Emerging Trends in Perioperative Buprenorphine Management

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1

Disclosures

- Dr. Amanda Engle has nothing to disclose
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2

Objectives

1. Describe why a patient-centered perioperative buprenorphine management strategy is needed.
2. Compare and contrast current evidence and emerging trends in perioperative buprenorphine management strategies.

3

Outline

- Challenges with Perioperative Buprenorphine Management
- Previously Reviewed Evidence- Bupe2021
- Current Evidence
  - New protocols/outcomes
  - Other Literature
- Patient Case
- Emerging Trends
- Summary

4

Challenges with Perioperative Buprenorphine Management

- Complex buprenorphine pharmacology
- Complex care of opioid use disorder population
- Gaps in continuity of care due to logistical challenges
- Lack of clinician understanding of appropriate management
- Lack of specialty addiction services access
- Established risks associated with discontinuation (acute pain crisis, relapse, etc.)
- Limited evidence coalescing around a single best practice

Previously Reviewed Evidence - BUPE2021

Literature Review 2017-2020

- Five original buprenorphine protocols
  - Wide variation in strategies and complexity
  - Management protocols developed primarily through interpretation of pharmacologic studies and clinical experience; **no patient outcomes data**

Journal of Opioid Management 2021;17:101-07.

Previously Reviewed Evidence:

Original Protocols

Author	Clinical Decision Points Guiding Algorithm Management			Proposed Buprenorphine Management		18 Other Notable Features
	Pain Severity	Home Buprenorphine Dose	Emergent vs Planned	Continue or Discontinue	Home vs Reduced Dose	
Anderson et al, 2017	Yes	No	Yes, Emergent	Continue, if minimal to no pain	Home	Avoid supplemental opioids
				Discontinue, if moderate to severe pain	N/A	Consider PCA with continuous infusion opioid
			Yes, Planned	Continue, if minimal to no pain	Home	Avoid supplemental opioids
				Discontinue, If moderate to severe pain	N/A	Reschedule surgery after patient has been tapered off buprenorphine and bridged to short-acting opioid
Quaye and Zhang, 2018	Yes	Yes	No	Continue	Reduced, if > 16 mg Home, if < 16 mg	For daily doses >16 mg, taper down to 16 mg on day prior to surgery
Lembke et al, 2019	No	Yes	No	Continue	Reduced, if > 12 mg Home, if < 12 mg	For daily doses >12 mg, taper down to 12 mg in 2-3 days prior to surgery
Harrison et al, 2018	No	No	No	Continue	Home	Consider dividing total daily dose over TID* interval postoperatively, or increasing home buprenorphine dose for additional analgesia
Engle et al, 2021	Yes	Yes	Yes, Planned	Continue	Home	Additional opioids, with higher mu binding potency that do not require metabolic activation and are lipophilic (fentanyl, hydromorphone), are recommended

Journal of Opioid Management 2021;17:101-07.

7

Current Evidence: *Search Strategy*

- Perioperative buprenorphine protocol, 2021-present
  - Opioid use disorder
  - Reported patient outcomes
- Systematic review or guidance document, 2020-present

8

Current Evidence: *Original Protocols*

- 1 original protocol without patient outcomes (Warner, 2020)
- 1 previously published protocol with newly reported patient outcomes (n=55) (Quay, 2020)

Mayo Clin Proc. June 2020;95(6):1253-1267.
Pain Medicine 2019;20:1395–1408.

Current Evidence: *Original Protocols*

Warner, 2020

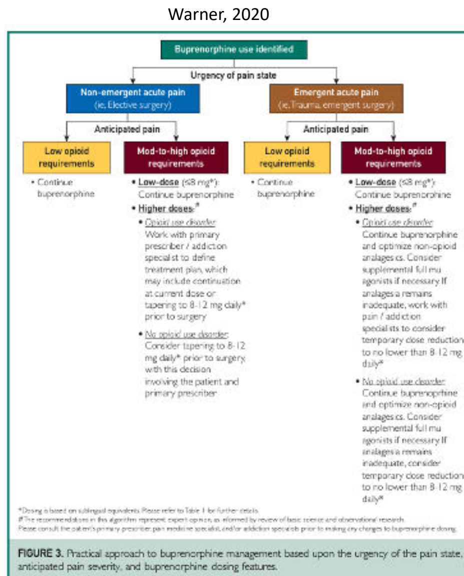

FIGURE 3. Practical approach to buprenorphine management based upon the urgency of the pain state, anticipated pain severity, and buprenorphine dosing features.

Mayo Clin Proc. June 2020;95(6):1253-1267.

Current Evidence: *Original Protocols*

Author	Clinical Decision Points Guiding Algorithm Management			Proposed Buprenorphine Management		Other Notable Features
	Pain Severity	Home Buprenorphine Dose	Emergent vs Planned	Continue or Discontinue	Home vs Reduced Dose	
Warner, 2020	**Yes**	**Yes**	**Yes**	**Continue**	**Reduced if > 8-12 mg Home if < 8 mg**	**Different plan if anticipated pain will require low vs mod-high opioid use to achieve analgesia**

Mayo Clin Proc. June 2020;95(6):1253-1267.

11

Current Evidence: *Original Protocols*

Quaye, 2020

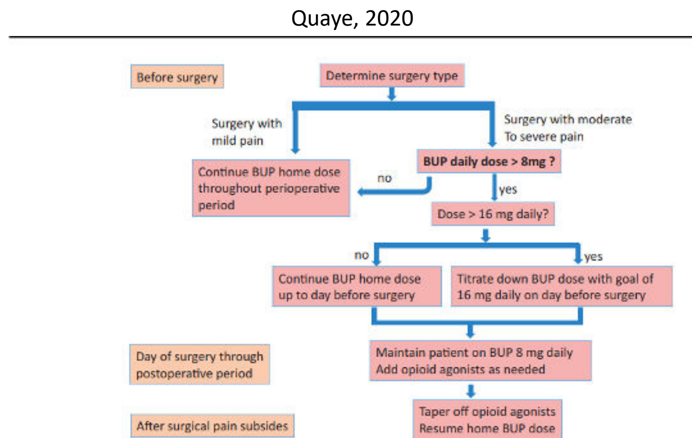

Figure 1. Algorithm for perioperative management of buprenorphine. BUP = buprenorphine.

Pain Medicine 2019;20:1395–1408.

12

Current Evidence: *Original Protocols*

Author	Clinical Decision Points Guiding Algorithm Management			Proposed Buprenorphine Management		Other Notable Features
	Pain Severity	Home Buprenorphine Dose	Emergent vs Planned	Continue or Discontinue	Home vs Reduced Dose	
Quaye, 2020	**Yes**	**Yes**	**No**	**Continue**	**Reduced if > 16 mg** **Home if < 16 mg**	**For daily doses >16 mg, taper down to 16 mg on day prior to surgery**

Minimal post-op pain expected: Patients are continued on their buprenorphine maintenance regimen.

Moderate to significant postoperative pain expected: Patients on >16 mg daily of buprenorphine are tapered to 16 mg the day before surgery and continued perioperatively at 8mg daily until surgical pain subsides and previous buprenorphine dose can be resumed.

Pain Medicine, 21(9), 2020, 1955–1960.

13

Current Evidence: *Original Protocols*

Quaye, 2020

- Retrospective observational study from March-October 2018
- Comparison of PACU pain scores and outpatient opioid dispensing MMEs in patients with OUD who had buprenorphine continued vs held
- N=55 (38 continued, 17 held)
- **Continuing buprenorphine peri-operatively reduced overall post-op opioid utilization in MMEs** (mean of 229 cont. vs mean of 521 held, P=0.033) **and PACU pain scores** (mean 2.9 cont. vs mean 7.6 held, P<0.001)
- Did not evaluate post-operative relapse

Pain Medicine 2020;21:1955–1960.

14

Current Evidence: *Other Literature*

Kohan, 2021

- Modified Delphi process to achieve 100% consensus recommendations and assess the literature, including representatives from the following organizations:
  - American Society of Regional Anesthesia and Pain Medicine
  - American Society of Anesthesiologists
  - American Academy of Pain Medicine
  - American Society of Addiction Medicine
  - American Society of Health System Pharmacists
- Continue buprenorphine perioperatively to decrease the risk of OUD relapse
- Modify buprenorphine dosing according to anticipated postoperative pain severity (e.g. continue home dose for mild/moderate pain anticipated, consider increasing to 24-32 mg in three divided doses if severe pain anticipated)

Reg Anesth Pain Med 2021;**46**:840–859.

15

Current Evidence: *Other Literature*

Kohan, 2021

- Discontinuing buprenorphine can increase the risk of OUD recurrence or harm (grade B, moderate level of evidence)
- Avoid tapering buprenorphine perioperatively (grade B, moderate level of certainty)
- Multimodal analgesia, including adjunctive medications and regional anesthesia techniques, should be used whenever possible (grade B, moderate level of certainty)
- Consider administration of full mu agonists (with high affinity for the mu receptor) (grade B, moderate level of certainty) or increased and/or divided doses of buprenorphine (grade C, low level of certainty) with close monitoring for uncontrolled postoperative pain if multimodal analgesia proves inadequate
- Engage in ongoing collaboration with the patient's outpatient buprenorphine prescriber (grade A, moderate level of certainty).

Reg Anesth Pain Med 2021;**46**:840–859.

16

Current Evidence: *Other Literature*

Mehta, 2020

- Evidence does not suggest continuation of perioperative buprenorphine interferes with the ability to treat acute pain
- "No clear advantage to discontinuing buprenorphine; however, there is potential for harm with this strategy…"
  - risk of OUD relapse
  - risk of precipitated withdrawal
- Continue buprenorphine throughout the operative period in most cases
- Regional anesthesia, epidurals, and peripheral nerve blocks are effective modes of multimodal analgesia

Pain Physician. 2020 Mar;23:E163-E174.

17

Current Evidence: *Other Literature*

American Society of Addiction Medicine (ASAM) National Practice Guideline for the Treatment of Opioid Use Disorder, 2020

- Discontinuation of buprenorphine before surgery is not required
- Higher potency intravenous full agonist opioids can be used perioperatively for analgesia

J Addict Med. 2020 Mar/Apr;14(2S Suppl 1):1-91.

18

Emerging Trends

- **Consensus**
  - Continue buprenorphine perioperatively
  - Discontinuing buprenorphine can cause harm
- Consider anticipated post-op pain severity in buprenorphine dosing decisions

19

Patient Case

- 52 M adm for planned left knee arthroplasty
- PMH opioid use disorder (buprenorphine 8 mg/ naloxone 2 mg SL BID) and severe OA of left knee (ibuprofen 800 mg po TID)
- Did not discontinue buprenorphine/naloxone prior to surgery but did hold ibuprofen for 72 hours pre-operatively

20

Patient Case: Pre-Op

- PDMP reviewed and appropriate
- 10-year history of Oxycontin abuse with last relapse 5 years ago
- Buprenorphine/naloxone prescriber reported patient has been doing well with stable home life and job, excellent compliance with clinic appointments, and UDS WNL since therapy began 5 years ago
- Perioperative surgical plan communicated to buprenorphine/naloxone prescriber
- Pain management plan communicated to patient
- Anesthesia to consider nerve block, ketamine, and/or high potency/lipophilic opioid that does not require activation (ie: fentanyl, sufentanil)

21

Patient Case: Post-Op

- Anticipate moderate to severe pain s/p L-TKA
- Possible evidence-based buprenorphine dosing strategies:
  - Continue home dose of 8mg BID (Engle, Quay, Harrison, Kohan)
  - Reduce dose to 8-12 mg/day (Warner, Lembke)
  - Increase dose to 24-32 mg/day if severe pain (Kohan)
  - Split total daily dose into divided doses (e.g. 4 mg q6h) (Engle, Harrison, Kohan)
- Initiate hydromorphone 2-4 mg po q4h prn pain (Engle, Kohan)
- Add non-opioid adjunctive therapy (i.e. APAP, NSAIDs, topical anesthetics, gabapentinoids)
- Provide direct handoff to buprenorphine prescriber prior to discharge
- Clear follow up plan and patient education at discharge

22

Summary

- There are few published perioperative buprenorphine management protocols. Additional patient outcomes data are needed.
- Buprenorphine should be continued perioperatively, at the same or modified home dose.
  - Consider anticipated post-op pain severity in buprenorphine dosing decisions
  - Consider divided buprenorphine doses for improved analgesia
- Perioperative buprenorphine discontinuation can cause harm.
- Multimodal analgesia with non-opioid and non-pharmacologic adjuncts should be utilized.
- Full mu agonists, specifically those with high affinity, should be used for acute postoperative pain.
- Collaborate with primary prescriber for perioperative planning.

23

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24

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