# Opiate Withdrawal and Addiction Treatment

## Overview of Opiate Withdrawal and Addiction

Opiate withdrawal and addiction are significant challenges in the hospital setting, often encountered in patients with a history of opioid use disorder (OUD). Withdrawal occurs when a patient dependent on opiates (e.g., heroin, oxycodone, fentanyl) abruptly stops or reduces use, leading to a constellation of physical and psychological symptoms. Addiction treatment, particularly with medication-assisted treatment (MAT) using methadone or buprenorphine, is a cornerstone of long-term management. Hospitalists play a critical role in managing acute withdrawal, initiating MAT, and coordinating outpatient care. This guide provides a comprehensive overview of opiate withdrawal and addiction treatment, including how to initiate methadone versus buprenorphine, the benefits and drawbacks of each, clinical pearls, and includes tables and clinical scenarios for practical application.

## Clinical Presentation of Opiate Withdrawal

### Symptoms:

- Early (6-12h after last dose for short-acting opiates, 24-48h for long-acting):
  - Anxiety, restlessness, irritability, drug craving.
  - Lacrimation, rhinorrhea, yawning, diaphoresis.
- Peak (24-72h):
  - Nausea, vomiting, diarrhea, abdominal cramps.
  - Muscle aches, joint pain, piloerection (goosebumps).
  - Dilated pupils, tachycardia, hypertension.
- Late (5-10 days):
  - Symptoms subside, but fatigue, insomnia, and craving may persist.

### Assessment Tool:

- **Clinical Opiate Withdrawal Scale (COWS) based on the following:**
  Resting Pulse Rate, Sweating, Restlessness, Pupil Size, Bone/Joint Aches, Runny Nose/Tearing, GI Upset, Tremor Yawning, Anxiety/Irritability, Gooseflesh Skin/piloerection
- **Mild: 5-12**
- **Moderate: 13-24**
- **Moderately Severe: 25-36**
- **Severe: 37-48**

### History:

- Duration, type, and amount of opiate use (e.g., heroin 1 g/day IV, oxycodone 60 mg/day PO).
- Time since last dose (e.g., 12h for heroin, 24h for methadone).
- Prior withdrawal episodes, treatment attempts (e.g., methadone, buprenorphine).
- Co-occurring substance use (e.g., alcohol, benzodiazepines), psychiatric history (e.g., depression).

### Physical Exam:

- **Vital Signs:** Tachycardia, hypertension, fever.
- **General:** Diaphoresis, lacrimation, rhinorrhea, goosebumps.
- **Eyes:** Dilated pupils.
- **Neuro:** Tremors, restlessness, agitation.
- **GI:** Abdominal tenderness, hyperactive bowel sounds.

### Labs:

- **Urine Drug Screen (UDS):** Positive for opiates, assess for co-ingestants (e.g., benzos, cocaine).
- **CBC, CMP:** Electrolyte imbalances (e.g., hypokalemia from diarrhea), LFTs (hepatitis C risk).
- **HIV, Hepatitis Serologies:** High prevalence in IV drug users.
- **Pregnancy Test:** Important in women (impacts treatment choice).

## Treatment of Opiate Withdrawal

### Symptomatic Management:

- **Clonidine:** 0.1-0.3 mg PO q6-8h (reduces autonomic symptoms: sweating, tachycardia). Monitor BP (risk of hypotension).
- **Loperamide:** 4 mg PO initially, then 2 mg prn (diarrhea). Max 16 mg/day.
- **Ondansetron:** 4-8 mg IV/PO q8h (nausea/vomiting).
- **Ibuprofen:** 600-800 mg PO q6-8h (muscle aches). Avoid NSAIDs if GI bleed risk.
- **Diazepam:** 5-10 mg PO q6-8h (anxiety, tremors). Use sparingly (addiction risk).
- **Hydration:** IV fluids (NS 1 L bolus, then 100 mL/h) for dehydration from vomiting/diarrhea.
- **Medication-Assisted Treatment (MAT):** MAT with methadone or buprenorphine is the gold standard for managing withdrawal and treating OUD long-term. Below is a detailed comparison of initiating each.

# Initiating Methadone vs. Buprenorphine

## Methadone:

- Mechanism: Full opioid agonist, long-acting (half-life 24-36h), prevents withdrawal and cravings.
- Initiation:
  - **Setting:** Requires a licensed opioid treatment program (OTP) due to DEA regulations (hospitalists can initiate inpatients under 42 CFR Part 8).
  - **COWS Score:** Start when COWS ≥13 (moderate withdrawal).
  - **Dose:** Initial 20-30 mg PO on day 1, observe 2-4h for sedation, then titrate by 5-10 mg daily. Max 40 mg on day 1.
  - Maintenance: 60-120 mg PO daily (steady state in 5-7 days).
- Benefits:
  - Highly effective for severe OUD, reduces cravings, prevents withdrawal.
  - Structured OTP setting ensures counseling, monitoring.
- Drawbacks:
  - Risk of overdose (long half-life, accumulates over days).
  - QT prolongation (risk of torsades de pointes, monitor ECG if dose >100 mg).
  - Strict regulations (daily OTP visits initially).
  - High potential for misuse/diversion.
- Monitoring:
  - ECG (QTc <500 ms), LFTs (hepatotoxicity), UDS (compliance, co-ingestants).

## Buprenorphine:

- Mechanism: Partial opioid agonist, high affinity for mu receptors, ceiling effect (safer in overdose), half-life 24-48h.
- Initiation:
  - **Setting:** Can be prescribed in office-based settings (requires X-waiver, though waived in some settings post-2023).
  - **COWS Score:** Start when COWS ≥13 (moderate withdrawal, ensures no precipitated withdrawal).
  - **Dose:** Sublingual (SL) buprenorphine/naloxone (Suboxone):
  - **Day 1:** 2-4 mg SL, observe 1-2h, repeat up to 8-16 mg total.
  - **Day 2:** 8-16 mg SL daily, titrate to 16-24 mg daily maintenance.
  - **Precipitated Withdrawal:** Avoid starting if patient used opiates <12h ago (short-acting) or <24-48h (long-acting like methadone).
- Benefits:
  - Lower overdose risk (ceiling effect on respiratory depression).
  - Office-based prescribing (more accessible than methadone).

    - Less sedation, better safety profile.
    - Naloxone component reduces misuse (IV injection causes withdrawal).
- Drawbacks:
    - Less effective for severe OUD (partial agonist, may not fully suppress cravings).
    - Precipitated withdrawal if initiated too early.
    - Requires patient to be in withdrawal (COWS ≥13) before starting.
    - May require higher doses in fentanyl users (high receptor affinity).
- Monitoring:
    - UDS (compliance, buprenorphine metabolites), LFTs, assess for diversion.

### Other Options:

**Naltrexone:** Opioid antagonist, used for maintenance (50 mg PO daily or 380 mg IM q4 weeks). Requires 7-10 days opioid-free (not for acute withdrawal).

**Supportive Care:** Psychosocial support (counseling, 12-step programs like NA), social work (housing, rehab referral).

## Clinical Pearls

### Pearl 1: COWS Score Guides MAT Initiation

Use the COWS score to decide when to start methadone or buprenorphine. A score ≥13 ensures the patient is in withdrawal, avoiding precipitated withdrawal with buprenorphine.

### Pearl 2: Buprenorphine Is Safer but Tricky to Start

Buprenorphine's ceiling effect makes it safer than methadone, but you must wait for withdrawal (COWS ≥13) to avoid making symptoms worse (precipitated withdrawal).

### Pearl 3: Methadone Requires ECG Monitoring

Methadone can prolong the QT interval, especially at doses >100 mg/day. Always check an ECG before starting and during dose increases to avoid torsades de pointes.

### Pearl 4: Fentanyl Withdrawal Needs Higher Doses

Fentanyl has a high affinity for opioid receptors. Patients may need higher buprenorphine doses (e.g., 24 mg/day) to control withdrawal and cravings.

### Pearl 5: Avoid Benzodiazepines in Withdrawal

Benzodiazepines can help anxiety in withdrawal, but they increase the risk of respiratory depression and addiction. Use clonidine or supportive care instead.

### Pearl 6: Always Screen for Co-Ingestants

Patients with OUD often use other substances (e.g., benzos, alcohol). A UDS can guide treatment and prevent withdrawal from multiple drugs (e.g., benzo withdrawal seizures).

## Complications of Opiate Withdrawal and Addiction Treatment

### Withdrawal Complications:

- **Dehydration:** Vomiting/diarrhea (hypokalemia, AKI).
- **Seizures:** Rare, more common with co-ingestants (e.g., alcohol, benzos).
- **Relapse:** High risk during withdrawal due to cravings, leading to overdose (mortality 1-2% per year).

### Methadone Complications:

- **Overdose:** Sedation, respiratory depression (risk highest in first 2 weeks).
- **QT Prolongation:** Torsades de pointes (ECG monitoring essential).
- **Drug Interactions:** CYP3A4 inducers (e.g., rifampin) reduce levels; inhibitors (e.g., fluconazole) increase levels.

### Buprenorphine Complications:

- **Precipitated Withdrawal:** If started too early (severe symptoms within 1-2h).
- **Diversion:** Misuse (e.g., IV injection), though naloxone reduces risk.
- **Hepatotoxicity:** Rare, monitor LFTs (ALT/AST >3x ULN).

**Table:** Comparison of Methadone vs. Buprenorphine for Opiate Withdrawal and Addiction

| Feature | Methadone | Buprenorphine |
|---|---|---|
| Mechanism | Full opioid agonist | Partial opioid agonist |
| Initiation | COWS ≥13, 20-30 mg PO day 1, titrate 5-10 mg daily | COWS ≥13, 2-4 mg SL day 1, titrate to 8-16 mg daily |

| Feature | Methadone | Buprenorphine |
|---|---|---|
| Maintenance Dose | 60-120 mg PO daily | 16-24 mg SL daily |
| Setting | Opioid treatment program (OTP) | Office-based (X-waiver, often waived) |
| Benefits | Effective for severe OUD, structured OTP | Safer (ceiling effect), accessible, less sedation |
| Drawbacks | Overdose risk, QT prolongation, regulations | Precipitated withdrawal, less effective for severe OUD |
| Complications | Overdose, torsades de pointes | Precipitated withdrawal, diversion |
| Monitoring | ECG (QTc), LFTs, UDS | UDS (compliance), LFTs, withdrawal signs |

**Table:** Hospitalist Management Checklist for Opiate Withdrawal

| Task | Withdrawal Management | Methadone Initiation | Buprenorphine Initiation |
|---|---|---|---|
| Initial Assessment | COWS score, UDS, labs (CMP, HIV) | COWS ≥13, ECG (QTc <500 ms) | COWS ≥13, confirm no recent use |
| Symptomatic Treatment | Clonidine 0.1 mg q6h, loperamide, ondansetron | Pain control (morphine if needed) | Pain control (non-opioids preferred) |
| MAT Dosing | N/A | 20-30 mg PO day 1, titrate | 2-4 mg SL day 1, titrate to 8-16 mg |
| Consult | Addiction medicine, social work | Addiction medicine, OTP referral | Addiction medicine, outpatient MAT |
| Monitoring | COWS q4h, electrolytes q12h | ECG q48h, UDS, sedation | COWS q4h, UDS, withdrawal signs |

## Clinical Scenarios

### Scenario 1: Young Male with Heroin Withdrawal - Methadone Initiation

- Presentation: A 30-year-old male with a history of heroin use (1 g/day IV, last use 12h ago) presents with agitation, sweating, and nausea. Exam shows T 37.5°C, BP 140/90 mmHg, HR 110 bpm, RR 20/min, dilated pupils, goosebumps, COWS score 15.
- Diagnostic Workup: **UDS:** Positive for opiates, negative for benzos, labs: Normal CMP, HIV negative, ECG: QTc 420 ms.
- Diagnosis: Opiate withdrawal (moderate) → COWS 15, recent heroin use.

- Management: Admit to medicine (withdrawal). Start methadone 20 mg PO, observe 2h (no sedation), add 10 mg (total 30 mg day 1). Clonidine 0.1 mg PO q6h, ondansetron 4 mg IV q8h. Consult addiction medicine: OTP referral. Monitor COWS q4h (decreases to 8 by day 2), ECG q48h. After 3 days, methadone 40 mg PO daily, discharged to OTP with follow-up.

## Scenario 2: Middle-Aged Female with Oxycodone Addiction - Buprenorphine Initiation

- Presentation: A 45-year-old female with chronic oxycodone use (60 mg/day PO, last use 24h ago) presents with muscle aches, diarrhea, and anxiety. Exam shows T 37°C, BP 130/80 mmHg, HR 90 bpm, RR 18/min, COWS score 14, no sedation.
- Diagnostic Workup: **UDS:** Positive for oxycodone, negative for benzos, labs: Normal CMP, LFTs, pregnancy test negative.
- Diagnosis: Opiate withdrawal (moderate) → COWS 14, recent oxycodone use.
- Management: Admit to medicine (withdrawal). Start buprenorphine/naloxone 4 mg SL, observe 2h (COWS 8), add 4 mg (total 8 mg day 1). Loperamide 4 mg PO, ibuprofen 600 mg PO q6h. Consult addiction medicine: Outpatient MAT referral. Monitor COWS q4h, UDS. After 2 days, buprenorphine 12 mg SL daily, discharged with MAT follow-up.

## Scenario 3: Elderly Male with Fentanyl Withdrawal - Withdrawal Management

- Presentation: A 70-year-old male with fentanyl use (patches, last use 36h ago) presents with vomiting, tremors, and craving. Exam shows T 37.8°C, BP 150/90 mmHg, HR 100 bpm, RR 20/min, COWS score 20, tremors.
- Diagnostic Workup:**UDS:** Positive for fentanyl, labs: K+ 3.2 mEq/L (diarrhea), normal LFTs, ECG: QTc 430 ms.
- Diagnosis:Opiate withdrawal (severe) → COWS 20, recent fentanyl use.
- Management: **Admit to medicine (withdrawal). Symptomatic:** Clonidine 0.2 mg PO q6h, ondansetron 8 mg IV q8h, NS 1 L bolus (K+ replacement). Consult addiction medicine: Declines MAT, prefers detox. Monitor COWS q4h (decreases to 10 by day 3), electrolytes q12h. After 5 days, symptoms resolved, discharged to rehab with social work follow-up.