Managing the Hospitalized Patient with Opioid Use Disorder

MARLENE MARTIN
ASSISTANT CLINICAL PROFESSOR
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

23RD ANNUAL MANAGEMENT OF THE HOSPITALIZED PATIENT CME COURSE
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35 Y man admitted overnight with right upper extremity erythema, pain, and swelling

- Started on empiric treatment for cellulitis
- You are getting sign out from your overnight colleague when you get paged that he is complaining of diarrhea, abdominal pain, headache, and nausea
- You evaluate the patient and note he is yawning and that his pupils are dilated. He endorses last using heroin before being admitted

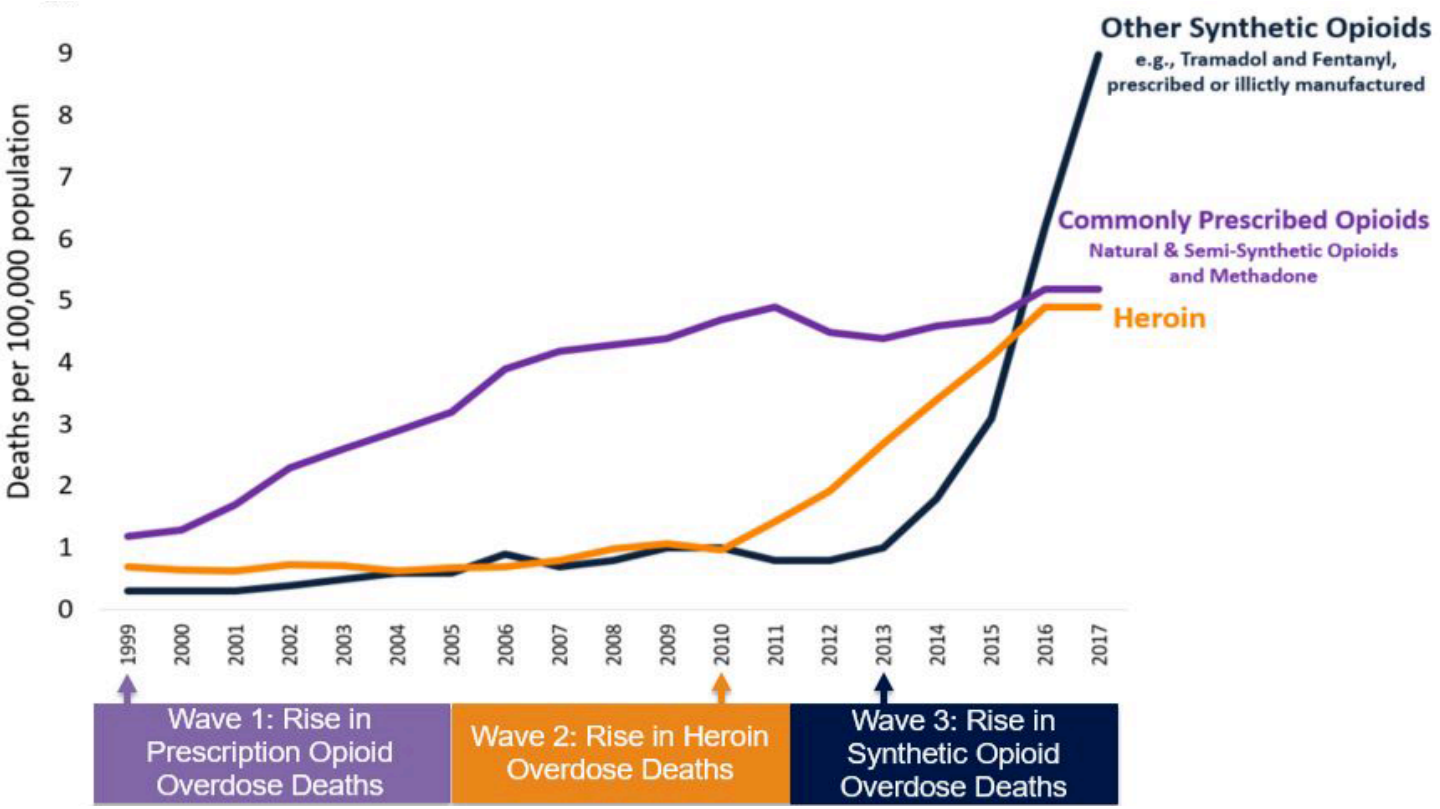
Objectives

1. Diagnose and treat opioid withdrawal and opioid use disorder (OUD) with either methadone or buprenorphine
2. Identify how to link hospitalized patients to buprenorphine or methadone treatment on discharge
3. Name three options for OUD harm reduction

Outline

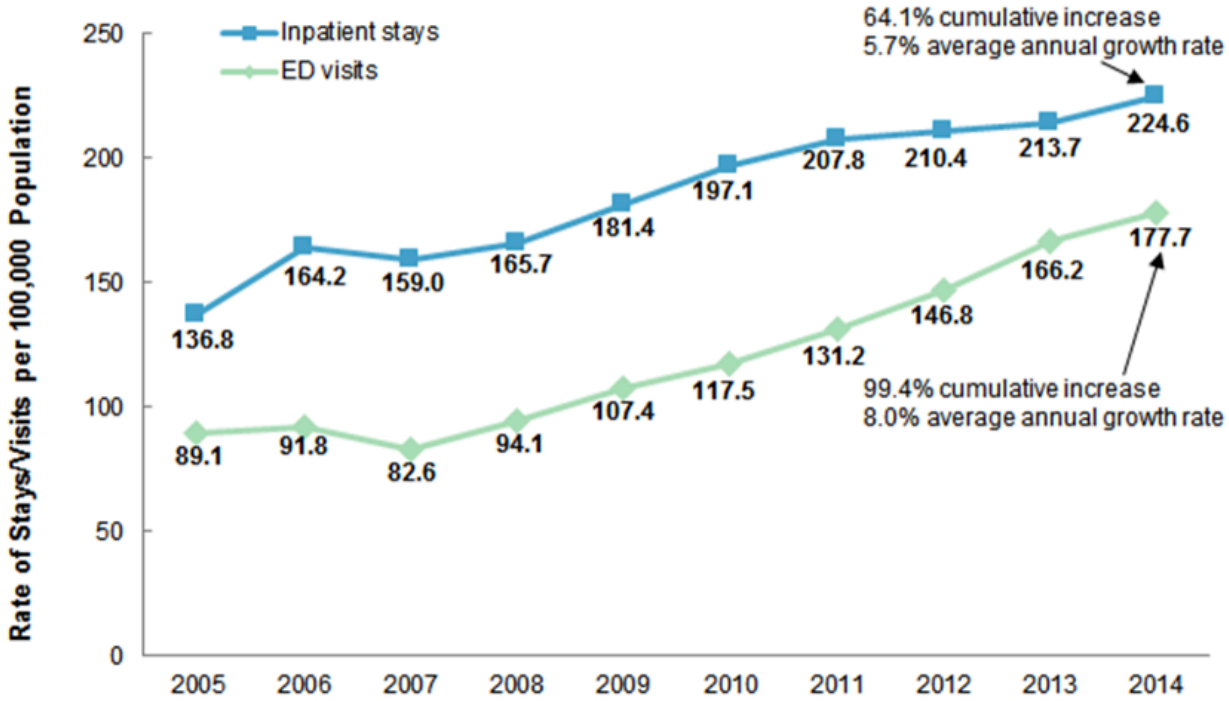
- **Prevalence, demographics, and characteristics of hospitalized patients with OUD**
- Diagnosing OUD
- Medication treatment
- Cases

Three Waves of Opioid Overdose Deaths



Source: CDC, 2017

OUD-related hospitalizations and ED visits almost doubled in the last decade



Source: AHRQ, 2017

SUD among hospitalized patients

- Up to 25% of hospitalized patients
- More likely to be admitted from the emergency department
- Longer lengths of stay, costlier, higher readmission
- High AMA rates
- Lowest quartile of income
- Unconnected to care

Statistical Brief #249. Healthcare Cost and Utilization Project (HCUP). March 2019. Agency for Healthcare Research and Quality, Rockville, MD.
Brown RL, Leonard T, Saunders LA et al. The prevalence and detection of substance use disorders among inpatients ages 18 to 49: an opportunity for prevention. Prev Med 1998; 27 (1): 101-10).
Englander H, Weimer M, Solotaroff R et al. Planning and Designing the Improving Addiction Care Team (IMPACT) for Hospitalized Adults with Substance Use Disorder. J Hosp Med. 2017 May;12(5):339-342.
Spooner, K.K., Salemi, J.L., Salihu, H.M., Zoorob, R.J., 2017. Discharge against medical advice in the United States, 2002-2011. Mayo Clin. Proc. 92, 525–535.
Walley AY, Paasche-Orlow M, Lee EC, et al. Acute care hospital utilization among medical inpatients discharged with a substance use disorder diagnosis. J Addict Med. 2012 Mar;6(1):50-6.
Ronan MV and Herzig SJ. Hospitalizations Related To Opioid Abuse/Dependence And Associated Serious Infections Increased Sharply, 2002-12. Health Aff (Millwood). 2016 May 1;35(5):832-7.

Why treat OUD in the hospital?

- Eliminate withdrawal and reduce cravings
- If return to use while on treatment occurs, less/no high
- Maintain tolerance
- Root cause of ED visits, admissions, and readmissions
- Patients motivated to cut back or stop use – pivotal touch point
- When addressed:
  - Improved rates of PCP and addiction treatment follow up
  - Reduced substance use after discharge
  - Lower 30-day readmissions
  - Improved patient and provider experiences

Velez CM, Nicolaidis C, Korthuis PT, Englander H. "It's been an Experience, a Life Learning Experience": A Qualitative Study of Hospitalized Patients with Substance Use Disorders. J Gen Intern Med. 2017 Mar;32(3):296-303.
Wei J, Defries T, Lozada M, Young N, Huen W, Tulsky J. An inpatient treatment and discharge planning protocol for alcohol dependence: efficacy in reducing 30-day readmissions and emergency department visits. J Gen Intern Med. 2015 Mar;30(3):365-70.
Englander H, Collins D, Perry SP et al. "We've Learned It's a Medical Illness, Not a Moral Choice": Qualitative Study of the Effects of a Multicomponent Addiction Intervention on Hospital Providers' Attitudes and Experiences. J Hosp Med. 2018 Nov 1;13(11):752-758.
Englander H, Weimer M, Solotaroff R et al. Planning and Designing the Improving Addiction Care Team (IMPACT) for Hospitlaized Adults with Substance Use Disorder. J Hosp Med. 2017 May; 12(5):339-342.
Liebschutz JM, Crooks D, Herman D. Buprenorphine treatment for hospitalized, opioid-dependent patients: a randomized clinical trial. JAMA Intern Med. 2014 Aug;174(8):1369-76.

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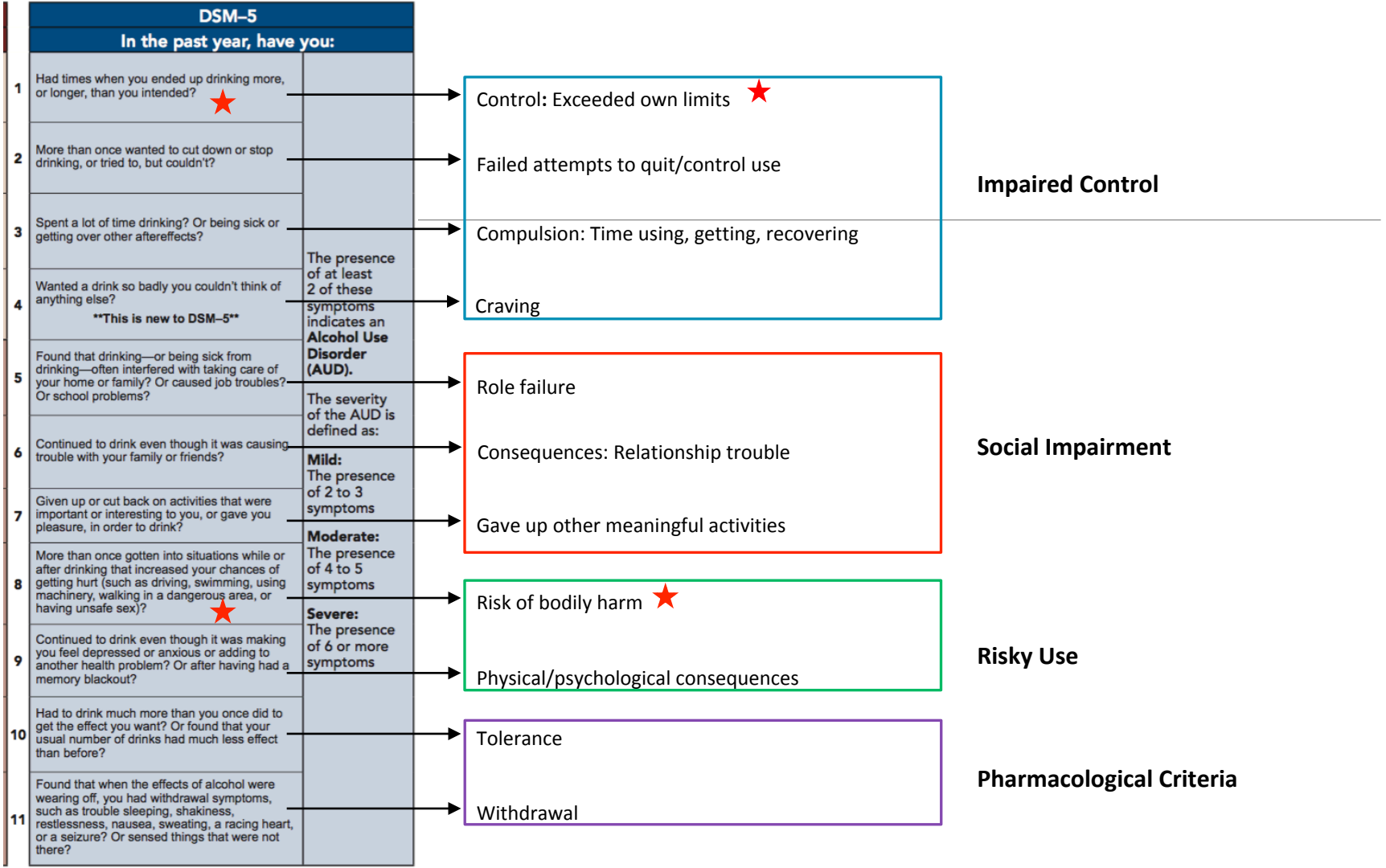
Diagnosing OUD

Symptoms
- Withdrawal
- Uncontrolled pain

Diagnoses
- Skin and soft tissue infections
- Endocarditis, osteomyelitis
- Trauma
- Overdose

DSM Criteria
- Chronic pain

Not all who use opioids have OUD


DSM–5
In the past year, have you:
1 Had times when you ended up drinking more, or longer, than you intended?
2 More than once wanted to cut down or stop drinking, or tried to, but couldn't?
3 Spent a lot of time drinking? Or being sick or getting over other aftereffects?
4 Wanted a drink so badly you couldn't think of anything else?
This is new to DSM–5
5 Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?
6 Continued to drink even though it was causing trouble with your family or friends?
7 Given up or cut back on activities that were important or interesting to you, or gave you pleasure, in order to drink?
8 More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?
9 Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?
10 Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?
11 Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?
The presence of at least 2 of these symptoms indicates an Alcohol Use Disorder (AUD).
The severity of the AUD is defined as:
Mild: The presence of 2 to 3 symptoms
Moderate: The presence of 4 to 5 symptoms
Severe: The presence of 6 or more symptoms
Control: Exceeded own limits
Failed attempts to quit/control use
Compulsion: Time using, getting, recovering
Craving
Impaired Control
Role failure
Consequences: Relationship trouble
Gave up other meaningful activities
Social Impairment
Risk of bodily harm
Physical/psychological consequences
Risky Use
Tolerance
Withdrawal
Pharmacological Criteria

Outline

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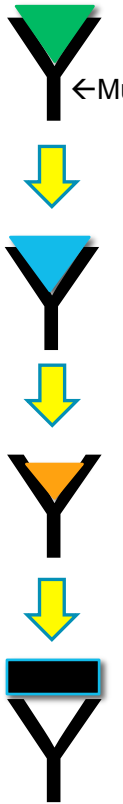
Medications for OUD



Opioids: full agonist
heroin, oxycodone, fentanyl, etc

Methadone: full agonist
Activates receptor

Buprenorphine: partial agonist
High affinity, ceiling effect

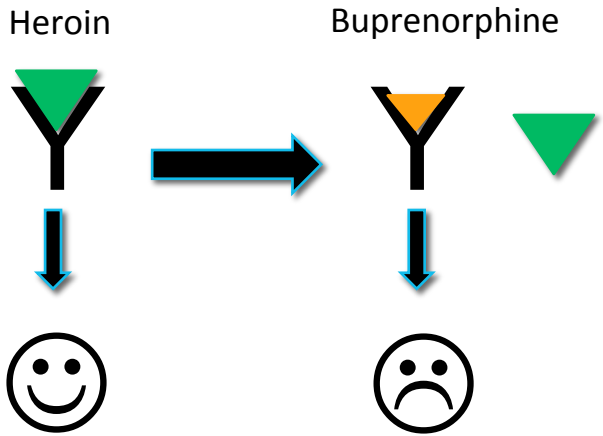
Extended-release naltrexone, naloxone:
Full antagonist, high affinity

Medications for OUD

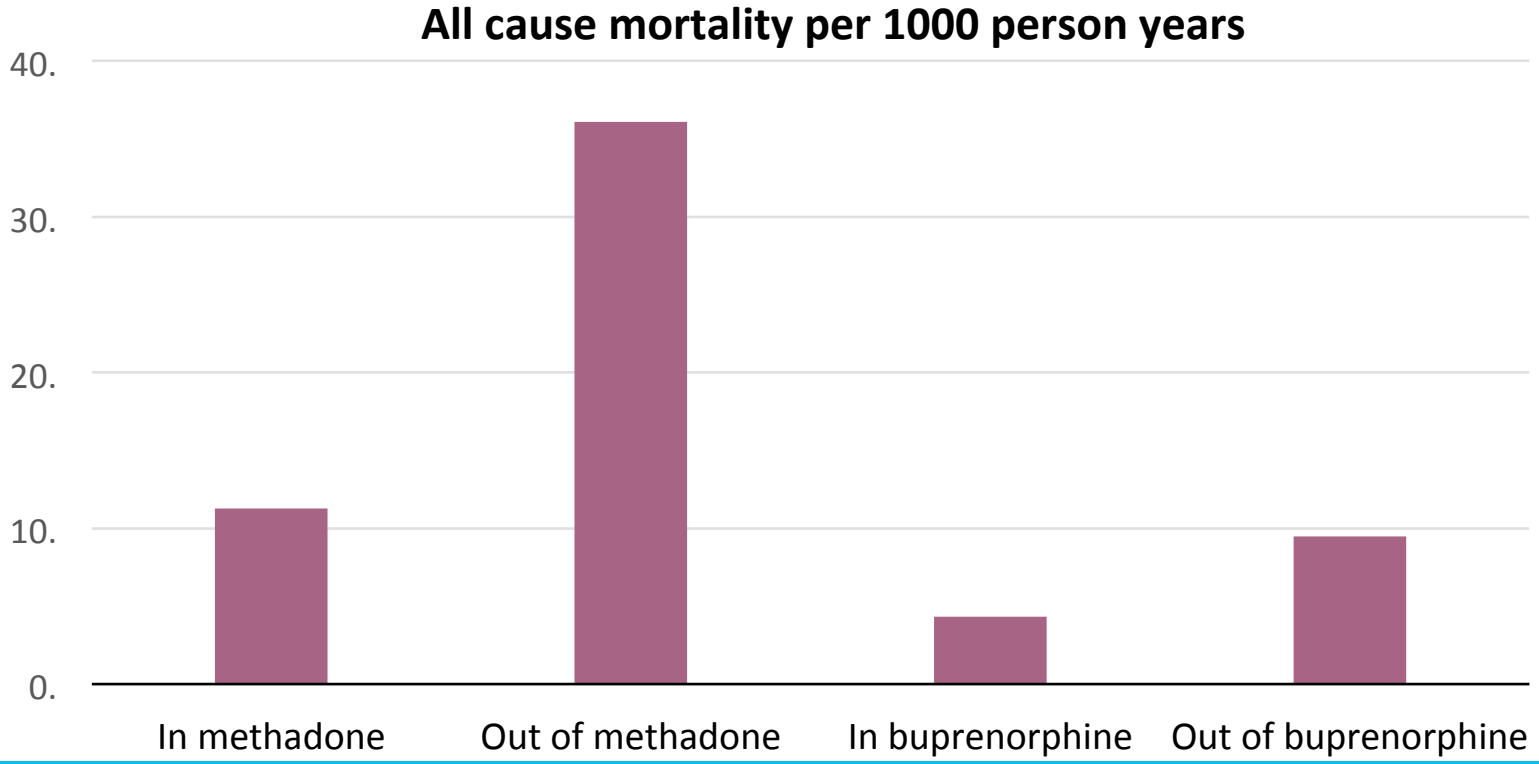
	Methadone	Buprenorphine
Treatment retention	Higher than buprenorphine	Retention improves at doses >16mg
Office visits	Daily visits to treatment program	Daily-monthly; can also provide as DOT in some settings
Who can prescribe in acute care?	**Any inpatient provider during hospitalization. Any provider in ED: up to 72 hours dosing**	**Any inpatient provider during hospitalization. Any provider in ED: up to 72 hours dosing**
Who can prescribe at discharge?	**Opiate Treatment Program (methadone clinic)**	**Any provider with DATA2000 X waiver**
Sedation	Yes at high doses, non-tolerant patients or slow metabolizers	Ceiling effect for respiratory depression
Withdrawal when starting	Takes time to reach comfortable dose	**Need to be in withdrawal**

Buprenorphine: precipitated withdrawal

- Must be in withdrawal prior to induction
- High affinity

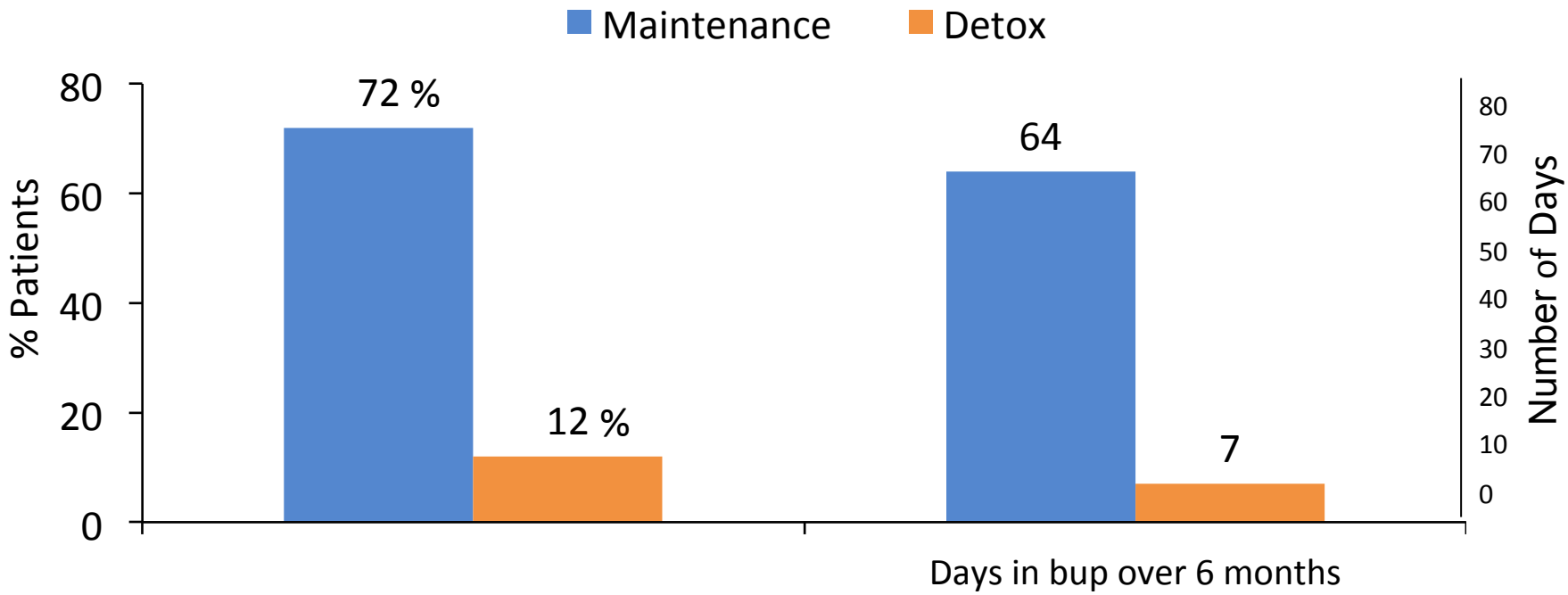


Decreased Mortality



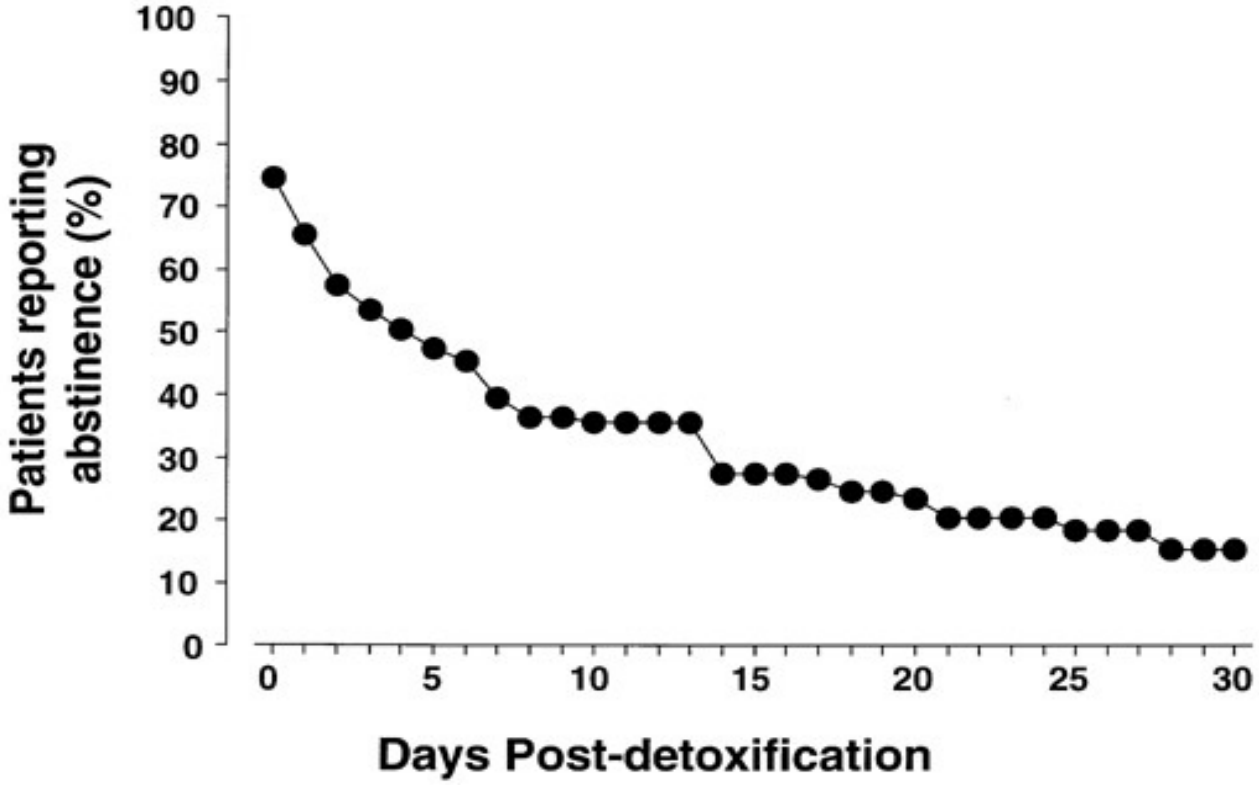
Source: Sordo *et al*, *BMJ*, *2017*

Hospital Initiation of Buprenorphine



Source: Liebschutz *et al*, *JAMA Internal Medicine*, 2014

Detox Doesn’t Last



Source: Chutuape M *et al, The American Journal of Drug and Alcohol Abuse*, 2001.

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Opioid Use Disorder (OUD), Opioid Withdrawal, and Linkage to Treatment

Methadone Guide for OUD Treatment and Withdrawal

Day 1
- ❑Utox, pregnancy test, consider QTc, CURES, COWS, confirm OUD
- ❑Give 20mg methadone
- ❑Every 4 hours -> COWS, if having cravings or withdrawal, give 10mg more. Do not exceed 40mg

Day 2
- ❑Give total Day 1 dose in am
- ❑Every 4 hours -> COWS, if having cravings or withdrawal, give 10mg more. Do not exceed 50mg

3
- ❑Give total Day 2 dose in am and follow same protocol. Do not exceed 60mg

Day 4
- ❑Give Day 3 max dose. Continue protocol until reaching 60mg daily. Then hold for 5 days before increasing by 10mg every 5 days

*__Uncomplicated__ = no methadone for 5 days, no acute pain or surgery, not altered, no severe illness

If concerned for **precipitated withdrawal, start with 2mg

Buprenorphine Guide for OUD Treatment and *Uncomplicated Withdrawal

Day 1
- ❑Utox, pregnancy test, CURES, COWS, confirm OUD, consider QTc & LFTs
- ❑Start buprenorphine (bup) when mild withdrawal (COWS>8) or no opioids for 5 days. If received opioids:
  - ❑Short acting→ wait 12 hrs
  - ❑Long acting→ wait 24-48 hrs
  - ❑Methadone in last 5 days→ request help
- ❑Give **bup 4-8mg (ensure sublingual)
- ❑1 hour later → recheck COWS. If ≥ 8 give 4mg more
- ❑6 hours later (sooner if withdrawing) → recheck COWS. If ≥ 8 give 4mg. Max dose 16mg on Day 1

Day 2
- ❑Give total Day 1 dose in am. TID dosing if patient has pain
- ❑1 hour later → if having cravings, pain, or withdrawal increase total daily dose by 4-8mg
- ❑Goal daily dose 16-24mg/day. If greater, request help

Adjunctive Support

Clonidine 0.1-0.3 mg PO q6-8 hours PRN (NTE 1.2 mg/day) → Sweating, restlessness, hot flashes, watery eyes, anxiety

Loperamide 4 mg PO x 1, then 2 mg PRN (NTE 16 mg/24 hours) → Loose stools

Zofran 4 mg PO q 6 hours PRN → Nausea

Trazodone or **Melatonin** → Insomnia

Diphenhydramine 25-50 mg, PO q 8 hours PRN → Insomnia or anxiety

Tylenol and/or **Ibuprofen** 650 mg PO q 6 hours PRN → Pain

Bup and Methadone Quick Facts

- Inpatient providers can order bup or methadone for OUD, opioid withdrawal, or to continue outpatient tx
- X-waivered providers can prescribe bup on discharge
- Inpatient providers cannot prescribe methadone for OUD on discharge

Case 1

45-year-old man with a history of injection heroin use is admitted with cellulitis of his right upper extremity.

Two hours after admission, he feels achy and nauseous. His pulse is 102, he is sweating, and moving frequently in bed. Assume his sepsis is adequately addressed, and his symptoms are from opioid withdrawal.

- What medications would you offer him?
- How would you decide when to start these medications?
- How would you dose these medications?
- What do you do with his OUD medications at discharge?

Buprenorphine

- COWS ≥8, Must be in withdrawal prior to induction
- Initial dose 8-12h after short acting, 24-48h post long acting
- Transitioning from methadone—ask for help

Wesson & Ling, J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9.

COWS Clinical Opiate Withdrawal Scale

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 Pulse rate 80 or below 1 Pulse rate 81-100 2 Pulse rate 101-120 4 Pulse rate greater than 120	GI Upset: *over last 1/2 hour* 0 No GI symptoms 1 Stomach cramps 2 Nausea or loose stool 3 Vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting
Sweating: *over past 1/2 hour not accounted for by room temperature or patient activity.* 0 No report of chills or flushing 1 Subjective report of chills or flushing 2 Flushed or observable moistness on face 3 Beads of sweat on brow or face 4 Sweat streaming off face	Tremor *observation of outstretched hands* 0 No tremor 1 Tremor can be felt, but not observed 2 Slight tremor observable 4 Gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 Able to sit still 1 Reports difficulty sitting still, but is able to do so 3 Frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds	Yawning *Observation during assessment* 0 No yawning 1 Yawning once or twice during assessment 2 Yawning three or more times during assessment 4 Yawning several times/minute
Pupil size 0 Pupils pinned or normal size for room light 1 Pupils possibly larger than normal for room light 2 Pupils moderately dilated 5 Pupils so dilated that only the rim of the iris is visible	Anxiety or irritability 0 None 1 Patient reports increasing irritability or anxiousness 2 Patient obviously irritable anxious 4 Patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 Not present 1 Mild diffuse discomfort 2 Patient reports severe diffuse aching of joints/ muscles 4 Patient is rubbing joints or muscles and is unable to sit still because of discomfort	Gooseflesh skin 0 Skin is smooth 3 Piloerrection of skin can be felt or hairs standing up on arms 5 Prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 Not present 1 Nasal stuffiness or unusually moist eyes 2 Nose running or tearing 4 Nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing Assessment:_____

Score: 5-12 mild; 13-24 moderate; 25-36 moderately severe; more than 36 = severe withdrawal

Withdrawal Assessment

COWS shortcut: Subjective symptoms AND at least 1 objective withdrawal sign

- Subjective: Nausea, abdominal pain, myalgias, chills
- Objective (at least 1): Restlessness, sweating, rhinorrhea, dilated pupils, watery eyes, tachycardia, yawning, goose bumps, vomiting, diarrhea, tremor

Buprenorphine

When COWS ≥8, give 4-8 mg

Max day 1: 16 mg

Max day 2: 24 mg

Therapeutic dose 16-24mg/day

Increase dose: craving, withdrawal, pain

Decrease dose: insomnia/mania, sedation

Precipitated withdrawal: more buprenorphine OR short acting full agonist

Methadone

Day 1

Start with 10-30 mg, reassess in 3-4 hrs, may add 10mg PRN w/d sx, max 40 mg

Document COWS, sedation scores @ 0 min, 4 h. Goal COWS <5

Day 2

Total Day 1 + 5-10 mg PRN, max 50 mg

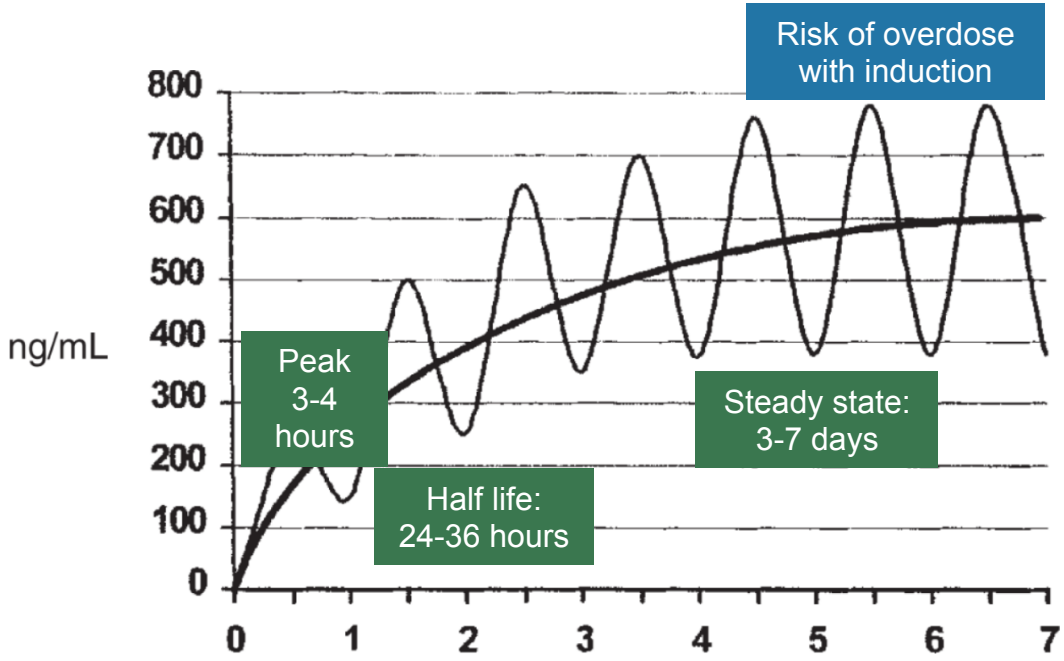
Day 3

Today Day 2+ 5-10 mg PRN, max 60 mg

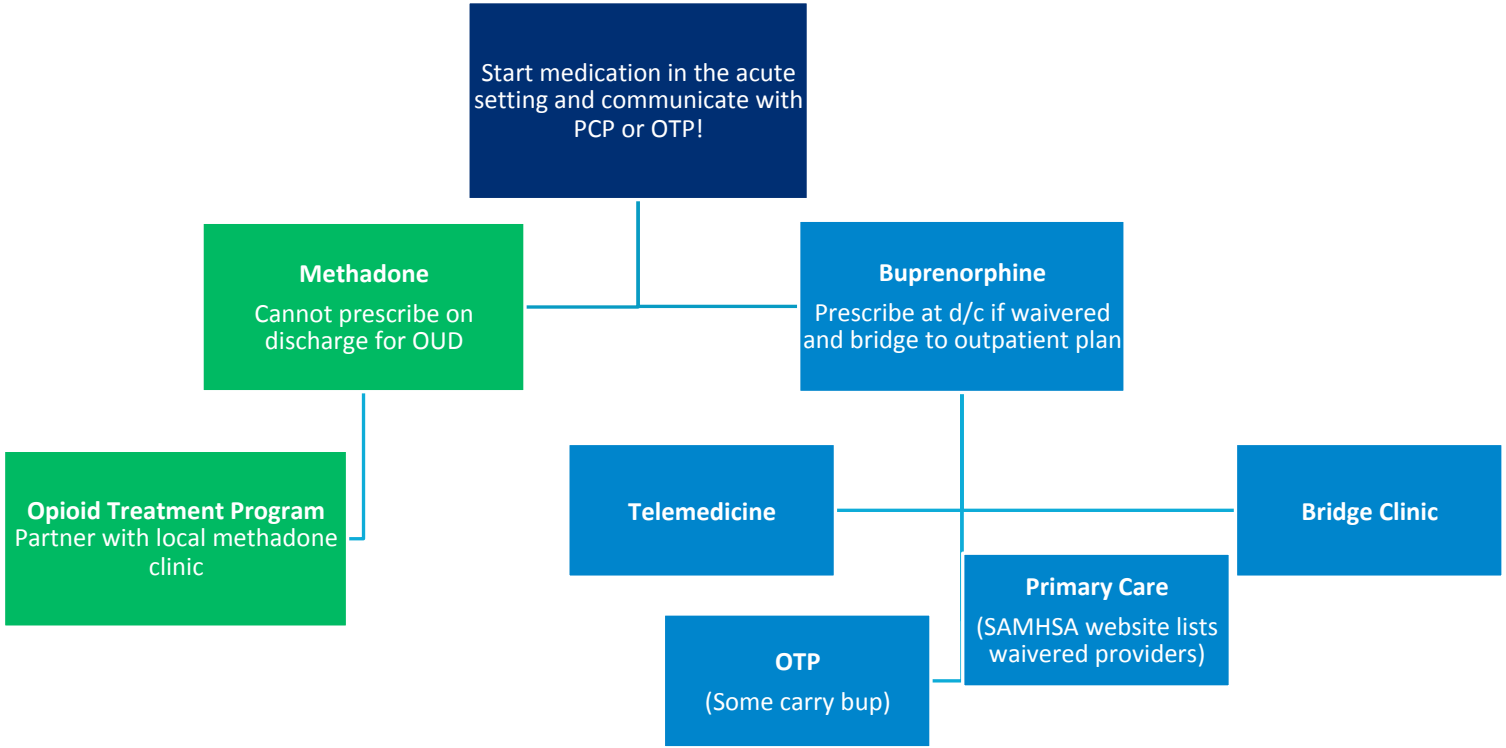
Monitor on 60mg daily for 5 days before increasing again by 5-10mg, then hold that dose for 5 days, etc

Target daily dose 80-120mg

Methadone


Risk of overdose with induction
ng/mL
800
700
600
500
400
300
200
100
0
Peak 3-4 hours
Steady state: 3-7 days
Half life: 24-36 hours
0
1
2
3
4
5
6
7
Days at steady dose

Medication Care Transition



Case 2

60-year-old woman with a history of tricuspid valve endocarditis and anxiety is admitted for acute encephalopathy. Urine toxicology shows morphine, alprazolam, and cocaine. Shortly after admission, she wakes up sweating, tremulous, agitated, and vomiting and is asking to leave. Assume her symptoms are from opioid withdrawal.

- What medications would you offer for her withdrawal if she does not want to continue OUD treatment after discharge?
- What harm reduction measures would you provide if she is interested in treating the OUD but not stopping benzos or cocaine?
- What bloodwork could you obtain to look for complications of OUD?

Opioid Use Disorder (OUD), Opioid Withdrawal, and Linkage to Treatment

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Day 2
- ❑Give total Day 1 dose in am
- ❑Every 4 hours -> COWS, if having cravings or withdrawal, give 10mg more. Do not exceed 50mg

3
- ❑Give total Day 2 dose in am and follow same protocol. Do not exceed 60mg

Day 4
- ❑Give Day 3 max dose. Continue protocol until reaching 60mg daily. Then hold for 5 days before increasing by 10mg every 5 days

*__Uncomplicated__ = no methadone for 5 days, no acute pain or surgery, not altered, no severe illness

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- ❑Give total Day 1 dose in am. TID dosing if patient has pain
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- ❑Goal daily dose 16-24mg/day. If greater, request help

Adjunctive Support

Clonidine 0.1-0.3 mg PO q6-8 hours PRN (NTE 1.2 mg/day) → Sweating, restlessness, hot flashes, watery eyes, anxiety

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- X-waivered providers can prescribe bup on discharge
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Harm Reduction

Buprenorphine or methadone

Needle exchange programs

Review injection practices

Supervised injection facilities

Buddy system

HCV and HIV education, screening, and treatment

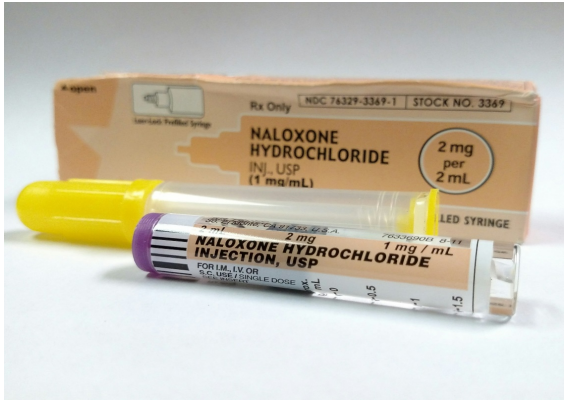
HAV, HBV, & TDaP vaccines prn

Naloxone

Stop Overdose Deaths

Universal **naloxone** prescribing

- OUD
- Opioids
- Any drug use



Post Discharge Linkage

Buprenorphine

- ❑ Primary Care if PCP is X waivered. If not, check *SAMHSA to find bup provider. Give enough bup to bridge to appointment. Communicate d/c plan with PCP.
- ❑ SUD Bridge Clinic if available
- ❑ Some OTPs have DOT for bup
- ❑ Telemedicine
- ❑ Emergency administration (ie in ED) for up to 72 hours
- ❑ Some available formulations:
  - ❑ Bup-naloxone SL films
  - ❑ Bup-naloxone SL tabs
  - ❑ Buprenorphine tabs

Methadone

- ❑ OTP (methadone clinic) -> refer to one in your community. Establish partnerships to ease transitions. Great for patients who need more structure.

For patients with acute pain and OUD

- DO treat acute pain on top of OUD
  - PRN opioids work even if on bup
  - Split bup into TID or QID dosing to treat acute or chronic pain
- DO continue methadone or bup dosing before and after surgery
- DO use adjunctive medications, regional, ketamine, etc

Withdrawal Assessment

COWS shortcut: Subjective symptoms AND at least 1 objective withdrawal sign

- Subjective: Nausea, abdominal pain, myalgias, chills, runny nose
- Objective (at least 1): Restlessness, sweating, rhinorrhea, dilated pupils, watery eyes, tachycardia, yawning, goose bumps, vomiting, diarrhea, tremor

Diagnosing OUD

1. Does the patient use heroin and have signs and symptoms of withdrawal? If YES -> OUD.
2. If unsure OR no signs of withdrawal OR patient using prescription drugs, refer to **DSM criteria below**

DSM Criteria

- Risk of bodily harm
- Exceeds own limits
- Role failure
- Relationship trouble
- Unable to cut down
- Time spent getting
- Using despite health
- Gives up activities
- Craving
- Tolerance
- Withdrawal

Harm Reduction Checklist

- ❑ HIV and HCV testing and treatment
- ❑ HAV, HBV, & TDaP vaccines prn
- ❑ Review safe injection practices
  - ❑ Don't use alone
  - ❑ Clean injection site
  - ❑ Inject slowly or use test shot
  - ❑ Use clean needle and other supplies ("works")
  - ❑ Don't share needles or works
- ❑ Needle exchange programs
- ❑ Bup or methadone as harm reduction
- ❑ Naloxone for every patient
- ❑ PrEP/PEP
- ❑ Treat withdrawal even if patient is ambivalent or may not want bup or methadone after discharge

Other Resources

- **UCSF Substance Use Warmline**: Call 855-300-3595, weekdays PST 6 am-5 pm for Addiction MD, RN, or pharmacist
- **ED-Bridge**: Detailed resources at: https://ed-bridge.org
- **SAMHSA:** Find waivered providers at: https://www.samhsa.gov

This Toolkit Belongs To:

_____

Case 3

40-year-old man with a history of OUD in recovery x 2 months on buprenorphine 16 mg daily is admitted after a motor vehicle accident and found to have multiple fractures requiring operative repair.

- What do you do with his buprenorphine before surgery? What if he was on methadone?
- What do you do with his buprenorphine after the surgery to manage his pain? What if he was on methadone?

	Dose verification	Before surgery	After surgery
Methadone	Call methadone clinic	Continue full dose	Continue full dose, consider splitting TID
Buprenorphine	Medical record, PDMP, outpatient pharmacy	Continue full dose Rarely, decrease to 12 mg 2-3 days prior to surgery	Continue full dose, consider splitting TID

	Intervention
Very mild pain	Split methadone/buprenorphine TID
Mild pain	• Ibuprofen, acetaminophen, or topical analgesics • Neuropathic pain: gabapentin, TCAs, SNRIs • Spastic pain: tizanidine, baclofen, cyclobenzaprine (not carisoprodol) • Anxiety/PTSD: sedating SSRIs or SNRIs • Pregnancy: Nitrous oxide for labor pain, avoid ibuprofen, tizanidine, some SSRIs
Moderate-severe pain	• Neuraxial, regional, and local anesthesia • Opioids: may need higher doses than patients without OUD due to tolerance—opioid requirements are lower if home methadone/buprenorphine is continued than if it is stopped • Ketamine or dexmedetomidine

What can you do at your institution?

- Dispense naloxone for all patients who use opioids or drugs
- Ensure buprenorphine and methadone are on formulary, continued during hospitalization/surgery
- Create hospital order set or guideline for new starts
- Partner with stakeholders
- Start prescribing!
- Disseminate your knowledge with colleagues

Objectives

1. Diagnose and treat opioid withdrawal and opioid use disorder (OUD) with either methadone or buprenorphine
2. Identify how to link hospitalized patients to buprenorphine or methadone treatment on discharge
3. Name three options for OUD harm reduction

Reflections

Take 1 minute to write down (or tweet):

- What concept or tool you are taking away from this workshop?
- What is one aspect of OUD or harm reduction that you can speak to providers at your home institution about to raise awareness?

Thank you!

Email me at Marlene.Martin@ucsf.edu

Additional Resources:

UCSF Substance use warmline: (855) 300-3595, 6am-5pm PT

SAMHSA, TIP 63: Medications for OUD

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