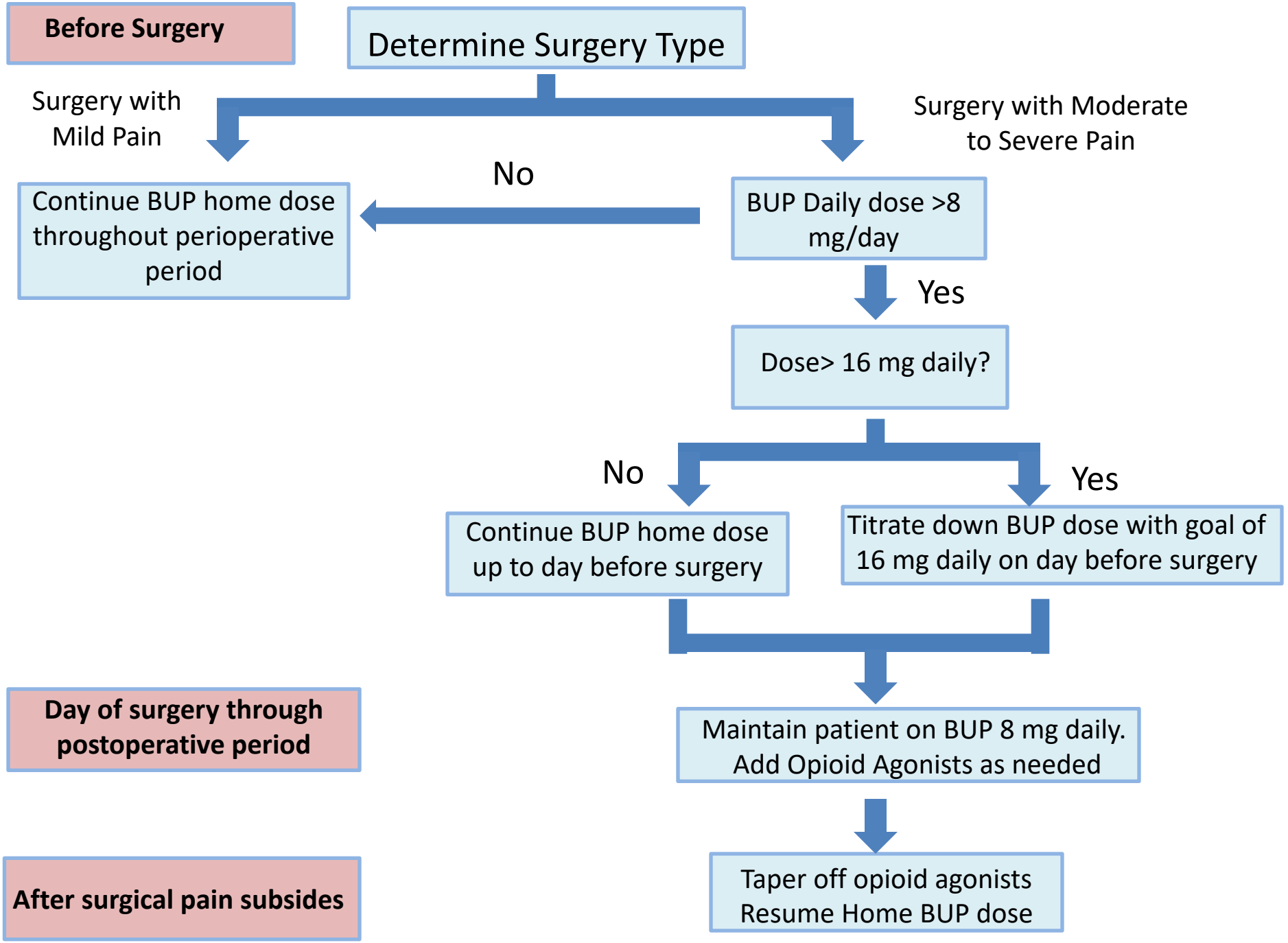
- Body of evidence is evolving
- Routine practices generally reflect 3 approaches
  - Taper off of buprenorphine prior to procedure
    - Patients will experience opioid withdrawal
  - Increase frequency and dosage of buprenorphine
    - Limited in patients treated with 24 mg
  - Combine opioids with buprenorphine
    - Concern that competitive antagonism at mu-opioid receptor sites will limit efficacy of full agonist opioids
- Most recommendations come from protocols based on expert consensus or common practices
- Pharmacokinetics suggest interference but there is no high level data to support this

# Buprenorphine and opioids

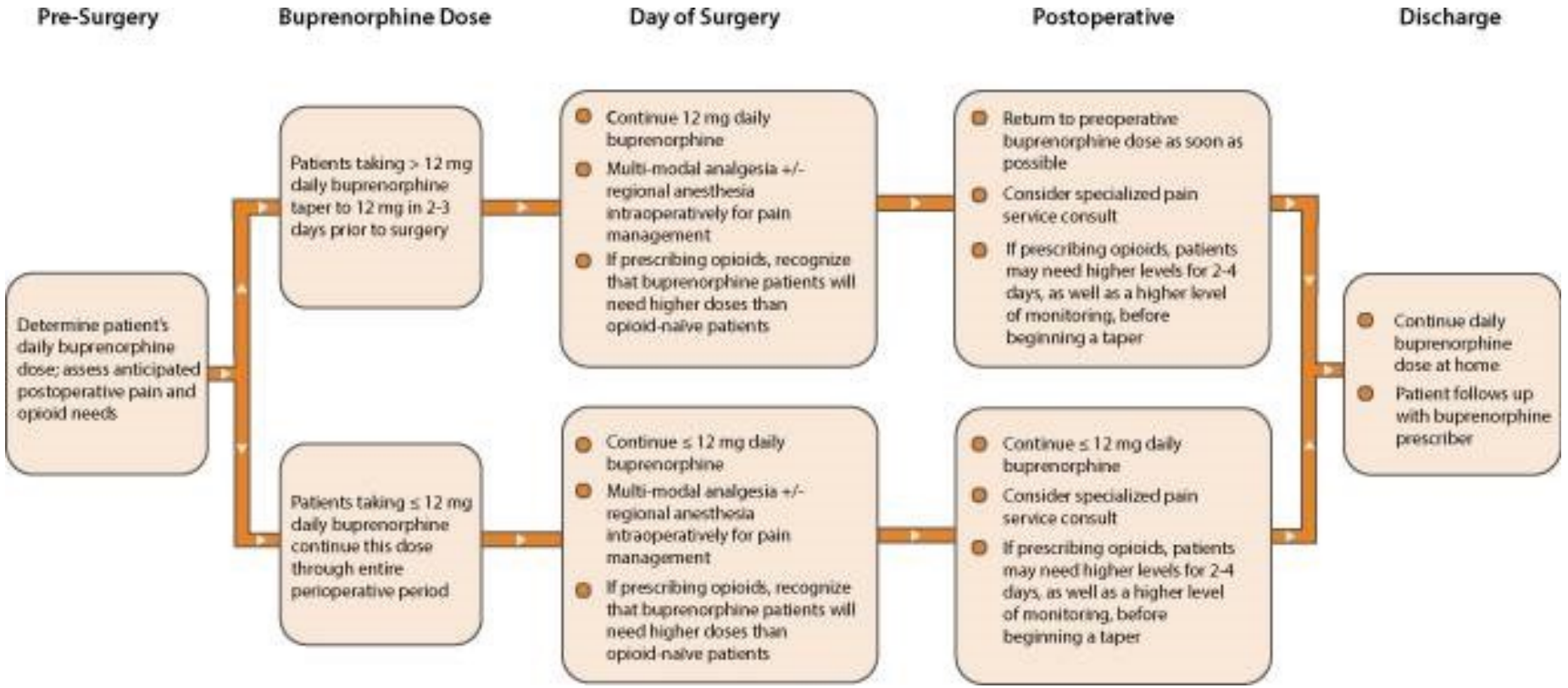
- Preclinical and clinical studies provide evidence of *additive or synergistic* analgesia
  - Studies in mice demonstrate a bell shaped response curve.
    - Lower doses of buprenorphine potentiate response
    - Higher doses block response
  - Randomized double blind, placebo control trial of 45 patients undergoing hysterectomy (Beltrutti et al 2002)
    - During procedure:
      - Group 1: Intrathecal morphine plus saline
      - Group 2:IV BUP plus saline
      - Group 3: Intrathecal morphine plus IV BUP
    - Post Operatively:
      - Group 1: Intrathecal morphine
      - Group 2 and 3: IV BUP
    - Group 3 reported statistically significant lower pain intensity suggesting *synergistic response to morphine and BUP*

# Two Recent Review Articles

- Perioperative Management of Buprenorphine: Solving the Conundrum (Quaye et al., 2018)
- Patients maintained on buprenorphine for opioid use disorder should continue buprenorphine through the perioperative period (Lembke et al., 2018)
  - Both recommend combining buprenorphine with full agonist opioids when indicated
  - Differ in dosage of buprenorphine to continue during perioperative period




From Aurora et al. 2018




From Lembke et al. 2018

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