

Treatment of Opioid Use Disorder in the Pediatric Patient

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Pediatric Opioid Use Disorder

- Opioid use disorder (OUD) among adolescents is a growing public health concern.^{1,2,3}
 - Overdose rates have more than doubled since 2019.⁴



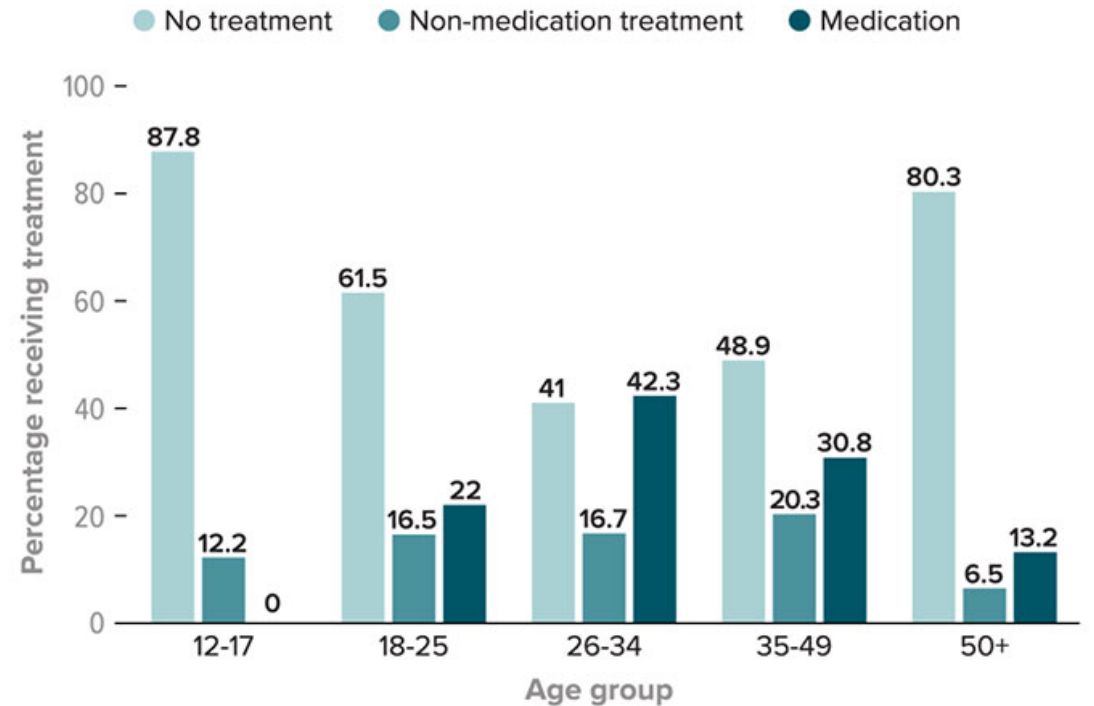
Pediatrics. 2025 Jun
1;155(6):e2024069488.
doi: [10.1542/peds.2024-069488](https://doi.org/10.1542/peds.2024-069488)

Opioid Use Disorder

- In 2023, approximately 712,000 adolescents and young adults (12 to 21 years) were estimated to have an OUD.⁴
- 90% of adolescent overdose-related deaths can be attributed to OUD.
 - High one-year mortality rate for patients with OUD⁵
 - Recognizing the signs and symptoms of OUD/opioid withdrawal and initiating therapies, including medications for opioid use disorder (MOUD) are imperative.^{2,6,7,8}
- Delays in starting MOUD are associated with decreased engagement in care.⁴

- < 5% of adolescents with OUD receive MOUD⁴
 - Providers feel unprepared
- MOUD as first line treatment recommended by:
 - American Academy of Pediatrics
 - American College of Emergency Physicians
 - American Society of Addiction Medicine
 - Society for Adolescent Health and Medicine

Treatments for opioid use disorder, by age



SOURCE: P.M. MAURO ET AL / JAMA NETWORK OPEN 2022

KNOWABLE MAGAZINE

Treatment



- Buprenorphine is an effective, evidence-based treatment to manage withdrawal symptoms in adolescents.⁸
 - Can be administered across various care settings or prescribed for at-home treatment initiation^{9,10,13}
- Adolescents treated with buprenorphine have improved retention in treatment and less likely to overdose compared to those receiving non-pharmacologic interventions alone.^{11,12}

TABLE 2. Trajectories of Use of Medication for Opioid Use Disorder Among 11 503 Youth^a Who Initiated Buprenorphine and Health Outcomes During the Subsequent Year.^b

Trajectory	Opioid Overdose		All-Cause ED Use		All-Cause Inpatient Hospitalization	
	Rate per 1000	aHR (95% CI)	Rate per 1000	aHR (95% CI)	Rate per 1000	aHR (95% CI)
High adherence for 12 mo	86.6	Reference	750.6	Reference	189.0	Reference
Low adherence for 12 mo	122.8	1.46 (1.24–1.73)	714.5	1.09 (1.01–1.17)	212.3	1.20 (1.06–1.35)
Discontinuation in 3–9 mo	157.8	1.82 (1.52–2.17)	734.0	1.05 (0.96–1.14)	216.0	1.20 (1.05–1.38)
Discontinuation in <3 mo	147.1	1.76 (1.50–2.06)	721.5	1.08 (1.01–1.16)	207.8	1.22 (1.08–1.37)

Abbreviations: aHR, adjusted hazard ratio; ED, emergency department.

^a Among the 11 649 youth who initiated buprenorphine, 146 individuals (1.3%) died of an overdose before time 0 (ie, beginning of month 13 after initiating buprenorphine) in the time-to-event analysis and thus were excluded.

^b Multivariable Cox regression models adjusted for the covariates listed in Table 1, with the models examining all-cause ED use and all-cause inpatient hospitalization adjusting for prior ED use and inpatient hospitalization, respectively.

Hadland SE, Kimmel SD, Yan S, et al. Buprenorphine. Treatment Duration and Adherence Among Youth and Subsequent Health Outcomes. *Pediatrics*. 2025;156(6):e2025071147

Screening

- The ED is an important gateway to treatment and services for OUD
 - Missed opportunities to screen
- S2BI
- CRAFFT

Opioid Use Screen

In the last week, have you struggled with pain killers, or used Heroin or Fentanyl?

No (Negative)
 Yes (Positive)
 Drug Overdose
 Unable to Assess

Thank you for letting us know. We have resources for people who are struggling, and we can start you on treatment while you're here today. Your team will talk to you about this more. Are you experiencing withdrawal right now?

Yes
 No

Clinical Opiate Withdrawal Scale

Resting pulse rate (beats per minute)

0 = Pulse rate 80 or below
 1 = Pulse rate 81-100
 2 = Pulse rate 101-120
 4 = Pulse rate greater than 120

Sweating

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

Restlessness

0 = Able to sit still
 1 = Reports difficulty sitting still, but is still able to do so
 3 = Frequent shifting or extraneous movements of legs/arms
 4 = Unable to sit still for more than a few seconds

Outpatient Treatment

> Acad Pediatr. 2026 Jan-Feb;26(1):103143. doi: 10.1016/j.acap.2025.103143. Epub 2025 Sep 5.

Treatment and Referral of Youth With Opioid Addiction in the Pediatric Emergency Department: A Pilot Study

Gabriel Devlin ¹, Neri Bernabe ², Irene Lim ³, Alan L Nager ⁴

- Outpatient MOUD initiation in pediatrics is still novel
- Devlin et al study¹⁴
 - 12 treated with MOUD
 - All required one dose in the ED and discharged
 - 50% attended first outpatient appointment, 42% at 30 days
- Another study: 18 enrolled
 - Average dose 4-8mg/day
 - 61% adherence at 3 months, 56% at 6 months
- CMKC recently released an OUD treatment pathway



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U.S. News & World Report

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Clinical decision support tools

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Additional Resources

[PedsGuide App >](#)[Antimicrobial Stewardship at Children's Mercy >](#)[Children's Mercy >](#)

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**Opioid Withdrawal Treatment:
Buprenorphine/Naloxone
(Suboxone)**

Part of **Evidence Based Practice**

 **MORE**

Ovarian Torsion

Part of **Evidence Based Practice**



Clinical Pathway:

- **Opioid Withdrawal Treatment: Buprenorphine/Naloxone (Suboxone) Algorithm**
- **Opioid Withdrawal Treatment: Buprenorphine/Naloxone (Suboxone) Clinical Pathway Synopsis**
(provides care standards employed for this clinical pathway)

Additional tools associated with this Clinical Pathway:

- **Opioid Stewardship Program Resources** (available to Children's Mercy providers)
- Naloxone handout – **English** and **Spanish**
- Suboxone Sublingual Films handout – **English** and **Spanish**
- Suboxone Sublingual Films handout (printable version) – **English** and **Spanish**
- How to Talk to Your Kids About Using Drugs – **English** and **Spanish**
- Important Facts to Know When Taking Opioids – **English** and **Spanish**
- Illicit Fentanyl handout – **English** and **Spanish**



Exclusion criteria:

- Patients < 12 years of age
- Patients being actively weaned
- Patients with sickle cell disease
- Patients on chronic therapeutic opioids

Opioid Withdrawal Signs and Symptoms

Signs

- Elevated blood pressure, rapid heart rate, and irritability or agitation
- Dilated pupils, sweating, runny nose, goose bumps
- Diarrhea, inability to sleep, heavy yawning, watering eyes

Symptoms

- Restlessness or anxiety
- Nausea, vomiting, or abdominal cramping
- Tremor/shaking, muscle aches, joint pain
- Sensitive to touch
- Intense desire for drugs

If several signs or symptoms are present, please refer to Clinical Opiate Withdrawal Scale (COWS)

COWS Score

- Mild withdrawal: 5 - 12
- Moderate withdrawal: 13 - 24
- Moderately severe withdrawal: 25 - 36
- Severe withdrawal: > 36

Consults to Consider

- Medical Toxicology
- Social Work
- Adolescent and Young Adult Medicine Clinic
- Developmental and Behavioral Health

Additional Resources

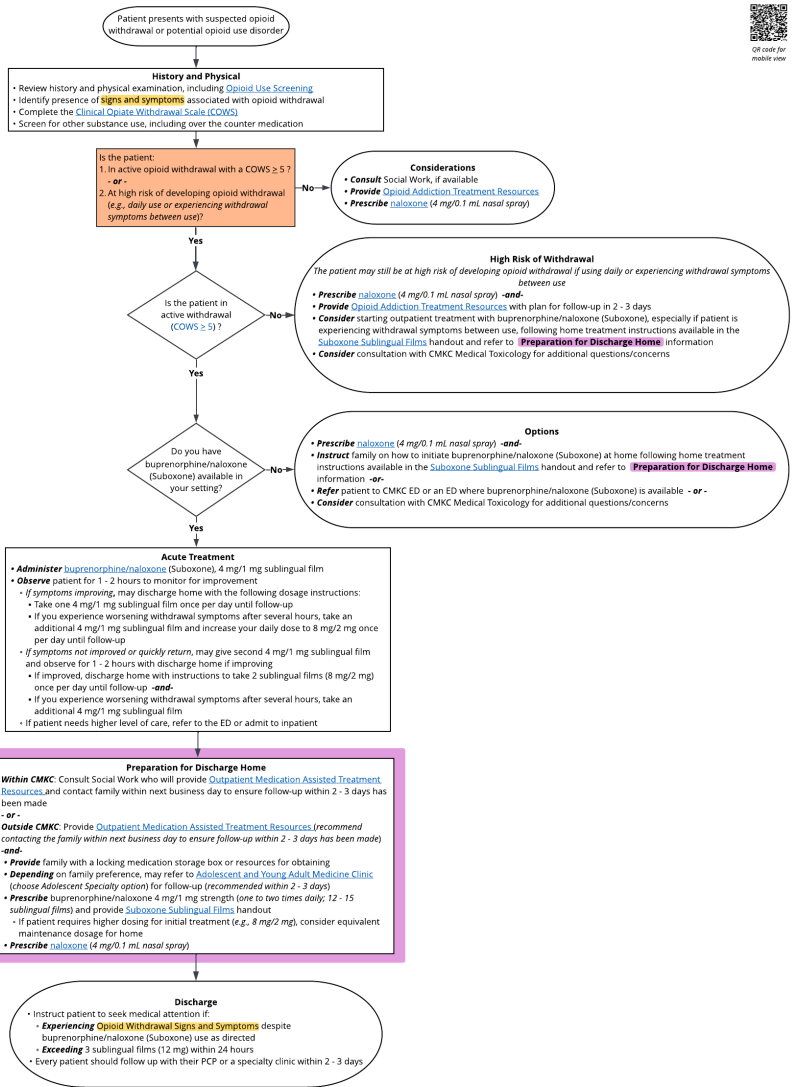
- [How to Talk to Your Kids About Using Drugs](#)
- [Important Facts to Know When Taking Opioids](#)
- [Illicit Eentany Facts](#)
- [Buprenorphine Quick Start Guide \(SAMHSA\)](#)
- Naloxone
- [Locking Medicine Pouch](#)
- [Locking Medication Storage Box](#)

Children's Mercy Provider Resources

- [Outpatient Support Program](#)
- [Opioid Treatment Agreement](#)

Preparation for Discharge Home Resources

- [Outpatient Medication Assisted Treatment Resources](#)
- [Suboxone Sublingual Films](#) handout
- [Naloxone](#) handout
- [Locking Medication Storage Box](#)
- [Locking Medicine Pouch](#)



This clinical pathway is meant as a guide for physicians and healthcare providers. It does not establish a standard of care, and is not a substitute for medical judgment which should be applied based upon the individual circumstance and clinical condition of the patient. Printing of Clinical Pathways is not recommended as these documents are updated regularly. Copyright © The Children's Mercy Hospital 2025. All rights reserved.



Opioid Withdrawal Treatment: Buprenorphine/Naloxone (Suboxone)

Exclusion criteria:

- Patients < 12 years of age
- Patients being actively weaned
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- Patients on chronic therapeutic opioids

Opioid Withdrawal Signs and Symptoms

Signs:

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COWS Score

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Consults to Consider

Patient presents with suspected opioid withdrawal or potential opioid use disorder

History and Physical

- Review history and physical examination, including [Opioid Use Screening](#)
- Identify presence of **signs and symptoms** associated with opioid withdrawal
- Complete the [Clinical Opiate Withdrawal Scale \(COWS\)](#)
- Screen for other substance use, including over the counter medication

Is the patient:
1. In active opioid withdrawal with a COWS ≥ 5 ?
- or -
2. At high risk of developing opioid withdrawal (e.g., daily use or experiencing withdrawal symptoms between use)?

Considerations

- **Consult** Social Work, if available
- **Provide** [Opioid Addiction Treatment Resources](#)
- **Prescribe** [naloxone](#) (4 mg/0.1 mL nasal spray)

Is the patient in active withdrawal (COWS ≥ 5)?

High Risk of Withdrawal

The patient may still be at high risk of developing opioid withdrawal if using daily or experiencing withdrawal symptoms between use

- **Prescribe** [naloxone](#) (4 mg/0.1 mL nasal spray) **-and-**
- **Provide** [Opioid Addiction Treatment Resources](#) with plan for follow-up in 2 - 3 days
- **Consider** starting outpatient treatment with buprenorphine/naloxone (Suboxone), especially if patient is experiencing withdrawal symptoms between use, following home treatment instructions available in the [Suboxone Sublingual Films](#) handout and refer to **Preparation for Discharge Home** information
- **Consider** consultation with CMKC Medical Toxicology for additional questions/concerns

Time Since Last Use:

- **Short Acting (e.g. heroin, fentanyl): 6-12 hours**
- **Long acting (e.g. ER oxycodone): 12-24 hours**
- **Methadone: >48-72 hours**



QR code for mobile view



Opioid Addiction Treatment Resources

Missouri and Kansas both have regional gatekeepers to addiction services. Both will complete assessments and make referrals directly to services available in the community.

Missouri

Firstcall

Adolescent Drug and Alcohol Substance Abuse Treatment

- While You Are Here Home >
- Pharmacy >
- Antibiotics >
- How to Talk to Your Kids About Using Drugs and Illegal Fentanyl Facts >
- Information About Opioids >
- Medication Safety >
- Opioid Addiction Treatment Resources >**
- Opioid Overdose Reversal Medication – Naloxone (Narcan) >
- Suicide Prevention in

Resources Link



Opioid Withdrawal Treatment: Buprenorphine/Naloxone (Suboxone)



QR code for
mobile view

Exclusion criteria:

- Patients < 12 years of age
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- Patients with sickle cell disease
- Patients on chronic therapeutic opioids

Opioid Withdrawal Signs and Symptoms

Signs:

- Elevated blood pressure, rapid heart rate, and irritability or agitation
- Dilated pupils, sweating, runny nose, goose bumps
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Symptoms:

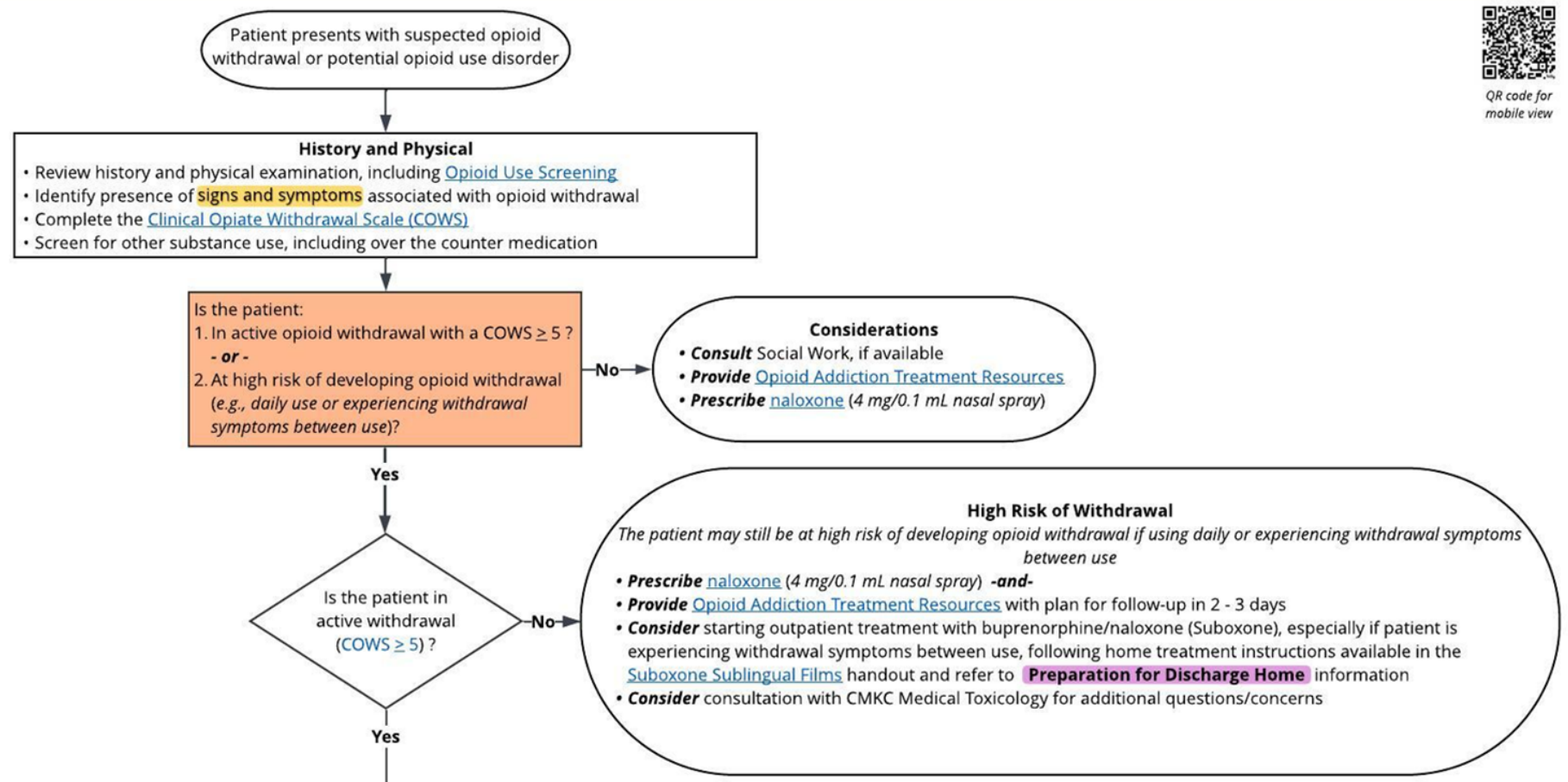
- Restlessness or anxiety
- Nausea, vomiting, or abdominal cramping
- Tremor/shaking, muscle aches, joint pain
- Sensitive to touch
- Intense desire for drugs

If several signs or symptoms are present, please refer to [Clinical Opiate Withdrawal Scale \(COWS\)](#)

COWS Score

- Mild withdrawal: 5 - 12
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Consults to Consider





■ What is Suboxone®?

Suboxone® (buprenorphine/naloxone) is a prescribed medicine that helps people stop using opioids like pain pills, fentanyl or heroin. It helps by:

- Reducing cravings (the strong urge to use)
- Easing withdrawal symptoms (feeling sick when you stop using)

Suboxone® works best when you also talk to a counselor or go to therapy. You should see your healthcare provider or visit a substance use disorder clinic within 2 to 3 days after starting this medicine.

WHY IS IT IMPORTANT TO TAKE SUBOXONE® SAFELY?

Suboxone® can make you very sleepy or dangerously slow your breathing if you take it with alcohol or certain other drugs or medications.

- Always take it just the way your healthcare provider tells you.
- Never mix it with other medicines unless your healthcare provider says it is okay.

Common withdrawal symptoms

- High blood pressure, fast heartbeat
- Irritability or agitation
- Dilated pupils, sweating, chills or goosebumps
- Runny nose or watery eyes
- Stomach cramps, nausea or vomiting
- Diarrhea
- Tremor/shaking, muscle aches or joint pain
- Restlessness or anxiety
- Yawning a lot or trouble sleeping
- Sensitive to touch
- Strong desire to use drugs

Finalized by the Opioid Withdrawal
Treatment Clinical Pathway Committee on
8/2025

[Handout Link](#)

How do I know I am ready to start Suboxone®?

YOU SHOULD FEEL SICK FROM WITHDRAWAL AND HAVE AT LEAST 3 OF THESE SYMPTOMS:

- Restlessness
- Yawning a lot
- Large pupils
- Runny nose
- Body aches
- Tremors or twitching
- Chills or sweating
- Feeling anxious or irritable
- Stomach issues (nausea, vomiting, diarrhea)

MAKE SURE IT HAS BEEN AT LEAST:

- 12 hours since you last used heroin, fentanyl, or snorted pain pills
- 16 hours since you last swallowed pain pills
- 48 to 72 hours since you used methadone

The worse you feel before taking Suboxone®, the better it will work.

Built for kids.™

WHEN SHOULD I TAKE SUBOXONE®?

You may have been started on Suboxone® in the emergency room or are planning to start it at home.

- Follow your healthcare provider's instructions for how much to take each day.
- They may also tell you how to take an extra dose if your withdrawal symptoms get worse.
- If you have questions, call your healthcare provider.

Don't take Suboxone® too soon after using opioids—it can make you feel worse.

Step-by-Step instructions for taking Suboxone®:

Day One

Step 1:

Check the strength of your strip.

- If it says 4mg/1mg, use the whole strip.
- If it says 8mg/2mg, cut it in half.

Take a sip of water first to moisten your mouth.

Put the strip under your tongue and let it melt.



Buprenorphine strip

- Don't chew or swallow it.
- It takes about 5 to 15 minutes to dissolve.

Don't eat or drink for 30 minutes before and after taking it.

Don't brush your teeth for 1 hour after taking it. This helps protect your teeth.

Tip: If you take your dose in the morning, brush your teeth first, then take your medicine. You can eat breakfast 30 minutes later or take something with you to eat at school/ work.

DO NOT TAKE ANY MORE IF YOU ARE FEELING BETTER. THIS MEANS THE MEDICATION IS WORKING.

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If you still feel sick, follow **Step 2:**

Step 2:

- Wait 1 to 2 hours after your first dose
 - Take the additional 4 mg buprenorphine/ 1mg naloxone strip
 - Put it under your tongue and let it melt
- Wait 6 to 12 hours

DO NOT TAKE ANY MORE IF YOU ARE FEELING BETTER.

THIS MEANS THE ADDITIONAL MEDICATION IS WORKING.

If you still feel sick, follow **Step 3:**

Step 3:

- Wait 6 to 12 hours after your second dose
 - Take an additional 4 mg buprenorphine/ 1mg naloxone strip
 - Put it under your tongue and let it melt

STOP AFTER THIS DOSE.

DO NOT TAKE MORE THAN 12 MG OF BUPRENORPHINE ON THE FIRST DAY.

If you need more than 12mg to control your symptoms, please call your healthcare provider or go to the emergency department.

DAY TWO

- If you felt better after taking one strip (4mg/1mg), keep taking that same amount once a day.
- If you needed two or three strips (8mg/2mg or 12mg/3mg) to feel better, take that amount once a day.

Keep taking the same dose each day until your healthcare provider tells you to change. They will also refer you to counseling or therapy.



Track your dose

Below is a place where you can track your daily dose to share with your healthcare provider.

Daily Dose Tracking

Daily Dose Tracking	
DAY ONE	
DAY TWO	
DAY THREE	

DO NOT STOP SUDDENLY. Stopping Suboxone® suddenly can make you sick. Talk with your healthcare provider first.

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Call 911 or get help right away if you:

- Have severe stomach pain, vomiting, or diarrhea
- Have slow or difficult breathing
- Feel confused or cannot think clearly

What if I miss a dose?

Take it as soon as you remember. If it is almost time for your next dose, skip the missed one. Do not take two doses at once.

Safety tips

- Keep Suboxone® out of reach of children and in a location not accessible by others, including visitors to the home.
- Do not share your medicine with anyone.
- Avoid alcohol and other drugs or medications unless your health care provider says it is okay.
- Tell your healthcare provider about all medicines you take and if you are living in a household with small children.

If a child takes Suboxone® by accident, it is very dangerous and could cause death. Call 911 or get emergency help right away.

If the child shows signs of overdose, use naloxone as explained in your Naloxone handout.

Common side effects and what to do

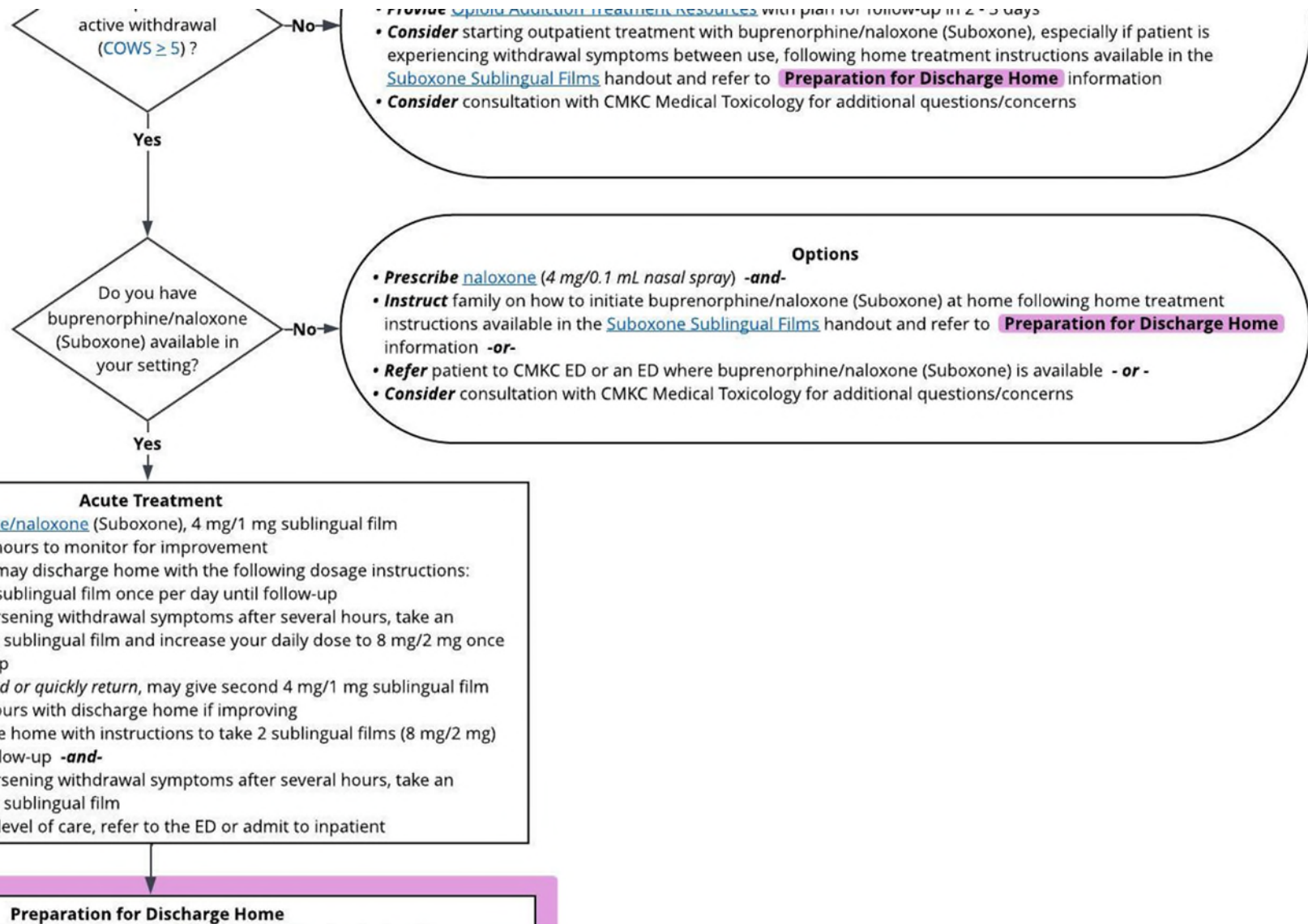
Side effect	What to do
Constipation	<ul style="list-style-type: none"> • Drink more water and juice • Eat food with fiber • Exercise more • Check with your doctor about over-the-counter medicines you may take
Headache, body aches, and cold- or flu-like symptoms	<ul style="list-style-type: none"> • Check with your doctor about over-the-counter medicines you may take
Upset stomach or vomiting	<ul style="list-style-type: none"> • Take an antacid product or anti-nausea medicine as prescribed by your doctor
Pain	<ul style="list-style-type: none"> • Use over-the-counter medicines as directed by your doctor
Sweating	<ul style="list-style-type: none"> • Shower often • Dress in layers
Sleep problems, including tiredness	<ul style="list-style-type: none"> • Take the medicine in the morning • Avoid naps • Go to bed at the same time every night • Do not drink caffeine after lunchtime
Dizziness	<ul style="list-style-type: none"> • Stand up slowly • Call your doctor if problems persist
Mood swing	<ul style="list-style-type: none"> • Exercise more • Do fun things that do not involve the old drug lifestyle

Relax, talk to your healthcare provider. Side effects usually go away over time.

DO NOT STOP taking the medicine without talking to your healthcare provider.

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COWS (COWS)
<p>COWS Score</p> <ul style="list-style-type: none"> Mild withdrawal: 5 - 12 Moderate withdrawal: 13 - 24 Moderately severe withdrawal: 25 - 36 Severe withdrawal: > 36
<p>Consults to Consider</p> <ul style="list-style-type: none"> Medical Toxicology Social Work Adolescent and Young Adult Medicine Clinic Developmental and Behavioral Health
<p>Additional Resources</p> <ul style="list-style-type: none"> How to Talk to Your Kids About Using Drugs Important Facts to Know When Taking Opioids Illicit Fentanyl Facts Buprenorphine Quick Start Guide (SAMHSA) Naloxone Locking Medicine Pouch Locking Medication Storage Box
<p>Children's Mercy Provider Resources</p> <ul style="list-style-type: none"> Opioid Stewardship Program Opioid Treatment Agreement
<p>Preparation for Discharge Home Resources</p> <ul style="list-style-type: none"> Outpatient Medication Assisted Treatment Resources Suboxone Sublingual Films handout Naloxone handout Locking Medication Storage Box Locking Medicine Pouch



Acute Treatment

- **Administer** [buprenorphine/naloxone](#) (Suboxone), 4 mg/1 mg sublingual film
- **Observe** patient for 1 - 2 hours to monitor for improvement
 - *If symptoms improving*, may discharge home with the following dosage instructions:
 - Take one 4 mg/1 mg sublingual film once per day until follow-up
 - If you experience worsening withdrawal symptoms after several hours, take an additional 4 mg/1 mg sublingual film and increase your daily dose to 8 mg/2 mg once per day until follow-up
 - *If symptoms not improved or quickly return*, may give second 4 mg/1 mg sublingual film and observe for 1 - 2 hours with discharge home if improving
 - If improved, discharge home with instructions to take 2 sublingual films (8 mg/2 mg) once per day until follow-up **-and-**
 - If you experience worsening withdrawal symptoms after several hours, take an additional 4 mg/1 mg sublingual film
 - If patient needs higher level of care, refer to the ED or admit to inpatient

Preparation for Discharge Home

Within CMKC: Consult Social Work who will provide [Outpatient Medication Assisted Treatment Resources](#) and contact family within next business day to ensure follow-up within 2 - 3 days has been made

- or -

Outside CMKC: Provide [Outpatient Medication Assisted Treatment Resources](#) (recommend contacting the family within next business day to ensure follow-up within 2 - 3 days has been made)




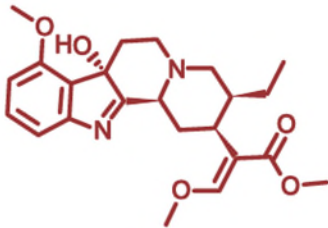
-and-

- **Provide** family with a locking medication storage box or resources for obtaining
- **Depending** on family preference, may refer to [Adolescent and Young Adult Medicine Clinic](#) (choose Adolescent Specialty option) for follow-up (recommended within 2 - 3 days)
- **Prescribe** buprenorphine/naloxone 4 mg/1 mg strength (one to two times daily; 12 - 15 sublingual films) and provide [Suboxone Sublingual Films](#) handout
 - If patient requires higher dosing for initial treatment (e.g., 8 mg/2 mg), consider equivalent maintenance dosage for home
- **Prescribe** [naloxone](#) (4 mg/0.1 mL nasal spray)

Discharge

- Instruct patient to seek medical attention if:
 - **Experiencing** Opioid Withdrawal Signs and Symptoms despite buprenorphine/naloxone (Suboxone) use as directed
 - **Exceeding** 3 sublingual films (12 mg) within 24 hours
- Every patient should follow up with their PCP or a specialty clinic within 2 - 3 days

7-Hydroxymitragynine

 <p>Rx Pills</p>	 <p>Heroin</p>
 <p>Fentanyl</p>	 <p>7-OH</p>

7-OH (formally known as 7-Hydroxymitragynine) is a powerful psychoactive compound that occurs naturally in very small amounts in the Kratom plant.

7-OH products are concentrated derivatives often falsely marketed as Kratom.

Street names include 7-Hydroxy, 7-OHMG and '7'.

[chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.fda.gov/media/187900/download](https://www.fda.gov/media/187900/download)

7-Hydroxymitragynine



7-Hydroxymitragynine

- Can develop opioid use disorder and withdrawal
- Early evidence suggests you can treat with buprenorphine using developed pathways
- Recent bans to sale of 7-OH

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Questions?





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