Opioid Use Disorder Education and Treatment ECHO Series

Session 16 – Perioperative Management with MOUD

July 19, 2022

Heather Bell, MD and Kurt DeVine, MD

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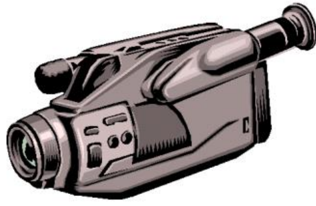
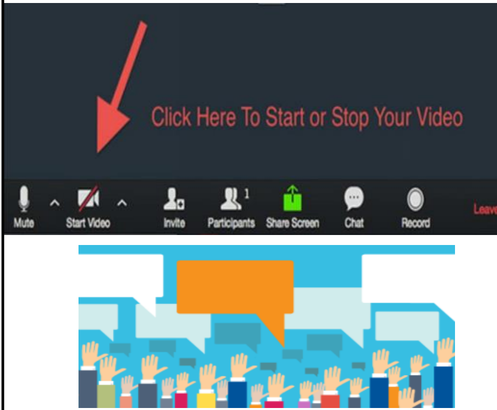
Announcements



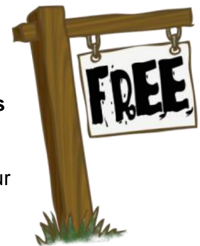


YES, THERE'S *FREE* CME

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Minnesota Medical Association (MMA) through the joint providership of Stratis Health and the Minnesota Academy of Family Physicians. **Stratis Health is accredited by the MMA to provide continuing medical education for physicians.**

Stratis Health designates this educational activity for a maximum of **1 *AMA PRA Category 1 Credits*™.**

Physicians should claim credit commensurate with the extent of their participation in the activity.



Continuing Education Credits and Contact Hours for Other Health Professionals
The OUD Education and Treatment ECHO Series may meet continuing education requirements for your focus. It is the responsibility of the individual to determine if this activity fulfills that requirement.

Upcoming ECHO Sessions

Tuesday

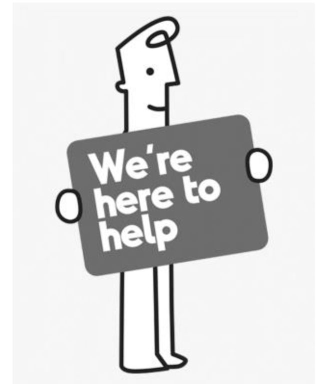
- **Tuesday, July 19:**
  Perioperative Management
- **Tuesday, August 2:**
  Community Collaboration Engagement
- **Tuesday, August 16:**
  Motivational Interviewing (MI) Lapse/Relapse
- **Tuesday, September 6:**
  Long-Term Management and Surveillance
- **Tuesday, September 20:**
  Final session - TBD

Wednesday

- **Wednesday, July 20, 2022**
  Drew McNamara, PA, Schizophrenia and Substance Use Disorders
- **Wednesday, July 27, 2022**
  Kurt DeVine, MD, Medications for Alcohol Use Disorder: FDA Approved and Off-Label
- **Wednesday, Aug. 3, 2022**
  Damir S. Utrzan, Ph.D., LMFT, DAAETS, Hazelden Betty Ford Foundation
- **Wednesday, Aug. 10, 2022**
  Troy Weber-Brown, MS, LMFT, Sexual and Gender Medicine, CentraCare

TECHNICAL ASSISTANCE

- **We are ALWAYS here for you!**
  - Program implementation
  - Inductions
  - Difficult cases
  - Trouble-shooting
  - Anything!
- **Call us anytime:**
  - Erin Foss, RN, Program Manager/Nurse Specialist efoss@stratishealth.org, Cell: 320-282-6553
  - Heather Bell: 320-630-5607
  - Kurt DeVine: 320-630-2507



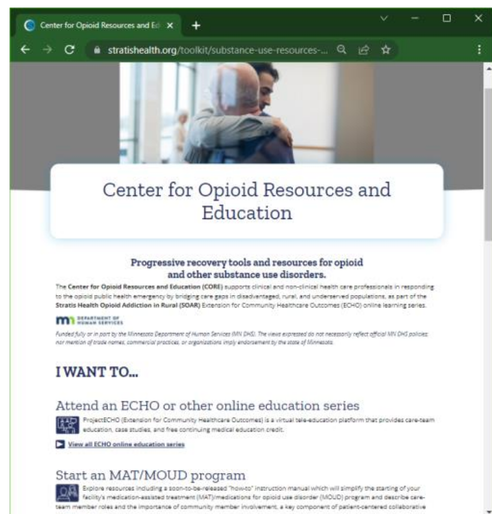
NEW! Center for Opioid Resources and Education (CORE)

Online source for progressive recovery tools and resources for opioid and other substance use disorders includes:

- Links to all current OUD ECHOs
- How-tos to simplify starting an MAT/MOUD program
- SUD clinical resources to use in practice
- Info to connect with other MAT/MOUD practitioners
- And more!
- Center for Opioid Resources and Education - Stratis Health

The **Center for Opioid Resources and Education (CORE)** supports clinical and non-clinical health care professionals in responding to the opioid public health emergency by bridging care gaps in disadvantaged, rural, and underserved populations, as part of the **Stratis Health Opioid Addiction in Rural (SOAR)** Extension for Community Healthcare Outcomes (ECHO) online learning series.

https://stratishealth.org/toolkit/substance-use-resources-and-education/



“The Addiction Connection Podcast”

Weekly addiction topics- Tuesday release day!

www.buzzsprout.com/954034
(Or anywhere you get your podcasts!)
Email us questions:
theaddictionconnectionpodcast@gmail.com

Objectives

- Understand the ‘science’ of buprenorphine
- Describe different non-opioid options for pain management in the post-operative period
- Explain the ways that buprenorphine can be utilized for pain management itself

General Goals:

1. Optimizing perioperative analgesia
2. Minimizing relapse risk
3. Setting expectations for patients and clinicians
4. Achieving prescribing consistency and mitigating risk
5. Maintaining continuity throughout care transitions

Key Questions to Consider

- What percent of mu receptors are covered by specific doses of buprenorphine?
- What is the affinity of common opioids to mu receptors?
- How much 'pain' relieve does buprenorphine itself have?
- What are the considerations with major and minor procedures/surgeries?
- What are 'common' doses of opioids following procedures?

Clinical Pearl and “Answer” to What to do About the Buprenorphine Patient Who Has Surgery…

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There is NO [*academic*] ANSWER!

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Current Research

- Overall lacking
- Retrospective studies
- Meta-analysis
- Expert consensus
- Case studies primarily

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Historical Approach

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Buprenorphine Affinity

- Buprenorphine has a high affinity at mu receptors (more details upcoming)
- “Some” mu receptors are not occupied
- Traditionally: Buprenorphine was held [pre-operatively] to “open up [more] mu receptors [for ‘better’ pain control]”

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Articles 2009-2017

- **Pain control is difficult with buprenorphine continuation**
  - Case reports: McCormick Pain Med 2013, Huang Can J Anesth 2014, Brummet J Opioid Manag 2009, Harrington Am Surg 2010, Gillmore Am J Em Med 2012
- **Pain control is manageable when continued**
  - Cohorts: Hansen Arthoplasty 2016, Macintyre Anaesth Int Care 2013, Kornfield Am J Ther 2010.
  - Peri-partum, Cohorts: ASAM Recommends continuing bup before elective c-section to avoid NAS, Jones Am J Drug Alc Ab 2009, Meyer Eur J Pain 2010, Vilkins J Addict Med 2017
- **Discontinuation associated with increased rates of illicit opioid use**
  - Ling Addiction 2009, Bentzley J Subst Abuse Treat 2015, Sen Curr Pain Headache Rep 2016, Sigmon JAMA Psych 2013, Breen Drug Alcohol Dep 2003

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The Fear…

"Can I adequately treat a patient's acute pain while they are on buprenorphine [due to the high-affinity of buprenorphine for the mu opioid receptor]?"

The Science

Buprenorphine on the Mu Receptor

- Partial agonist
- High-affinity*
  - Displaces full mu-opioid agonists
    - 1.7 times that of hydromorphone
    - 5.4 times that of morphine
    - 6.2 times that of fentanyl
    - 120 times that of oxycodone

*This has led to misperception that it is IMPOSSIBLE to treat perioperative pain in patients on buprenorphine

Blockade can be overridden with higher doses of full agonist opioids

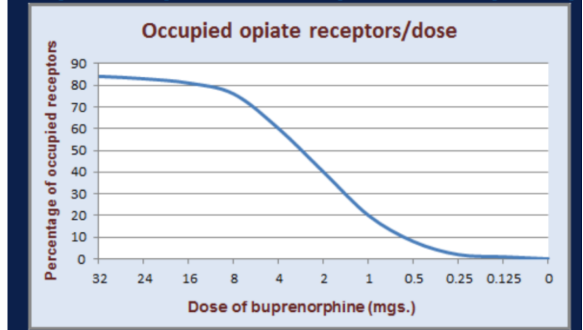
- Slowly dissociates from the body (~166 minutes)

Buprenorphine on the Mu Receptor

- Completely metabolized by the liver to norbuprenorphine
  - Active metabolite
  - Has some weak analgesic activity
- Kappa-opioid antagonist: thought to contribute to some of the reversal of opioid-induced hyperalgesia
- No studies show data that confirms degree (%) of opioid receptor occupancy (or availability) needed for a mu agonist or partial agonist to bind

Receptor Availability

- Additive analgesia vs receptor competition?
- Estimated receptor availability based on buprenorphine dose:
  - 1mg: 71-85%
  - 2mg: 53-72%
  - 4mg: 36-55%
  - 8mg: 11-22%
  - 12mg: 13-24%
  - 16mg: 9-20%
  - 24mg: 4-15%
  - 32mg: 2-12%
- Buprenorphine 16mg/day did not fully block the reinforcing efficacy of 24mg IV hydromorphone



Greenwald Biol Psych 2007, Greenwald Drug Alcohol Dep 2014)

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So What Does That Mean?

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So What Does That Mean?

- Continuing buprenorphine: (Komatsu et al. 2022)
  - Was not associated with respiratory depression
  - Associated with lower incidence of respiratory complications
- Holding buprenorphine carries significant risks (Wyse et al. 2021)

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So What Does That Mean? cont.

- Patients continued on maintenance doses post-op have lower patient-controlled opioid analgesia requirement than those who had discontinued
- Patients who discontinued buprenorphine maintenance treatment had a >50% (range 50%-90%) chance of OUD recurrence or death (Bentzley at al, J Subst Abuse Treat 2015)

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So What Does That Mean? cont.

- **Perioperative Management of Buprenorphine: Solving the Conundrum (Quaye, et al. Pain Medicine 2018)**
  - Case reviews:
    - 4 case reports supporting discontinuation
    - 2 Case series, 1 secondary observational, one prospective matched cohort, 4 retrospective cohorts supporting continuation
  - Recommendation:
    - "We feel that it is unnecessary and may be harmful to… completely stop"
    - "The evidence suggests that analgesic or moderate doses of buprenorphine combined with opioid agonists can have additive effects…"

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So What Does That Mean? cont.

- "It is almost always appropriate to continue buprenorphine at the preoperative dose. Furthermore, it is rarely appropriate to reduce the buprenorphine dose" (Goel et al, Can J Anaesth 2019)
- Buprenorphine may produce similar clinical analgesic efficacy as a full mu agonist (Raffa RB et al, Clin Pharm Ther 2014)

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So What Does That Mean?

- Meta-analysis of case reviews and case reports- pulled out commonalities: 20 patients (Buresh et al 2020)
  - 12 of 15 where buprenorphine continued as is showed adequate pain control
  - 3 cases where buprenorphine discontinued:
    - Needed more referrals for management
    - More difficult titration of medications
    - More nerve blocks
  - 2 cases where buprenorphine was stopped 3-5 days pre-op:
    - Pain control difficult
    - Needed higher doses*
    - *Consistent with tolerance

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Discontinuing Buprenorphine Pre-Op

- Highest risk patients for relapse/OD if:
  - Introduction of full mu agonist in place of buprenorphine prior to surgery
  - <20 months duration of buprenorphine treatment for OUD
  - Positive UDAS within the last 20 months
  - Discharge from perioperative period without maintenance of buprenorphine and insufficient communication with buprenorphine provider

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Perioperative Management of a Patient with an Untreated Active OUD (or at Risk for One)

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The "Other" Patient

- Substance use is prevalent among all hospitalized patients
  - 36% use tobacco
  - 20% use alcohol "hazardously"
  - 8% use illicit substances
- % of patients with OUD (or at risk for OUD) presenting for surgery is unknown
  - Withdrawal may also interfere with medical treatment (especially if not recognized as withdrawal)
- Untreated pain in conjunction with risk = less favorable outcomes
  - Premature discharge
  - Worsening of underlying medical conditions
  - Readmission
  - Overdose

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The "Other" Patient cont.

- **MOUD can be started safely during hospitalization** (Liebschutz et al JAMA Intern Med 2014, Wei et al. Gen Intern Med 2015)
- **SAMHSA**: Lower rates of illicit opioid use at a 6-month follow-up period among hospitalized patients who received buprenorphine induction and linkage at discharge
- **Exposure to MOUD even for short periods of time increases survival** (Evans et al Addiction 2015)
- Systematic review:
  - Data from nine studies (615 patients) in review (Machado et al in Brazil J Anesthesi 2020)
  - Transdermal buprenorphine started at 6-48hours before surgery, maintained for 1-8 days after procedure
    - **Lower or similar post-op pain scores, postoperative analgesic consumption, and patient satisfaction**
    - **No increase of side-effects**

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Buprenorphine as a Post-Operative Treatment for Pain

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Buprenorphine as a Post-Operative Treatment for Pain

- **Comparing buprenorphine and morphine in acute pain management: No difference in pain, respiratory depression or sedation**
  - Systematic review of 28 randomized controlled studies including 2210 patients (White LD et al. Br J Anaesth 2018)
- **Sublingual buprenorphine is as effective as morphine for the treatment of acute pain** (Kubalanza et al. 2012)

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Buprenorphine as a Post-Operative Treatment for Pain cont.

- **Buprenorphine tablets and injection (IV) suitable for post-op pain in high-risk individuals** (Stewart et al 2020)
  - Transdermal are not suitable* for acute pain but rather for chronic pain (*other studies disagree with this- especially at hospital discharge)

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So What Does it all Mean?

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ASAM National Practice Guideline For the Treatment of OUD 2020

"Discontinuation of methadone or buprenorphine before surgery is NOT required. Higher potency IV full agonists can be used perioperatively for analgesia"

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SAMHSA 2018 Guideline

... Recommend that most patients continue buprenorphine through perioperative period due to increased risk of relapse when it is discontinued…

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So… OUR Approach

Just so Happens to Be Consistent with Expert Consensus

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Pain Classifications for Procedures

- **Mild:**
  - Sprains, dental issues, small lacerations
  - Treat with local anesthetic, Ibuprofen, and Tylenol
- **Moderate:**
  - Minor bone fractures/breaks, minor surgical procedures ex. Carpal Tunnel release
  - Treat with local anesthetic, Ibuprofen, Tylenol, or Toradol
- **Severe:**
  - Large bone breaks/fractures, appendicitis, cholecystitis, post-op pain management, large lacerations, joint replacements
  - Use full agonist such as IV Hydromorphone or Fentanyl

The Pre-Operative Period

- Coordination with surgeon to discuss pain management plan prior to surgery
- If possible (depending on who buprenorphine provider is) buprenorphine instructions on pre-operative H and P with guidance
- Anesthesia to be aware on admission
  - Non-opioid pain strategies (to follow) considered/prepared
- Discussion of full plan with patient is also important!

The Intra-Operative Period

- Use IV Ketamine, lidocaine, or other forms of local anesthetic if not contraindicated
- Use continuous regional anesthesia techniques if possible (epidural, peripheral nerve catheters, Exparel etc.)
- Avoid the use of Benzodiazepines if possible
  - If they are needed- monitor respiratory status closer
- If stronger medications are needed, Fentanyl is preferred

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General Pain Management for Patients Taking Suboxone:

- Continue buprenorphine as prescribed
  - Unless instructed otherwise by MOUD provider
  - May consider QID or split dosing (to take advantage of the analgesic properties of buprenorphine)
- Consider the use of non-opioid analgesics such as: Gabapentin, Pregabalin, and NSAIDS

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General Pain Management for Patients Taking Suboxone Continued…

- A patient taking buprenorphine may require higher doses of full agonist opioids
  - ~About 2x the average dose to penetrate the Mu receptor
  - Understanding the 'typical' pain medications given for an opioid naïve patient can help guide this
- Avoid using long-acting opioids
- Avoid the use of Benzodiazepines
  - If needed, close attention to respiratory status
- Use regional anesthesia techniques if possible

General Pain Management for Patients Taking Suboxone Continued…

- Continue to take buprenorphine as prescribed unless instructed otherwise by MOUD provider
- Consider:
  - Split dosing: QD/BID -> TID/QID
  - Increasing total daily dose (TDD) for the period of expected acute pain
    - 16mg TDD -> 24mg TDD for example
    - *Can still, then, split dosing
- Prescribe small quantities of opioid pills
- Coordinate with buprenorphine provider (they may want to take over pain management)

Table 3 Recommendations for Acute Pain and Perioperative Management of Patients on Buprenorphine

Recommended management of buprenorphine	Recommended management of acute breakthrough pain	Discharge planning
Continue buprenorphine without dose reduction, including the following: • On morning of a planned surgery or procedure (whether minor or major) • During the postoperative period • During periods of acute, non-operative pain	Mild pain (pain scores 4 or less) or minor procedure (e.g., case 1): 1) Start with non-opioid analgesics (e.g., NSAIDs, acetaminophen). 2) Consider splitting buprenorphine dose into Q6-8h dosing; can increase total daily dose up to 32 mg for better pain coverage.* Moderate to severe pain (5 or more) or major procedure (e.g., case 2): In addition to recommendations for mild pain above, 1) If needed, add one short-acting full agonist opioid (e.g., oxycodone or hydromorphone) for breakthrough pain. Given underlying tolerance, higher doses will be required compared with opioid-naive patients (e.g., oxycodone 15–20 mg PO instead of 5–10 mg). Pain control should be reassessed after every dose. 2) IV opioids or PCAs without basal component (buprenorphine will play role of basal rate) may be considered in addition to patient's buprenorphine if pain is not adequately controlled or if patient is not tolerating POs. 3) Regional blocks and non-opioid analgesia should also be encouraged.	Patient's outpatient buprenorphine prescriber should be contacted prior to discharge to notify them of opioids received while in hospital and to arrange for follow-up appointment and should be informed of any doses changes and if patient will be discharged on additional opioids for pain. An X-waivered buprenorphine prescriber will need to write a discharge prescription to bridge to their next outpatient appointment.

**Some insurance companies do not approve outpatient doses of SL buprenorphine above 24 mg; however, it is FDA-approved up to 32 mg daily and can be increased to this dose while patient is inpatient*

Patient Examples

Patient #1

- 35yo male
  - Bup/naloxone 8-2mg BID
  - 3 years of recovery
  - No other co-morbid health conditions
  - Carpal tunnel surgery scheduled (minor)

How do we approach his pain concerns?

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Patient #1 cont.

- 35yo male - carpal tunnel
  - Pre-op planning:
    - Talk to surgeon- DON'T STOP BUPRENORPHINE!
    - Consider long-acting local anesthetic
    - Consider post-op Toradol IV
  - Post-op planning:
    - NSAIDs
    - Ice
    - Buprenorphine/naloxone: remain on 16/4mg TDD but change to QID rather than BID (8/2mg BID -> 4/1mg QID)

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Patient #1 cont.

- 35yo male - carpal tunnel: RESULTS
  - No full-agonist opioids needed
  - Tolerable pain
  - No lapse/relapse

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Patient #2

- 30yo female
  - 5 years in recovery
  - Healthy, stable
  - Buprenorphine/naloxone 8/2mg BID
  - Knee scope with meniscus repair (moderate)

How do we approach her pain concerns?

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Patient #2 cont.

- 30yo female - knee scope with meniscus repair
  - Pre-op planning:
    - Talk to surgeon- DON'T STOP BUPRENORPHINE!
    - Consider post-op Toradol IV
    - Anticipate 3-5 days of full agonist (hydrocodone)
  - Post-op planning:
    - NSAIDs
    - Ice
    - Buprenorphine/naloxone: remain on 16/4mg TDD but change to QID rather than BID (8/2mg BID -> 4/1mg QID)

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Patient #2 cont.

- 30yo female - knee scope with meniscus repair: RESULTS
  - Patient has significant pain
  - Takes hydrocodone (5mg) TID-QID X3days with ibuprofen
  - 4th post op day: pain improved but still significant
  - Bup/naloxone increased to ½ strip of 8/2 (4/1mg) 6x per day (24mg TDD) for 1 week then back to 8/2mg BID (16mg TDD)

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Patient #3

- 24yo female
  - Presents to clinic ~27 weeks gestation
  - In withdrawal from heroin and methamphetamines
  - Now what?

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Patient #3 cont.

- 24yo female: pregnant… which medication?
  - Methadone?
    - Benefits:
      - No concerns for precipitated withdrawal
      - Good data in pregnancy
    - Downside:
      - Would have to go to OTP- travel an issue
      - Baby likely will need a NICU/support for NOWS

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Patient #3 cont.

- 24yo female: pregnant… which medication?
  - Buprenorphine: with or without naloxone?
    - Benefit:
      - x waivered provider
      - Less neonatal withdrawal
      - No daily needs/transportation
      - Buprenorphine (without naloxone) also recommended in pregnancy
      - Buprenorphine/naloxone: less likely to have diversion
    - Downsides:
      - Need some withdrawal to initiate
      - Buprenorphine (without naloxone) higher chance of diversion
      - With non-daily visits- possible concerns for decreased retention
      - Buprenorphine/naloxone: data less available

Patient #3 cont.

- 24yo female - pregnancy
  - MOUD induction:
    - Buprenorphine/naloxone started (risks/benefits weighed- shared decision making with patient)
    - 8/2mg TID (placental breakdown in pregnancy often itself requires higher dosages)
    - Weekly visits (after 3 visits the first week):
      - Full clinic follow up
      - All UDAS as expected
      - FOB and his mother still using
      - She moved home with her parents

Patient #3 cont.

- 24yo female - pregnancy
  - Planning:
    - NSVD
    - Acetaminophen/ibuprofen adequate
  - Delivery- C-section (major)
  - What did we do?
    - Discussion with anesthesia
    - Anesthesia did tap blocks in the OR
    - IV Toradol given in OR and 2 addition doses (per OB protocol)
    - Buprenorphine/naloxone continued TDD 24mg changed from TID to q4 hours for 3 days then back to 8/2 TID
    - Over night the night of c-section: 1 dose fentanyl 100mcg given

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Patient #3 cont.

- 24yo female - pregnancy
  - What did we do?
    - Discussion with anesthesia
    - Anesthesia did tap blocks in the OR
    - IV Toradol given in OR and 2 addition doses (per OB protocol)
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    - Over night the night of c-section: 1 dose fentanyl 100mcg given

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Patient #3 cont.

- 24yo female - pregnancy
  - Discharge:
    - Mom discharged POD #3
    - Baby discharged DOL #5
    - No NOWS requiring treatment (ESC model)
    - Baby discharged with mom
    - Negative meconium screen
    - Tylenol, ibuprofen
    - Buprenorphine/naloxone 8/2mg TID
    - Weekly follow up through 6 week post partum visit then q2 weeks

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Summary

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Summary

- It is not recommended to discontinue buprenorphine for surgical procedures
- It is not recommended (in most cases) to taper buprenorphine to a lower dose for surgical procedures
- Spreading the TDD of buprenorphine (split dosing) allows for utilization of buprenorphine's analgesic properties
- Increasing TDD (along with split dosing) also can minimize the use of full-agonist opioids

Summary…

- Utilizing other modalities (nerve blocks, NSAIDs etc.) can minimize the use of full-agonist opioids
- If full-agonist opioids are needed, higher than 'normal' doses are often required (~double)
- Buprenorphine can be used first-line for post-op pain in patients high risk for developing an OUD
- Team-based approach and patient involvement (i.e., COMMUNICATION) is key

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Podcast: The Addiction Connection

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