



*Duval*

# Opioid use disorder in adolescents: An overview

## Treatment needs to include interventions that address young patients' unique needs

### Shikha Verma, MD

Child and Adolescent Psychiatrist  
Rogers Behavioral Health  
Kenosha, Wisconsin

### Disclosure

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**M**s. L, age 17, seeks treatment because she has an ongoing struggle with multiple substances, including benzodiazepines, heroin, alcohol, cannabis, and prescription opioids.

She reports that she was 13 when she first used a prescription opioid that was not prescribed for her. She also reports engaging in unsafe sexual practices while using these substances, and has been diagnosed and treated for a sexually transmitted disease. She dropped out of school and is estranged from her family. She says that for a long time she has felt depressed and that she uses drugs to “self-medicate my emotions.” She endorses high anxiety and lack of motivation. Ms. L also reports having several criminal charges for theft, assault, and exchanging sex for drugs. She has undergone 3 admissions for detoxification, but promptly resumed using drugs, primarily heroin and oxycodone, immediately after discharge. Ms. L meets DSM-5 criteria for opioid use disorder (OUD).

Ms. L's case illustrates a disturbing trend in the current opioid epidemic in the United States. Nearly 11.8 million individuals age  $\geq 12$  reported misuse of opioids in the last year.<sup>1</sup> Adolescents who misuse prescription or illicit opioids are more likely to be involved with the legal system due to truancy, running away from home, physical altercations, prostitution, exchanging sex for drugs, robbery, and gang involvement. Adolescents who use opioids may also struggle with academic decline, drop out of school early, be unable to maintain a job, and have relationship difficulties, especially with family members.

In this article, I describe the scope of OUD among adolescents, including epidemiology, clinical manifestations, screening tools, and treatment approaches.

continued



## Opioid use disorder in adolescents

### Clinical Point

Chronic opioid use produces neurologic effects that change the function of areas of the brain that control pleasure/reward, stress, and more



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### Scope of the problem

According to the most recent Monitoring the Future survey of more than 42,500 8th, 10th, and 12th grade students, 2.7% of 12th graders reported prescription opioid misuse (reported in the survey as “narcotics other than heroin”) in the past year.<sup>2</sup> In addition, 0.4% of 12th graders reported heroin use over the same period.<sup>2</sup> Although the prevalence of opioid use among adolescents has been declining over the past 5 years,<sup>2</sup> it still represents a serious health crisis.

Part of the issue may relate to easier access to more potent opioids. For example, heroin available today can be >4 times purer than it was in the past. In 2002, the Drug Enforcement Administration reported that the average purity of retail heroin was 38%, with levels up to 71% in some areas of the northeastern United States.<sup>3,4</sup> This purer form can be inhaled, which reduces the need for injection and makes it more accessible to younger adolescents.

Between 1997 and 2012, the annual incidence of youth (age 15 to 19) hospitalizations for prescription opioid poisoning increased >170%.<sup>5</sup> Approximately 6% to 9% of youth involved in risky opioid use develop OUD 6 to 12 months after starting to use opioids.<sup>6-8</sup>

In recent years, deaths from drug overdose have increased for all age groups; however, limited data is available regarding adolescent overdose deaths. According to the Centers for Disease Control and Prevention (CDC), from 2015 to 2016, drug overdose death rates for persons age 15 to 24 increased to 28%.<sup>9</sup>

### How opioids work

Opioids activate specific transmembrane neurotransmitter receptors, including mu, kappa, and delta, in the CNS and peripheral nervous system (PNS). This leads to activation of G protein-mediated intracellular signal transduction. Mainly it is activation of endogenous mu opioid receptors that mediates the reward, withdrawal, and analgesic effects of opioids. These effects depend on the location of mu receptors. In the CNS, activation of mu opioid receptors may cause miosis, respiratory depression, euphoria, and analgesia.<sup>10</sup>

Different opioids vary in terms of their half-life; for most opioids, the half-life ranges

from 2 to 4 hours.<sup>10</sup> Heroin has a half-life of 30 minutes, but due to active metabolites its duration of action is 4 to 5 hours. Opioid metabolites can be detected in urine toxicology within approximately 1 to 2 days since last use.<sup>10</sup>

Chronic opioid use is associated with neurologic effects that change the function of areas of the brain that control pleasure/reward, stress, decision-making, and more. This leads to cravings, continued substance use, and dependence.<sup>11</sup> After continued long-term use, patients report decreased euphoria, but typically they continue to use opioids to avoid withdrawal symptoms or worsening mood.

### Criteria for opioid use disorder

In DSM-5, substance use disorders (SUDs) are no longer categorized as abuse or dependence.<sup>12</sup> For opioids, the diagnosis is OUD. The *Table*<sup>12</sup> (*page 16*) outlines the DSM-5 criteria for OUD. Craving opioids is included for the first time in the OUD diagnosis. Having problems with the legal system is no longer considered a diagnostic criterion for OUD.

### A vulnerable population

As defined by Erik Erikson’s psychosocial stages of development, adolescents struggle between establishing their own identity vs role confusion.<sup>13</sup> In an attempt to relate to peers or give in to peer pressure, some adolescents start by experimenting with nicotine, alcohol, and/or marijuana; however, some may move on to using other illicit drugs.<sup>14</sup> Risk factors for the development of SUDs include early onset of substance use and a rapid progression through stages of substance use from experimentation to regular use, risky use, and dependence.<sup>15</sup> In our case study, Ms. L’s substance use followed a similar pattern. Further, the comorbidity of SUDs and other psychiatric disorders may add a layer of complexity when caring for adolescents. *Box 1*<sup>16-20</sup> (*page 17*) describes the relationship between comorbid psychiatric disorders and SUDs in adolescents.



## Opioid use disorder in adolescents

### Clinical Point

Tolerance to heroin can occur in 10 days and withdrawal can manifest in 3 to 7 hours after last use, depending on dose and purity

#### Table

### DSM-5 criteria for opioid use disorder

To receive a diagnosis of opioid use disorder, a patient must meet  $\geq 2$  of the following in the last 12 months:

- Often taking opioids in larger amounts or for longer periods of time than intended
- Persistent desire or unsuccessful efforts to cut down or control opioid use
- Great deal of time spent in obtaining and using opioids or recovering from their effects
- Craving opioids
- Recurrent opioid use results in failure to fulfill major life obligations
- Continuing opioid use despite persistent problems caused by opioids
- Giving up important social, occupational, or recreational activities because of opioid use
- Recurrent opioid use in situations in which it is physically hazardous
- Continuing opioid use despite having a physical or psychological problem caused or made worse by opioids
- Tolerance<sup>a</sup>
- Withdrawal<sup>a</sup>

<sup>a</sup>This criterion is not considered to be met in individuals taking opioids solely under appropriate medical supervision

Source: Reference 12

### Clinical manifestations

Common clinical manifestations of opioid use vary depending on when the patient is seen. An individual with OUD may appear acutely intoxicated, be in withdrawal, or show no effects. Chronic/prolonged use can lead to tolerance, such that a user needs to ingest larger amounts of the opioid to produce the same effects.

*Acute intoxication* can cause sedation, slurring of speech, and pinpoint pupils. Fresh injection sites may be visible on physical examination of IV users. The effects of acute intoxication usually depend on the half-life of the specific opioid and the individual's tolerance.<sup>10</sup> Tolerance to heroin can occur in 10 days and withdrawal can manifest in 3 to 7 hours after last use, depending on dose and purity.<sup>3</sup> Tolerance can lead to unintentional overdose and death.

*Withdrawal.* Individuals experiencing withdrawal from opioids present with flu-like physical symptoms, including generalized body ache, rhinorrhea, diarrhea, goose bumps, lachrimation, and vomiting. Individuals also may experience irritability, restlessness, insomnia, anxiety, and depression during withdrawal.

*Other manifestations.* Excessive and chronic/prolonged opioid use can adversely impact socio-occupational functioning and cause academic decline in adolescents and youth. Personal relationships are significantly affected. Opioid users may have legal difficulties as a result of committing crimes such as theft, prostitution, or robbery in order to obtain opioids.

### Screening for OUD

Several screening tools are available to assess adolescents for SUDs, including OUD.

**CRAFFT** is a 6-item, clinician-administered screening tool that has been approved by American Academy of Pediatrics' Committee on Substance Abuse for adolescents and young adults age <21.<sup>21-23</sup> This commonly used tool can assess for alcohol, cannabis, and other drug use. A score  $\geq 2$  is considered positive for drug use, indicating that the individual would require further evaluation and assessment<sup>22,23</sup> (Figure, page 18). There is also a self-administered CRAFFT questionnaire that can be completed by the patient.

**NIDA-modified ASSIST.** The American Psychiatric Association has adapted the National Institute on Drug Abuse (NIDA)-modified ASSIST. One version is designated for parents/guardians to administer to their children (age 6 to 17), and one is designated for adolescents (age 11 to 17) to self-administer.<sup>24,25</sup> Each screening tool has 2 levels: Level 1 screens for substance use and other mental health symptoms, and Level 2 is more specific for substance use alone.

**Drug Use Screening Inventory (DUSI)** is a self-report questionnaire that has 149 items that assess the use of numerous drugs. It is designed to quantify the severity of

consequences associated with drug and alcohol use.<sup>26,27</sup>

**Problem-Oriented Screening Instrument for Teenagers (POSIT)** is a multidimensional tool that consists of 139 yes/no questions designed to explore adolescents' (age 12 to 19 years) problem substance use and current functioning in other areas.<sup>28,29</sup>

**Personal Experience Screening Questionnaire (PESQ)** is a brief, 40-item, cost-effective, self-report questionnaire that can help identify adolescents (age 12 to 18) who should be referred for further evaluation.<sup>30</sup>

### Addressing treatment expectations

For an adolescent with OUD, treatment should begin in the least restrictive environment that is perceived as safe for the patient. An adolescent's readiness and motivation to achieve and maintain abstinence are crucial. Treatment planning should include the adolescent as well as his/her family to ensure they are able to verbalize their expectations. Start with a definitive treatment plan that addresses an individual's needs. The plan should provide structure and an understanding of treatment expectations. The treatment team should clarify the realistic plan and goals based on empirical and clinical evidence. Treatment goals should include interventions to strengthen interpersonal relationships and assist with rehabilitation, such as establishing academic and/or vocational goals. Addressing readiness and working on a patient's motivation is extremely important for most of these interventions.

In order for any intervention to be successful, clinicians need to establish and foster rapport with the adolescent. By law, substance use or behaviors related to substance use are not allowed to be shared outside the patient-clinician relationship, unless the adolescent gives consent or there are concerns that such behaviors might put the patient or others at risk. It is important to prime the adolescent and help them understand that any information pertaining to their safety or the safety of others may need to be shared outside the patient-clinician relationship.

#### Box 1

### Comorbid psychiatric disorders and SUDs in adolescents

**D**isruptive behavior disorders are the most common coexisting psychiatric disorders in an adolescent with a substance use disorder (SUD), including opioid use disorder. These individuals typically present with aggression and other conduct disorder symptoms, and have early involvement with the legal system. Conversely, patients with conduct disorder are at high risk of early initiation of illicit substance use, including opioids. Early onset of substance use is a strong risk factor for developing an SUD.<sup>16</sup>

Mood disorders, particularly depression, can either precede or occur as a result of heavy and prolonged substance use.<sup>17</sup> The estimated prevalence of major depressive disorder in individuals with an SUD is 24% to 50%. Among adolescents, an SUD is also a risk factor for suicidal ideation, suicide attempts, and completed suicide.<sup>18-20</sup>

Anxiety disorders, especially social phobia, and posttraumatic stress disorder are common in individuals with SUD.

Adolescents with SUD should be carefully evaluated for comorbid psychiatric disorders and treated accordingly.

### Choosing an intervention

Less than 50% of a nationally representative sample of 345 addiction treatment programs serving adolescents and adults offer medications for treating OUD.<sup>31</sup> Even in programs that offer pharmacotherapy, medications are significantly underutilized. Fewer than 30% of patients in addiction treatment programs receive medication, compared with 74% of patients receiving treatment for other mental health disorders.<sup>31</sup> A review of the literature on adolescent treatment outcomes concluded that any form of treatment (psychotherapy with or without medication) is better than no treatment.<sup>32,33</sup>

**Psychotherapy** may be used to treat OUD in adolescents. Several family therapies have been studied and are considered as critical psychotherapeutic interventions for treating SUDs, including structural family treatment and functional family therapy approaches.<sup>34</sup> An integrated behavioral and family therapy model is also recommended for adolescent patients with SUDs. Cognitive distortions and use

### Clinical Point

**An adolescent's readiness and motivation to achieve and maintain abstinence are crucial**



## Opioid use disorder in adolescents

### Clinical Point

An integrated behavioral and family therapy model is recommended for adolescents with substance use disorders

Figure

## The CRAFFT Interview (Version 2.1) (Orally administered by clinician)

PART A: During past 12 months, on how many days did you

	QUESTIONS	No. of days
1.	Drink more than few sips of wine, beer or any drink containing alcohol? (Put "0" if none)	
2.	Use any marijuana or synthetic marijuana? (Put "0" if none)	
3.	Use anything else to get high? (like other illegal drugs, prescription or over the counter drugs, and things that you sniff, huff or vape)? (Put "0" if none)	

PART B: Did the patient answer "0" for all questions in PART A. If **Yes**, then ask **CAR** question only and stop. If **No**, then **ask all 6 CRAFFT questions below.**

	QUESTIONS	YES	NO
C	Have you ever ridden in a <b>CAR</b> , driven by someone (including yourself), who was "high" or had been using alcohol or drugs?		
R	Do you ever use alcohol or drugs to <b>RELAX</b> , feel better about yourself, or to fit in?		
A	Do you ever use alcohol or drugs when you are by yourself, or <b>ALONE</b> ?		
F	Do you ever <b>FORGET</b> things you did while using alcohol or drugs?		
F	Do your <b>FAMILY</b> or <b>FRIENDS</b> ever tell you that you should cut down on your drinking alcohol or drug use?		
T	Have you ever gotten into <b>TROUBLE</b> while you were using alcohol or drugs?		

2 and more "Yes" suggest a serious problem and need for further assessment.

NOTICE TO CLINIC STAFF AND MEDICAL RECORDS: The information on this page is protected by special federal confidentiality rules (42 CFR Part 2), which prohibit disclosure of this information unless authorized by specific written consent. A general authorization for release of medical information is NOT sufficient.

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of self-deprecatory statements are common among adolescents.<sup>35</sup> Therefore, using approaches of cognitive-behavioral therapy (CBT), or CBT plus motivational enhancement therapy, also might be effective for this population.<sup>36</sup> The adolescent community reinforcement approach (A-CRA) is a behavioral treatment designed to help adolescents and their families learn how to lead a healthy and happy life without the use of drugs or alcohol by increasing access to social, familial, and educational/vocational reinforcers. Support groups and peer and family support should be encouraged as adjuncts to other interventions. In some areas, sober housing options for adolescents are also available.

**Harm-reduction strategies.** Although the primary goal of treatment for adolescents with OUD is to achieve and maintain abstinence from opioid use, implicit and explicit goals can be set. Short-term implicit goals may include harm-reduction strategies that emphasize decreasing the duration, frequency, and amount of substance use and limiting the chances of adverse effects,

while the long-term explicit goal should be abstinence from opioid use.

Naloxone nasal spray is used as a harm-reduction strategy. It is an FDA-approved formulation that can reverse the effects of unintentional opioid overdoses and potentially prevent death from respiratory depression.<sup>37</sup> Other harm-reduction strategies include needle exchange programs, which provide sterile needles to individuals who inject drugs in an effort to prevent or reduce the transmission of human immunodeficiency virus and other bloodborne viruses that can be spread via shared injection equipment. Fentanyl testing strips allow opioid users to test for the presence fentanyl and fentanyl analogs in the unregulated "street" opioid supply.

**Pharmacologic interventions.** Because there is limited empirical evidence on the efficacy of medication-assisted treatment (MAT) for adolescents with OUD, clinicians need to rely on evidence from research and experience with adults. Unfortunately, MAT is offered to adolescents considerably less often than it is to adults. Feder et al<sup>38</sup> reported that only 2.4%

of adolescents received MAT for heroin use and only 0.4% of adolescents received MAT for prescription opioid use, compared with 26.3% and 12% of adults, respectively.

**Detoxification.** Medications available for detoxification from opioids include opiates (such as methadone or buprenorphine) and clonidine (a central sympathomimetic). If the patient has used heroin for a short period (<1 year) and has no history of detoxification, consider a detoxification strategy with a longer-term taper (90 to 180 days) to allow for stabilization.

**Maintenance treatment.** Consider maintenance treatment for adolescents with a history of long-term opioid use and at least 2 prior short-term detoxification attempts or non-pharmacotherapy-based treatment within 12 months. Be sure to receive consent from a legal guardian and the patient. Maintenance treatment is usually recommended to continue for 1 to 6 years. Maintenance programs with longer durations have shown higher rates of abstinence, improved engagement, and retention in treatment.<sup>39</sup>

According to guidelines from the American Society of Addiction Medicine (ASAM), adolescents age >16 should be offered MAT; the first-line treatment is buprenorphine.<sup>40</sup> To avoid risks of abuse and diversion, a combination of buprenorphine/naloxone may be administered.

### Maintenance with buprenorphine

In order to prescribe and dispense buprenorphine, clinicians need to obtain a waiver from the Substance Abuse and Mental Health Services Administration. Before initiating buprenorphine, consider the type of opioid the individual used (short- or long-acting), the severity of the OUD, and the last reported use. The 3 phases of buprenorphine treatment are<sup>41</sup>:

- **Induction phase.** Buprenorphine can be initiated at 2 to 4 mg/d. Some patients may require up to 8 mg/d on the first day, which can be administered in divided doses.<sup>42</sup> Evaluate and monitor patients carefully during the first few hours after the first dose. Patients should be in early withdrawal; otherwise, the buprenorphine might precipitate withdrawal. The induc-

#### Box 2

### Limiting adolescents' access to opioids

**M**any adolescents obtain opioids for recreational use from medications that were legitimately prescribed to family or friends. Both clinicians and parents/guardians can take steps to reduce or prevent this type of diversion

**Health care facilities.** Regulating the number of pills dispensed to patients is crucial. It is highly recommended to prescribe only the minimal number of opioids necessary. In most cases, 3 to 7 days' worth of opioids at a time might be sufficient, especially after surgical procedures.

**Home.** Families can limit adolescents' access to prescription opioids in the home by keeping all medications in a lock box.

**Proper disposal.** Various entities offer locations for patients to drop off their unused opioids and other medications for safe disposal. These include police or fire departments and retail pharmacies. The US Drug Enforcement Administration sponsors a National Prescription Drug Take Back Day; see [https://www.dea.gov/diversion/usdoj.gov/drug\\_disposal/takeback/index.html](https://www.dea.gov/diversion/usdoj.gov/drug_disposal/takeback/index.html). The FDA also offers information on where and how to dispose of unused medicines at <https://www.fda.gov/consumers/consumer-updates/where-and-how-dispose-unused-medicines>.

tion phase can be completed in 2 to 4 days by titrating the dose so that the signs and symptoms of opioid withdrawal are minimal, and the patient is able to continue treatment. It may be helpful to have the patient's legal guardian nearby in case the patient does not tolerate the medication or experiences withdrawal. The initial target dose for buprenorphine is approximately 12 to 16 mg/d.

- **Stabilization phase.** Patients no longer experience withdrawal symptoms and no longer have cravings. This phase can last 6 to 8 weeks. During this phase, patients should be seen weekly and doses should be adjusted if necessary. As a partial mu agonist, buprenorphine does not activate mu receptors fully and reaches a ceiling effect. Hence, doses >24 mg/d have limited added agonist properties.

- **Maintenance phase.** Because discontinuation of buprenorphine is associated with high relapse rates, patients may need to be maintained long-term on their stabilization

### Clinical Point

ASAM guidelines recommend that adolescents age >16 should be offered MAT; the first-line treatment is buprenorphine



## Opioid use disorder in adolescents

### Clinical Point

Before initiating buprenorphine, consider the type of opioid the patient used, the severity of the OUD, and the last reported use

### Related Resource

• Patkar AA, Weisler RH. Opioid abuse and overdose: Keep your patients safe. *Current Psychiatry*. 2017;16(8):8-12,14-16.

#### Drug Brand Names

Buprenorphine • Subutex, Sublocade	Naloxone • Narcan
Buprenorphine/naloxone • Suboxone	Oxycodone • OxyContin
Clonidine • Clorpres	Sertraline • Zoloft
Methadone • Methadose	Tramadol • Ultram
	Trazodone • Desyrel, Olepro

dose, and for some patients, the length of time could be indefinite.<sup>39</sup> During this phase, patients continue to undergo follow-up, but do so less frequently.

**Methadone maintenance** is generally not recommended for individuals age <18.

### Preventing opioid diversion

Prescription medications that are kept in the home are a substantial source of opioids for adolescents. In 2014, 56% of 12th graders who did not need medications for medical purposes were able to acquire them from their friends or relatives; 36% of 12th graders used their own prescriptions.<sup>21</sup> Limiting adolescents' access to prescription opioids is the first line of prevention. *Box 2 (page 19)* describes interventions and strategies to limit adolescents' access to opioids.

#### CASE CONTINUED

Ms. L is initially prescribed, clonidine, 0.1 mg every 6 hours, to address opioid withdrawal. Clonidine is then tapered and maintained at 0.1 mg twice a day for irritability and impulse control. She is also prescribed sertraline, 100 mg/d,

for depression and anxiety, and trazodone, 75 mg as needed at night, to assist with sleep.

Following inpatient hospitalization, during 12 weeks of partial hospital treatment, Ms. L participates in individual psychotherapy sessions 5 days/week; family therapy sessions once a week; and experiential therapy along with group sessions with other peers. She undergoes medication evaluations and adjustments on a weekly basis. Ms. L is now working at a store and is pursuing a high school equivalency certificate. She manages to avoid high-risk behaviors, although she reports having occasional cravings. Ms. L is actively involved in Narcotics Anonymous and has a sponsor. She has reconciled with her mother and moved back home, so she can stay away from her former acquaintances who are still using.

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continued on page 21

## Bottom Line

Adolescents with opioid use disorder can benefit from an individualized treatment plan that includes psychosocial interventions, pharmacotherapy, or a combination of the two. Treatment planning should include the adolescent and his/her family to ensure they are able to verbalize their expectations. Treatment should focus on interventions that strengthen interpersonal relationships and assist with rehabilitation. Ongoing follow-up care is necessary for maintaining abstinence.

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## Clinical Point

**Families can limit adolescents' access to prescription opioids in the home by keeping all medications in a lock box**