

# Treating Opioid Use Disorder – Trauma

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Melody Glenn, MD MFA  
University of Arizona



# Outline

1. MAT for OUD
2. Patient initiated discharges
3. Precipitated withdrawal
4. Bupe cross-tapers
5. Bupe slow starts
6. Pain control

# Let's start with a case...

- Pt presents as a trauma red activation w ICH's
- Intubated in the trauma bay
- Sedated on FYL and propofol gtts
- After ICU admission, becomes more tachycardic and difficult to sedate





**What do you do?**







## COWS Score for Opiate Withdrawal ☆

Quantifies severity of opiate withdrawal.

When to Use ▾

Pearls/Pitfalls ▾

Why Use ▾

### Resting Pulse Rate (BPM)

Measure pulse rate after patient is sitting or lying down for 1 minute

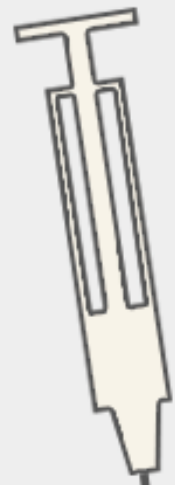
≤80	0
81-100	+1
101-120	+2
>120	+4

### Sweating

Sweating not accounted for by room temperature or patient activity over the last 0.5 hours

No report of chills or flushing	0
Subjective report of chills or flushing	+1

# Heroin Withdrawal Timeline



Last Dose

**Start**  
6-12  
Hours

**Peak**

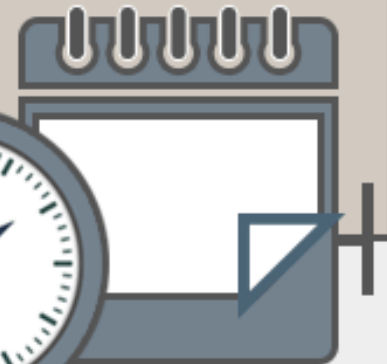
1-3  
Days

**Subside**

1  
Week

Post-Acute  
Withdrawal Syndrome

Symptoms can persist  
for weeks, months, or  
even years



## Opioid Use Disorders – DSM V

13

The diagnosis of Opioid Use Disorder under DSM V can be applied to someone who uses opioid drugs and has at least two of the following symptoms within a 12 month period:

- Taking more opioid drugs than intended.
- Wanting or trying to control opioid drug use without success.
- Spending a lot of time obtaining, taking, or recovering from the effects of opioid drugs.
- Cravings opioids.
- Failing to carry out important roles at home, work or school because of opioid use.
- Continuing to use opioids, despite use of the drug causing relationship or social problems.
- Giving up or reducing other activities because of opioid use.
- Using opioids even when it is physically unsafe.
- Knowing that opioid use is causing a physical or psychological problem, but continuing to take the drug anyway.
- Tolerance for opioids.
- Withdrawal symptoms when opioids are not taken.



# 3 Options

- Start methadone
- Start buprenorphine
- Give high-dose opioid agonists



# Benefits Of Medication Assisted Treatment *For Recovery*

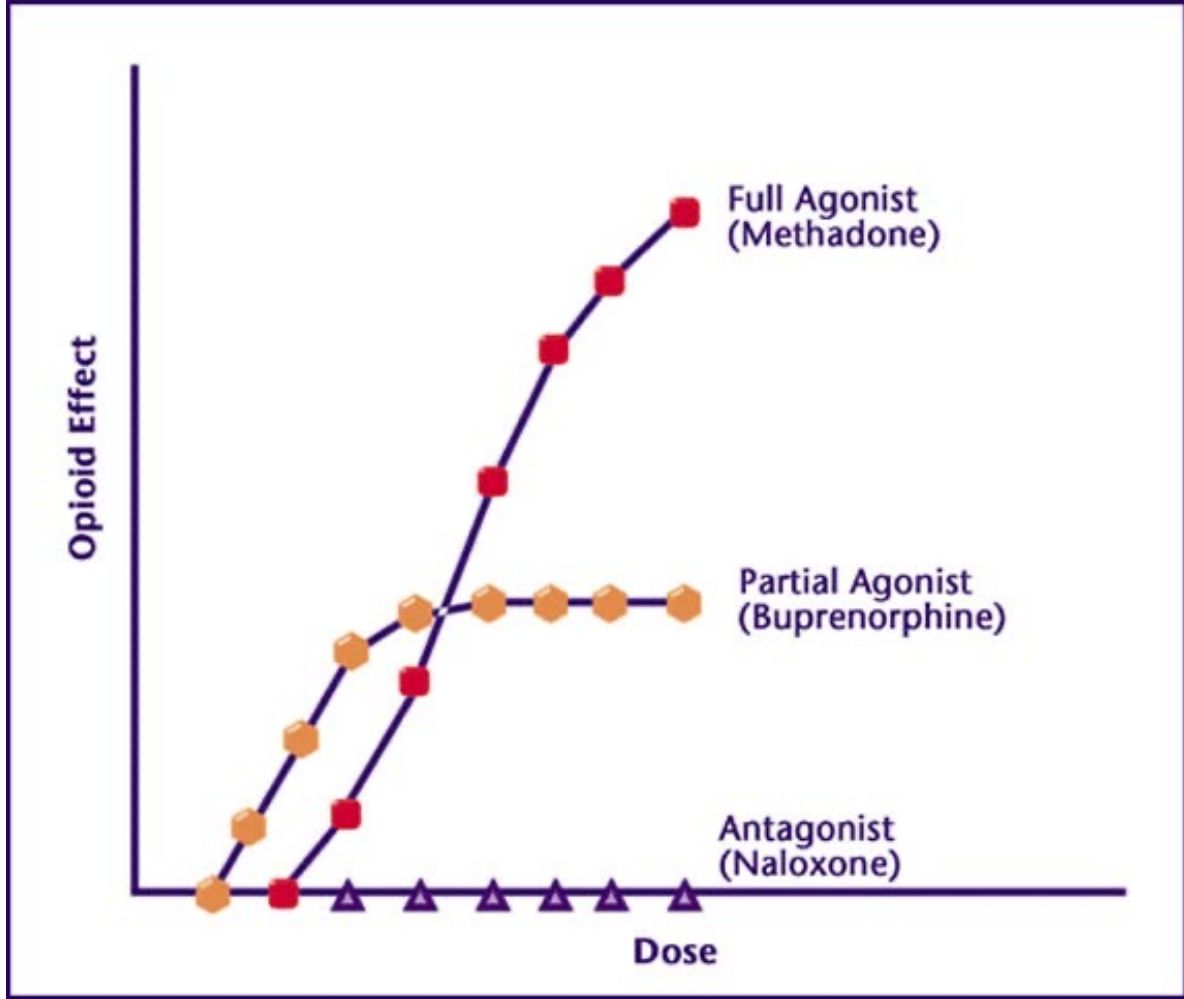
helping *reduce* cravings and withdrawal symptoms



Reduction In Drug-Related Overdose Deaths

Reduction In Disease And Violent Crimes

Improved Treatment Outcomes





# Methadone

> [Ann Pharmacother.](#) 2023 Oct;57(10):1129-1136. doi: 10.1177/10600280221151106.

Epub 2023 Feb 11.

## Use of Methadone Versus Oxycodone to Facilitate Weaning of Parenteral Opioids in Critically Ill Adult Patients

[Hanna A Azimi](#)<sup>1 2</sup>, [Kelli R Keats](#)<sup>1</sup>, [Essilvo Sulejmani](#)<sup>1 2</sup>, [Kristina Ortiz](#)<sup>1 2</sup>, [Jennifer Waller](#)<sup>3</sup>, [Nathan Wayne](#)<sup>1</sup>

Affiliations + expand

PMID: 36772836 DOI: [10.1177/10600280221151106](#)

- **Methods:** This was a single-center, retrospective, cohort medical record review of mechanically ventilated adults in an intensive care unit (ICU) who received a continuous IV infusion of fentanyl or hydromorphone for ≥72 hours and an enteral weaning strategy using either methadone or oxycodone
- **Conclusion and relevance:** This was the first study showing enteral methadone was associated with a shorter duration of IV opioids without differences in secondary outcomes compared with oxycodone.

# Benefits of Methadone

## Similar to oxy:

- mu opioid receptor agonist

## Unlike oxy:

- NMDA antagonism and SSRI/SNRI activity
  - antinociceptive effects such as preventing maladaptive responses to acute pain that can develop into chronic pain
- Lipophilic
  - rapid absorption
  - a long duration of action following enteral administration
  - produces a depot effect within the tissues, slow releasing into the bloodstream.

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Our resources have been developed by an interdisciplinary team based on published evidence and expert opinion.

However, they should never be used as a substitute for clinical judgement. Providers are responsible for assessing the unique circumstances and needs of each case. Adherence to these guidelines will not ensure successful treatment in every situation.

19/106 RESOURCES

**Acute Care Treatment of Alcohol Use Disorder**  
GUIDE: Guidance incorporating treatment for alcohol use disorder into emergency department and inpatient settings.

**Acute Pain Management in Emergency Department and Critical Care**  
PROTOCOL: Clinical acute pain management guide for EDs patients undergoing buprenorphine treatment for opioid use disorder.

**Acute Pain Management in Medical Surgical Units**  
PROTOCOL: Clinical acute pain management guides for MedSurg patients undergoing buprenorphine treatment for opioid use disorder.

**Buprenorphine Emergency Department Quick Start**  
PROTOCOL: Clinical guide for the treatment of acute withdrawal and opioid use disorder utilizing buprenorphine for ED-based starts.

**Buprenorphine Quick Start in Pregnancy**  
PROTOCOL: Clinical guide for pregnant patients with opioid use disorder in need of treatment in any setting.

**Care for Patients with Opioid Use Disorder Who Are in Custody**  
GUIDE: Evidence-based practices to treat patients in custody for opioid use disorder, opioid overdose, and opioid withdrawal.

**Caring for Youth with Substance Use Disorders**  
TOOL: Clinical guide for providers treating pediatric patients with substance use disorders.

**Emergent Management of Early Pregnancy Loss (EPL)**  
PROTOCOL: Clinical guide for emergency department use.

**Enhanced Care Practice: Precipitated Withdrawal 90-Minute Bundle**  
SITE EXAMPLE: Treatment guidelines for this bundle.

**Toolkit Quick Links:**

- Blueprint for Hospital Disorder Treatment
- MAT Toolkit for Nurses
- Substance Use Navigators

**FILTER BY TYPE**  
Clinical Protocols

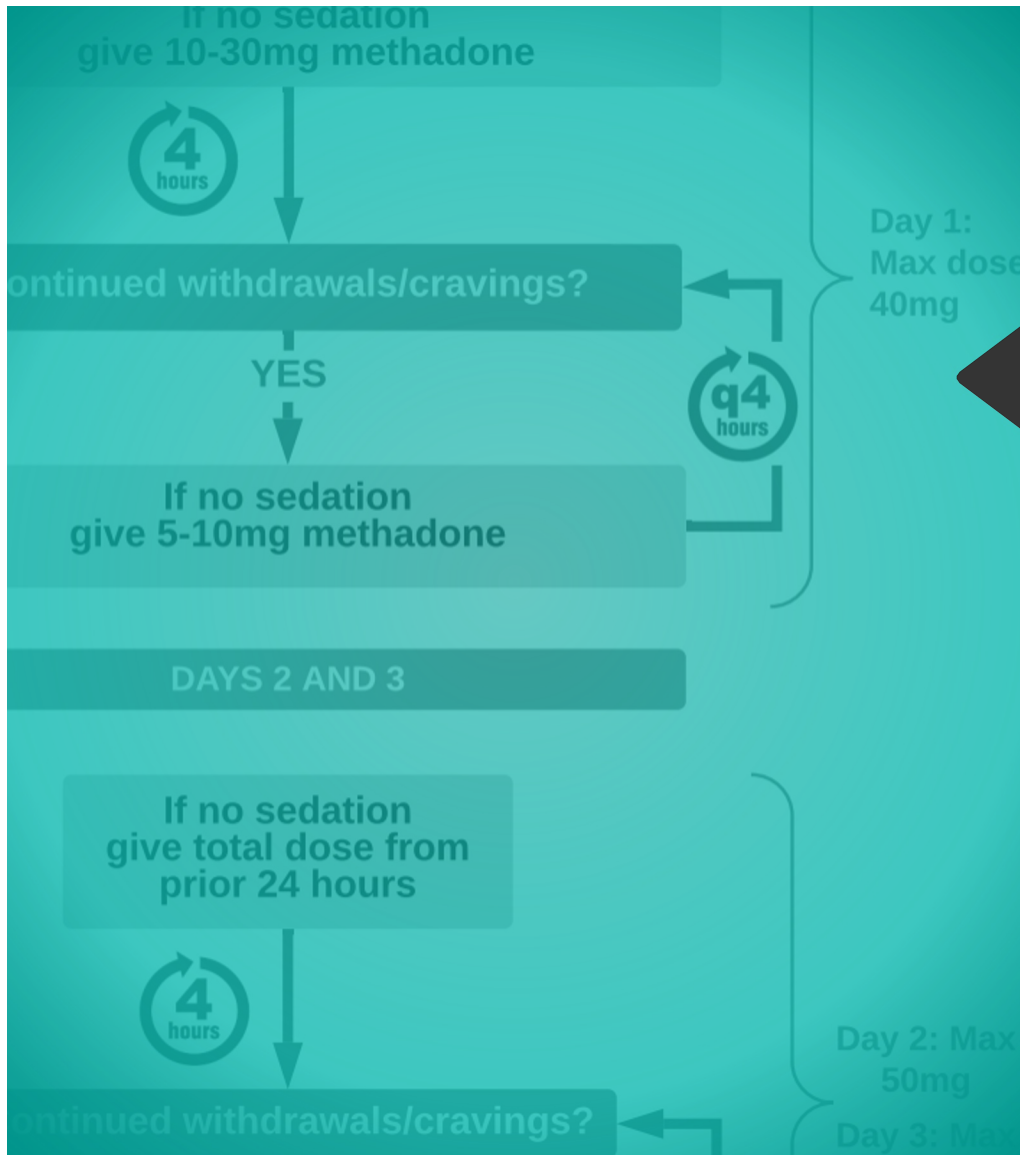
**SEARCH BY KEYWORDS**  
Type Title Here ...

**Access 24/7 provider lines**  
Any provider seeking support treating patients with MAT these Substance Use lines

**California Substance Use CA providers only, service Control System & National Consultation Center**  
24 hours a day, 7 days a week  
Focused on rapid access to acute care burp starts  
**(844) 326-2626**

**National Clinician Consultation Center Substance Use W**  
M-F 6am-5pm PT. Voice mail





- If patient missed outpatient dosing, strongly recommended to discuss dosing changes with methadone clinic provider.

# 1: Methadone



- If patient missed 1 dose and dose is continued
- If 1-2 days are missed, give patient
- If 3-4 days are missed, give half patient's regular dose
- If ≥5 days are missed, treat as a new start.

Pharmacology

When to choose

Initial dosing

How to titrate

Cautions

4. Brisk response to stimulus
5. Sluggish response to stimulus
6. No response to stimulus

## 2: Buprenorphine

- Pharmacology
- When to choose
- Initial Dosing
- Daily dosing/titration

## Issues to Consider with Transmucosal Buprenorphine in Critically Ill Patients

Patient Issue	Explanation
<b>Adequate nursing to patient ratio</b>	Patients need to be closely observed to ensure that transmucosal buprenorphine is not swallowed or expectorated before it dissolves, which can take up to 30 minutes for some products
<b>Clinical instability or ongoing care disruptions</b>	In addition to concerns related to unreliable buprenorphine absorption in unstable patients, it may not be possible or practical to administer transmucosal buprenorphine in patients who are encephalopathic or sedated and cannot follow commands, or patients having ongoing care disruptions such as for procedures
<b>Traumatic or thermal injury to oral cavity, oral cavity anomalies, or presence of surgical hardware</b>	Physical issues that could preclude the administration of transmucosal products
<b>Xerostomia</b>	Could preclude adequate dissolution and absorption. Wet the mucosa with an oral swab before administration.
<b>Severe mucositis</b>	The sublingual route of administration has been used to administer opioids such as fentanyl in patients with chemotherapy-related mucositis but there is a paucity of information for buprenorphine
<b>Mental alertness and ability to communicate</b>	Inability of patient to communicate subjective information such as possible withdrawal symptoms needed to assess dosing of transmucosal buprenorphine



## 3: Full opioid agonists

- May need much higher doses
  - Ie oxycodone IR 20-30 mg q3hr scheduled
- Not really allowed



## Case #2

- Another intubated patient wakes up and self-extubates
- Wants to leave the hospital AMA
- They have endocarditis and osteomyelitis

# Against Medical Advice?

Persons who inject opioids are at increased risk for leaving the hospital against medical advice (AMA), frequently before completing adequate therapy for their illness.

○Ti L, Ti L. Leaving the hospital against medical advice among people who use illicit drugs: a systematic review. *Am J Public Health* 2015; 105 (12):e53–e59.

AMA discharge, for any condition, has been associated with increased risk for readmission and all-cause mortality.

○Glasgow JM, Vaughn-Sarrazin M, Kaboli PJ. Leaving against medical advice (AMA): risk of 30-day mortality and hospital readmission. *J Gen Intern Med* 2010; 25 (9):926–929.

○Choi M, Kim H, Qian H, Palepu A. Readmission rates of patients discharged against medical advice: a matched cohort study. *PLoS One* 2011; 6 (9):2–7.



# What do you do?

Option A

Zofran, loperamide, clonidine, Toradol

Option B

Let them leave

Option C

Write a prescription for Keflex/Bactrim, refer to a methadone clinic, and let them leave

Option D

Start MAT (Medications for Addiction Treatment)

Option E

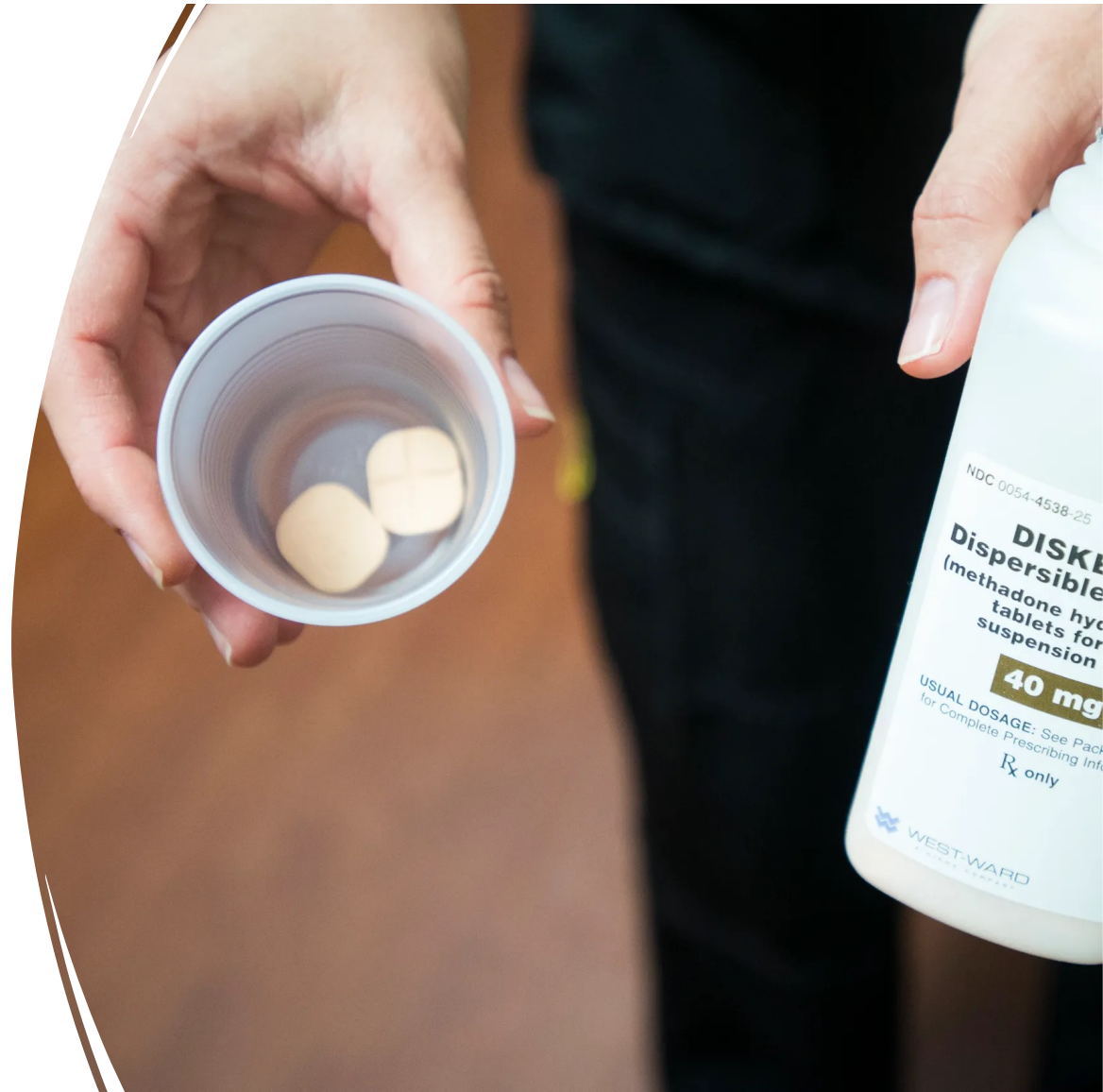
Only start MAT if they are interested in quitting



# Option D:

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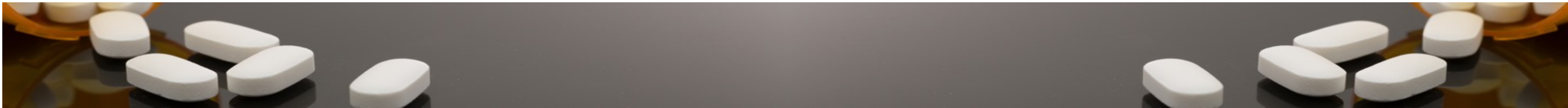
- You give them 16 mg of suboxone
- You give them 30 mg of methadone.



# For patients with Untreated, Active OUD

- Patients with OUD are more than 7x likely to be hospitalized
- Untreated pain with undx'ed OUD --> premature discharge, worsening of other medical conditions, readmission, relapse, overdose
- Opioid withdrawal can also interfere with medical treatment, and if untreated, is a high-risk period that is a/w increased OD/death
- Almost half of all patients with OUD are interested in MAT
- Even MAT for short periods of time increases survival

Kohan L, Potru S, Barrevelde AM, Sprintz M, Lane O, Aryal A, Emerick T, Dopp A, Chhay S, Viscusi E. Buprenorphine management in the perioperative period: educational review and recommendations from a multisociety expert panel. *Reg Anesth Pain Med.* 2021 Oct;46(10):840-859. doi: 10.1136/rapm-2021-103007. Epub 2021 Aug 12. PMID: 34385292.



## **MAT likely reduces AMA discharges**

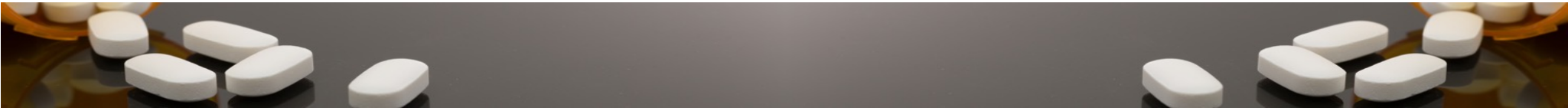
- Wang SJ, Wade E, Towle J, Hachey T, Rioux J, Samuels O, Bonner C, Kirkpatrick C, O'Loughlin S, Foster K. Effect of Inpatient Medication-Assisted Therapy on Against-Medical-Advice Discharge and Readmission Rates. *Am J Med.* 2020 Nov;133(11):1343-1349. doi: 10.1016/j.amjmed.2020.04.025. Epub 2020 May 20. Erratum in: *Am J Med.* 2022 Jun;135(6):797. PMID: 32445720.
- Kays LB, Steltenpohl ED, McPheeters CM, Frederick EK, Bishop LB. Initiation of Buprenorphine/Naloxone on Rates of Discharge Against Medical Advice. *Hosp Pharm.* 2022 Feb;57(1):88-92. doi: 10.1177/0018578720985439. Epub 2020 Dec 29. PMID: 35521020; PMCID: PMC9065509.
- Nolan NS, Marks LR, Liang SY, Durkin MJ. Medications for Opioid use Disorder Associated With Less Against Medical Advice Discharge Among Persons Who Inject Drugs Hospitalized With an Invasive Infection. *J Addict Med.* 2021 Apr 1;15(2):155-158. doi: 10.1097/ADM.0000000000000725. PMID: 32804690; PMCID: PMC7995266.

# What about abstinence?

- “Compared with use of  $\alpha$ 2-adrenergic agonists or psychosocial treatment alone, opioid agonist treatment with buprenorphine–naloxone or methadone has proven superior in terms of retention in treatment, sustained abstinence from illicit opioid use, and reduced risk of morbidity and death”



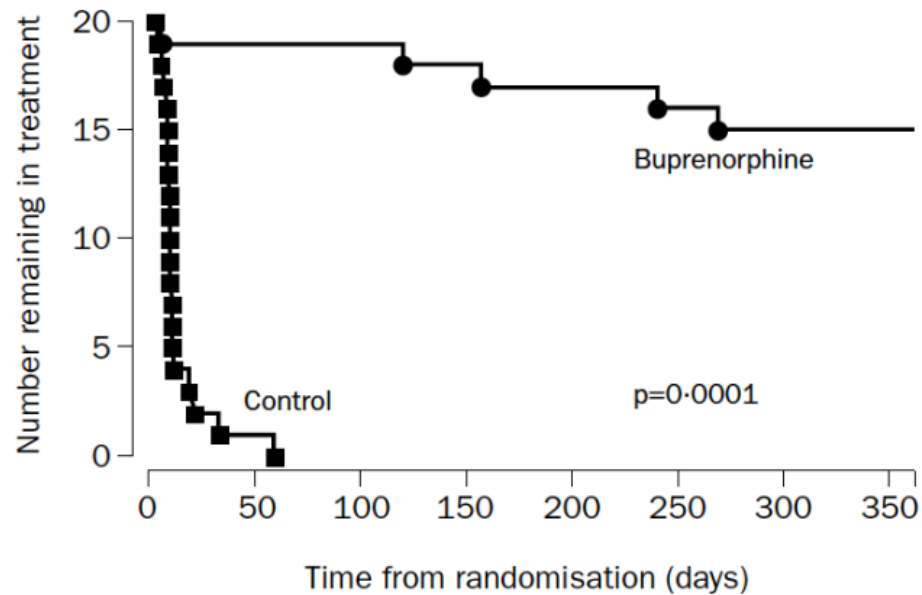
2018: Management of opioid use disorders: a national clinical practice guideline





# Taper vs. Ongoing Treatment

Kakko, Lancet, 2003



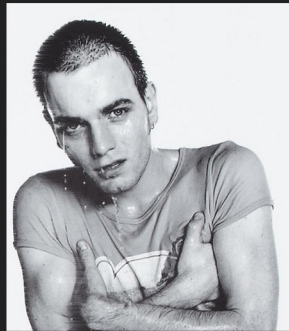
Deaths: Taper – 4/20

Buprenorphine – 0/20

CORE

Kakko J, Svanborg KD, Kreek MJ, Heilig M. 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: a randomised, placebo-controlled trial. Lancet. 2003;361(9358):662-668. doi:10.1016/S0140-6736(03)12600-1

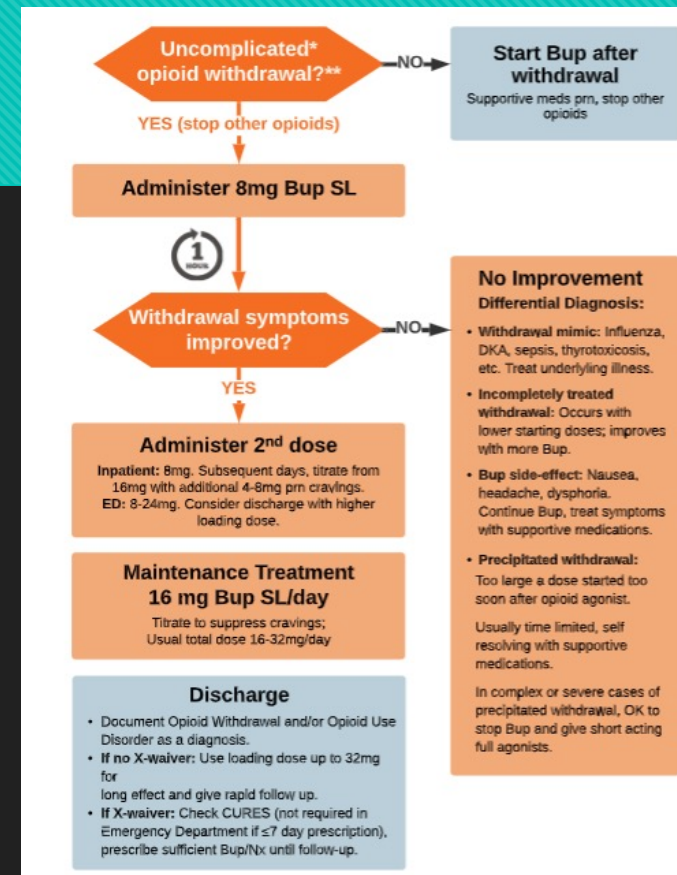
# Starting Bupe



COWS  
8+



Bupe  
16





## Case 3– Precipitated Withdrawal

# One protocol...

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**8-16 mg SL bupe q 30-60 min**

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Zofran 4 mg IV x 1-2

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Consider 20 mg ketamine slow push q30 min

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If lots of bupe still not helping, consider other adjuncts:

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2 mg lorazepam x1

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Haldol/olanzapine x 1

---

Clonidine 0.1 mg x1

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Ketamine 20 mg x 1

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## CASE REPORT

## Case Report: Buprenorphine-precipitated fentanyl withdrawal treated with high-dose buprenorphine [version 1; peer review: awaiting peer review]

Nicholas L. Bormann<sup>1</sup>, Antony Gout<sup>1,2</sup>, Vicki Kijewski<sup>1,2</sup>, Alison Lynch<sup>1,3</sup>

<sup>1</sup>Psychiatry, University of Iowa Hospitals and Clinics, Iowa City, IA, 52242, USA

<sup>2</sup>Internal Medicine, University of Iowa Hospitals and Clinics, Iowa City, IA, 52242, USA

<sup>3</sup>Family Medicine, University of Iowa Hospitals and Clinics, Iowa City, IA, 52242, USA

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**Open Peer Review****Approval Status** Awaiting Peer Review

Any reports and responses or comments on the article can be found at the end of the article.

**Abstract**

**Background:** Buprenorphine, a partial agonist of the mu-opioid receptor, is an increasingly prescribed medication for maintenance treatment of opioid use disorder. When this medication is taken in the context of active opioid use, precipitated withdrawal can occur, leading to acute onset of opioid withdrawal symptoms. Fentanyl complicates use of buprenorphine, as it slowly releases from body stores and can lead to higher risk of precipitated withdrawal.

**Objectives:** Describe the successful management of buprenorphine precipitated opioid withdrawal from fentanyl with high doses of buprenorphine. We seek to highlight how no adverse effects occurred in this patient and illustrate his stable transition to outpatient treatment.

**Case report:** We present the case of a patient with severe opioid use disorder who presented in moderately severe opioid withdrawal after taking non-prescribed buprenorphine-naloxone which precipitated opioid withdrawal from daily fentanyl use. He was treated with high doses of buprenorphine, 148 mg over the first 48 hours, averaging 63 mg per day over four days. The patient reported rapid improvement in withdrawal symptoms without noted side effects and was able to successfully taper to 16 mg twice daily by discharge.

**Conclusions:** This case demonstrates the safety and effectiveness of buprenorphine at high doses for treatment of precipitated withdrawal. While other options include symptomatic withdrawal management, initiating methadone or less researched options like ketamine, utilizing buprenorphine can preserve or re-establish confidence in this life-saving medication. This case also increases the previously documented upper boundary on buprenorphine dosing for withdrawal and should provide additional confidence in its use.

**Keywords**

Buprenorphine, fentanyl, Opioid-Related Disorders, case report

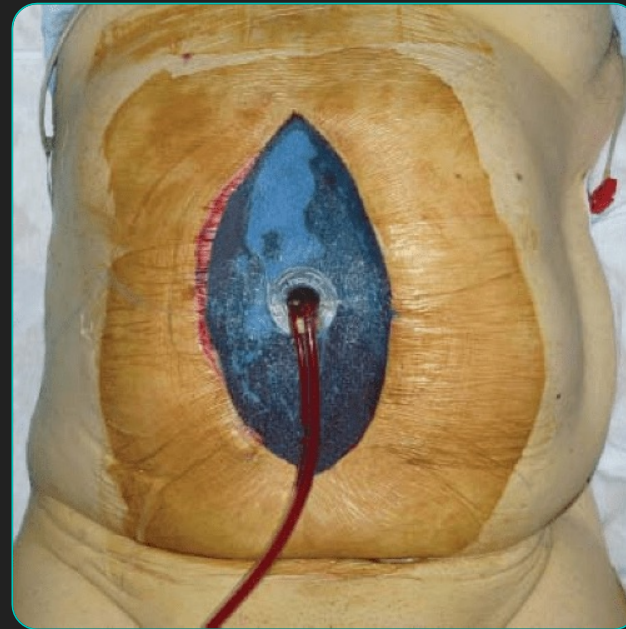
# Precipitated Withdrawal

○ 148 mg bupe within 48 hours



# Case 4

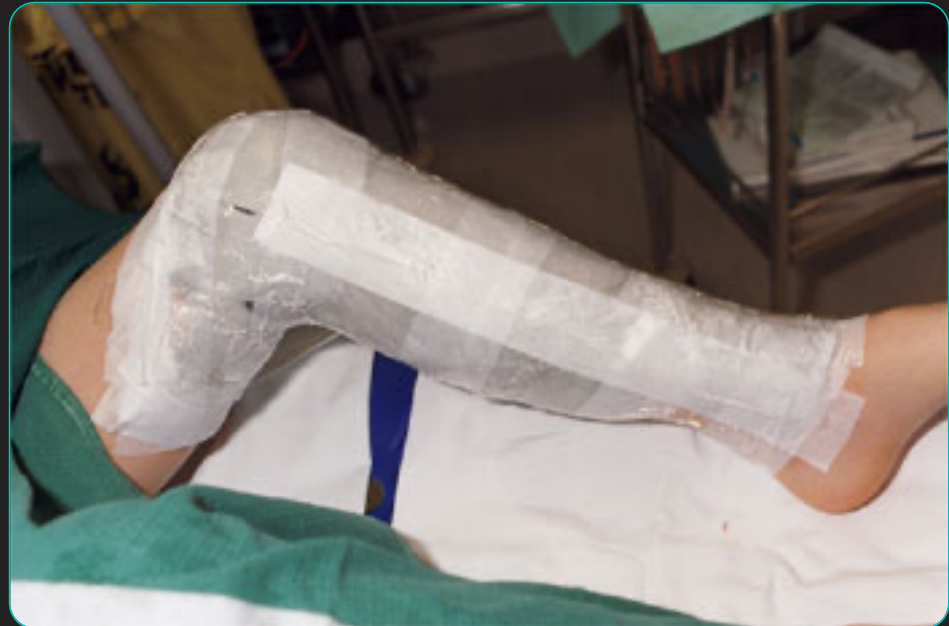
- Patient has been in the hospital for two months
- S/p many procedures
- Was on large doses of opioids
- Acute pain needs finally decreasing
- You don't want to send them home on all the MME's they are currently getting, especially because they have OUD



# Buprenorphine Cross-tapers/microinductions

## ○ Good candidates:

- Post-op/acute pain
- Was on FYL gtt while intubated
- Chronic pain
- Fear of withdrawal
- High risk of patient-initiated discharge
- Other medical needs requiring multiple-day hospitalization
- Pregnant
- On methadone, but drug-drug interactions or cardiotoxicity



# 3-day Cross-taper Protocol

- Day 1: 0.5 mg (1/4 of 2 mg tab/strip) SL bupe q3h (4 mg total daily dose), continue full agonists
- Day 2: 1 mg (1/2 of 2 mg tab/strip) SL bupe q3h (8mg total daily dose), continue full agonists
- Day 3: 8 mg SL qid; Stop full agonists







# Case 5

- Admitted with a hip fx
- H/o polysubstance use
- s/p fixation
- Want to transition from pain meds to bupe

# Gradual, time-based bupe start

- Wait 4-6 hours since last FYL/short-acting opioid use
- Give 2 mg bupe SL q1hr x4 (total of 8 mg)
  - Reassess COWS after each dose
  - Hold bupe if developing precipitated withdrawal
- 8 hours after last dose, start maintenance w 8 mg bupe bid-tid dosing







# Source: 2021 Expert Panel Review

- 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

## Buprenorphine management in the perioperative period: educational review and recommendations from a multisociety expert panel

Lynn Kohan <sup>1</sup>, Sudheer Potru <sup>2,3</sup>, Antje Barrevelde,<sup>4</sup> Michael Sprintz,<sup>5</sup> Olabisi Lane,<sup>6</sup> Anuj Aryal,<sup>7</sup> Trent Emerick,<sup>8</sup> Anna Dopp,<sup>9</sup> Sophia Chhay,<sup>9</sup> Eugene Viscusi <sup>10</sup>

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/rapm-2021-103007>).

For numbered affiliations see end of article.

**Correspondence to** Dr Lynn Kohan, Division of Pain Medicine/dept of anesthesia, University of Virginia, Charlottesville, VA 22903, USA; LRK9G@hscmail.mcc.virginia.edu

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### ABSTRACT

**Background** The past two decades have witnessed an epidemic of opioid use disorder (OUD) in the USA, resulting in catastrophic loss of life secondary to opioid overdoses. Medication treatment of opioid use disorder (MOUD) is effective, yet barriers to care continue to result in a large proportion of untreated individuals. Optimal analgesia can be obtained in patients with MOUD within the perioperative period. Anesthesiologists and pain physicians can recommend and consider initiating MOUD in patients with suspected OUD at the point of care; this can serve as a bridge to comprehensive treatment and ultimately save lives.

**Methods** The Board of Directors of the American Society of Regional Anesthesia and Pain Medicine, American Society of Anesthesiologists, American Academy of Pain Medicine, American Society of Addiction Medicine and American Society of Health System Pharmacists approved the creation of a Multisociety Working Group on Opioid Use Disorder, representing the fields of pain medicine, addiction, and pharmacy health sciences. An extensive literature search was performed by members of the working group. Multiple study types were included and reviewed for quality. A modified Delphi process was used to assess the literature and expert opinion for each topic, with 100% consensus being achieved on the statements and each recommendation. The consensus statements were then graded by the committee members using the United States Preventive Services Task Force grading of evidence guidelines. In addition to the consensus recommendations, a narrative overview of buprenorphine, including pharmacology and legal statutes, was performed.

**Results** Two core topics were identified for the development of recommendations with >75% consensus as the goal for consensus; however, the working group achieved 100% consensus on both topics. Specific topics included (1) providing recommendations to aid physicians in the management of patients receiving buprenorphine for MOUD in the perioperative setting and (2) providing recommendations to aid physicians in the initiation of buprenorphine in patients with

### INTRODUCTION

Currently, opioid use disorder (OUD), involving both prescription opioid medications and illicit opioids, is a public health crisis in the USA, having reached epidemic proportions in the past several years.<sup>1</sup> A recent national survey estimates that at least 2.5 million people in the USA have OUD.<sup>2</sup> Previous models of OUD treatment, primarily focused on psychosocial counseling and behavioral treatments, have been strengthened by the addition of pharmacological therapies in association with these psychosocial treatments; this was formerly referred to as medication-assisted treatment (MAT) and is now known as medication treatment of OUD (MOUD).<sup>3</sup> MOUD has been studied at length, and there is strong evidence demonstrating improved outcomes, increased retention in treatment, and decreased morbidity and mortality in the OUD population treated with this therapy.<sup>4</sup>

Given these benefits, expansion of access to MOUD critically decreases morbidity and mortality from OUD and associated medical problems,<sup>5</sup> with positive downstream effects on healthcare resources and society. Unfortunately, despite the opioid epidemic having been declared a national emergency in October 2017, a significant treatment gap remains between the number of patients diagnosed with OUD and those receiving MOUD. This reasons for this gap are complex and include multiple barriers, including stigma, an insufficient number of buprenorphine prescribers available to provide outpatient treatment,<sup>6</sup> inadequate insurance coverage, and low payor compensation. The COVID-19 pandemic has posed unique and dangerous challenges for patients with OUD, including higher OUD recurrence rates, more overdose fatalities, and worsening barriers to care.<sup>7</sup> The US Centers for Disease Control and Prevention (CDC) reported that over 81 000 drug overdose deaths occurred in the 12 months preceding May 2020, representing the highest number of overdose deaths ever recorded

- Patient is on bupe
- Now has acute pain 2/2 polytrauma

## Case 6





# 2021 Expert Panel Review

- American Society of Regional Anesthesia and Pain Medicine
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**Conclusions** To decrease the risk of OUD recurrence, buprenorphine should not be routinely discontinued in the perioperative setting. Buprenorphine can be initiated in untreated patients with OUD and acute pain in the perioperative setting to decrease the risk of opioid recurrence and death from overdose.

### INTRODUCTION

Currently, opioid use disorder (OUD), involving both prescription opioid medications and illicit opioids, is a public health crisis in the USA, having reached epidemic proportions in the past several years.<sup>1</sup> A recent national survey estimates that at least 2.5 million people in the USA have OUD.<sup>2</sup> Previous models of OUD treatment, primarily focused on psychosocial counseling and behavioral treatments, have been strengthened by the addition of pharmacological therapies in association with these psychosocial treatments.<sup>3</sup> This approach is now referred to as medication-assisted treatment (MAT) and is now known as medication treatment of OUD (MOUD).<sup>3</sup> MOUD has been studied at length, and there is strong evidence demonstrating improved outcomes, increased retention in treatment, and decreased morbidity and mortality in the OUD population treated with this therapy.<sup>4</sup>

Given these benefits, expansion of access to MOUD critically decreases morbidity and mortality from OUD and associated medical problems,<sup>5</sup> with positive downstream effects on healthcare resources and society. Unfortunately, despite the opioid epidemic having been declared a national emergency in October 2017, a significant treatment gap remains between the number of patients diagnosed with OUD and those receiving MOUD. This reasons for this gap are complex and include multiple barriers, including stigma, an insufficient number of buprenorphine prescribers available to provide outpatient treatment,<sup>6</sup> inadequate insurance coverage, and low payor compensation. The COVID-19 pandemic has posed unique and dangerous challenges for patients with OUD, including higher OUD recurrence rates, more overdose fatalities, and worsening barriers to care.<sup>7</sup> The US Centers for Disease Control and Prevention (CDC) reported that over 81 000 drug overdose deaths occurred in the 12 months preceding May 2020, representing the highest number of overdose deaths ever recorded in a 12-month period.<sup>8</sup>

Now more than ever, physicians, including anesthesiologists and acute pain specialists, should consider MOUD for patients with OUD.

The current definition of addiction as stated by the American Society of Addiction Medicine (ASAM) is as follows:

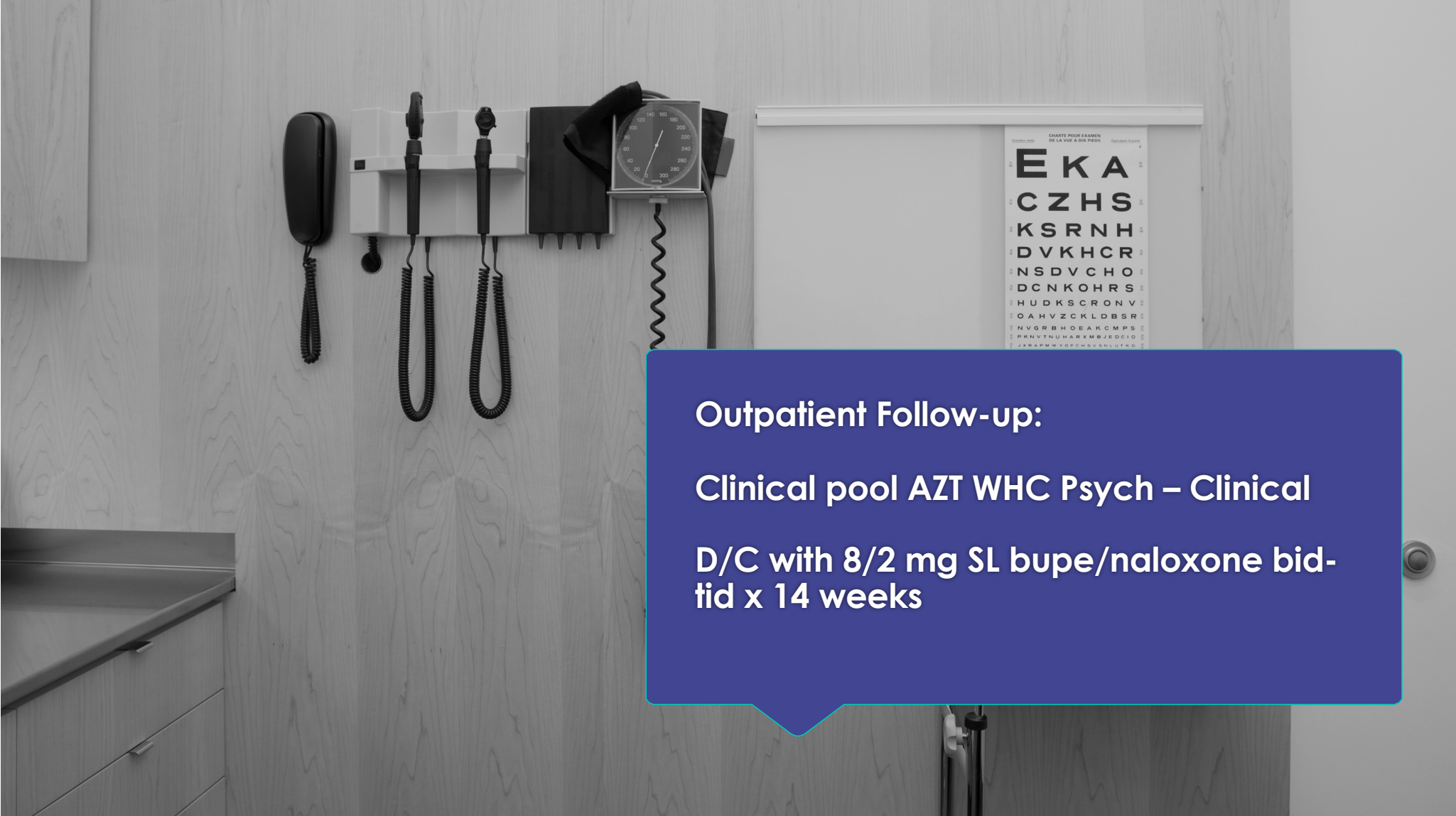
# Acute Pain

- Multimodal anesthesia- maximize non-opioid strategies
  - Grade B recommendation
  - NSAIDS, Ketamine, regional anesthesia, lidocaine, magnesium, gabapentin, etc
- Patients on MAT can still receive pain control from opioid agonists
  - Grade B
  - FYL and Dilaudid most effective d/t high receptor affinity
- Increased and/or divided doses of buprenorphine or methadone
  - Grade C
  - Can increase bupe up to 24-32 mg, tid or qid
  - Can consider IV bupe, 0.3 mg q6hrs prn

# Perioperative Planning

- MAT should not be discontinued
  - Grade B
  - Adequate analgesia can be obtained
  - Discontinuing MAT can increase the risk of OUD recurrence or harm
    - Grade B
- MAT should not even be tapered
  - Grade B





**Outpatient Follow-up:**

**Clinical pool AZT WHC Psych – Clinical**

**D/C with 8/2 mg SL bupe/naloxone bid-tid x 14 weeks**

# Bottom Line

- Order fentanyl drug screens in the trauma bay
- Restart home MOUD
- If not on MOUD and have OUD, start MOUD
- Do all this even if intubated!
- Consult addiction medicine!