AU InforMed

Volume 24 Number 5 (Issue 357) *Friday, July 24, 2026*

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Key Inforbits

- Signs of illicit substance use and abuse
- Signs of different overdoses
- Naloxone standing order and administration
- Naloxone alternatives
- Pharmacists' role in prevention
- Resources for help

Fig 1. Overdose Awareness Month. Generated with AI at www.chatgpt.com

Overdose Awareness Month:

August is overdose awareness month and this provides us a chance to acknowledge and discuss this epidemic impacting our communities. Pharmacists should have a firm understanding of how overdoses occur, signs that a patient is at risk of an overdose, and steps to take in the event an overdose occurs.

Recognizing Signs of Illicit Substance Use and Abuse:

In the United States, about 48.4 million people ages 12 or older had a past-year substance use disorder reported in 2024.[1] An unfortunate reality is that overdose deaths are one of the leading causes of death in the United States.[1] The vast majority of these deaths are preventable. Knowing the warning signs that someone is abusing substances can help pharmacists recognize a problem early and connect patients with the appropriate resources. Clear understanding of these signs and the correct steps to take are essential to saving lives.

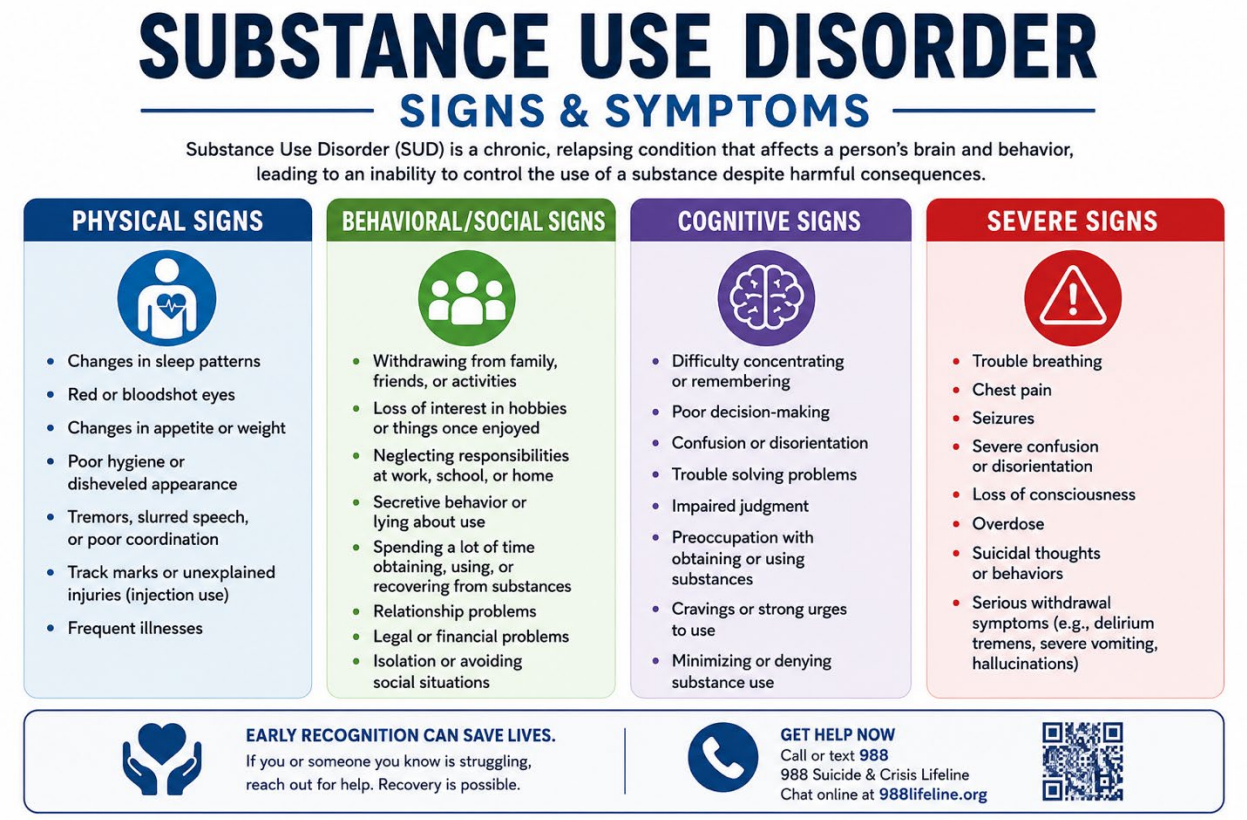

Fig 2. Signs & Symptoms of SUD. Created with AI at www.chatgpt.com

Physical Signs[2]

Different substances produce different physical effects, but common warning signs include:

- Changes in eyes: Unusually dilated or constricted (pinpoint) pupils
- Changes in appearance: Unexplained weight loss, poor hygiene, or looking unusually tired or run-down
- Sleep disturbances: Sleeping much more or much less than usual
- Appetite changes: Significant loss of appetite or unusual eating patterns
- Nasal problems: Frequent sniffling, nosebleeds, or a runny nose (common with snorted substances)
- Skin changes: Unexplained marks, bruises, or "track marks" on the arms
- Dental problems: Rapid tooth decay, gum disease, or mouth sores (especially with methamphetamine use)
- Other signs: Slurred speech, unsteady gait, tremors, frequent nausea, or unexplained sweating and chills

Behavioral and Emotional Signs[2]

Changes in behavior are often the earliest and most noticeable indicators:

- Withdrawal from family, friends, and activities once enjoyed
- Declining performance at work or school
- Unexplained absences, secrecy, or lying about whereabouts
- Sudden mood swings - irritability, agitation, anxiety, or depression
- Loss of motivation or interest in hobbies
- Risky or reckless behavior, including driving under the influence
- Borrowing or stealing money, or unexplained financial problems
- Changes in social circles - spending time with new, unfamiliar groups

Signs of a Developing Problem[2]
A substance use disorder goes beyond occasional use. Key patterns to note include:

- Using more of a substance, or using it more often, than intended
- Repeated unsuccessful attempts to cut down or stop
- Spending a great deal of time obtaining, using, or recovering from the substance
- Continuing to use despite relationship, work, or health problems
- Needing more of the substance to get the same effect (tolerance)
- Experiencing physical discomfort or emotional distress when not using (withdrawal)

Signs of Different Types of Overdoses

There are numerous different drugs and substances that can be abused and lead to overdose. While there are many signs of overdoses that are similar between different drug classes, there are some landmark signs that can help to distinguish one type of overdose from another.

Opioid Overdoses: Overdoses caused by taking excessive amounts of opioids account for a large proportion of overdose deaths.[2,3] These types of overdoses can be caused by natural, synthetic, or semi-synthetic opioids.[3] While the overdose potential is not equal between all drugs in these classes, the way they present once an overdose occurs is nearly the same for all drugs in the class. Signs of an opioid overdose are as follows:

- Unconsciousness
- Respiratory depression
- Gurgling or snoring
- **Miosis (pinpoint pupils)**[4]
- Skin discoloration (pale/gray)
- Cold and clammy skin

Stimulant Overdoses: Overdoses caused by stimulants can happen due to excessive consumption of stimulants alone or when stimulants are consumed in conjunction with other substances. Medications that increase overdose potential when taken alongside one of these stimulants are primarily alcohol and opioids. Signs of a stimulant overdose are as follows:

- Unconsciousness
- Respiratory distress
- Significant confusion or anxiety
- Tremors or seizures
- Elevated body temperature
- Profuse sweating
- Muscle rigidity
- **Dilated pupils**[4]

Depressant Overdoses: Overdoses can be caused by depressants like benzodiazepines, barbiturates, and alcohol.[5] Opioids also fall into this category but were included in their own category due to their prevalence. Pinpoint pupils are not a class-wide side effect seen consistently in patients experiencing an overdose on a depressant that is not an opioid. If someone is showing symptoms consistent with the list below and they have normal pupils, it can be reasonably inferred that they are overdosing on a depressant which is not an opioid. Signs of a depressant overdose are as follows:

- Unconsciousness
- Extreme fatigue
- Respiratory depression/labored breathing
- Slowed heart rate
- Low blood pressure
- Lack of balance

Antipsychotic Overdoses: Patients who take antipsychotics are at an elevated risk of experiencing an overdose. Due to the medical conditions in patients who take antipsychotics, they should be monitored closely for overdose symptoms. The main concern with antipsychotics comes when they are taken concurrently with other medications that elevate the overdose potential such as alcohol, opioids, and antidepressants. Symptoms of an antipsychotic overdose are as follows:

- Agitation
- Delirium
- Sedation
- Involuntary muscle movements
- Hallucinations
- Dilated pupils
- Elevated heart rate
- Paranoia

Antidepressant Overdoses: Overdoses on antidepressant medications alone are uncommon. The risk comes primarily when used alongside opioids, prescription painkillers, sedatives, tranquilizers, and alcohol. There is also some risk associated with over-the-counter supplements and commonly used medications used to treat colds. Signs of an antidepressant overdose are as follows:

Table 1: Signs of Antidepressant Overdose	
Mild Overdose	**Severe Overdose**
- Tachycardia	- Tachycardia
- Diarrhea	- Shaking & seizures
- High blood pressure	- Hallucinations
- Hallucinations	- Low blood pressure
- Profuse sweating	- Trouble breathing
- Nausea & vomiting	- Cardiac arrest
- Loss of coordination	- Coma

Opioid Reversal for Overdose Prevention Standing Order

In September 2023, the state of Alabama enacted a standing order permitting the dispensing of naloxone hydrochloride and nalmefene over-the-counter.[6] These two agents are opioid antagonists used for the indication of opioid overdose reversal. The standing order states that any person may purchase naloxone over the counter. The wording of the standing order is clear that any person can purchase naloxone OTC if they want it to assist a person at risk of developing an opioid-related overdose. Since the availability of OTC naloxone, there has been a notable decline in drug overdose deaths in Alabama. While the widespread availability of naloxone is not the sole reason for this decline, this standing order certainly played a role.[6]

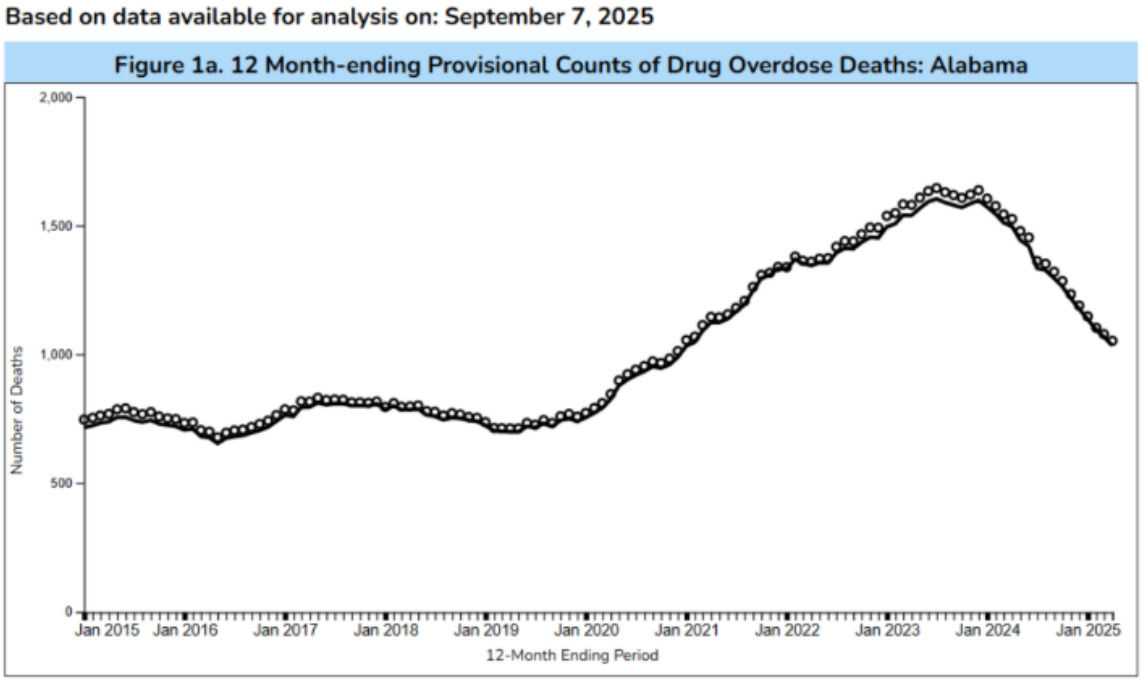

Fig 3. Alabama Drug Overdose Trend Graph; Accessed via Alabama Opioid Overdose and Addiction Council 2025 Report on Alabama.gov

To keep the downward trend of opioid overdose deaths on its current trajectory, much more work is still needed. Prescribing naloxone is not sufficient to help stem the opioid crisis. Informing new patients about

this product, making sure they understand how this product is used, and educating them about any misconceptions that may impact their use of naloxone.

Nalmefene: What You Need to Know About the Naloxone Alternative

Nalmefene (brand names include Zurnai and Opvee) is an opioid antagonist, a medication that blocks opioid receptors in the brain to rapidly reverse the dangerous effects of opioid drugs, including respiratory depression, sedation, and low blood pressure.[9] Available as an injection or nasal spray, nalmefene has no opioid effects of its own, is not addictive, and is not a controlled substance. It works by competing with opioids for receptor binding sites, primarily blocking mu (μ) receptors responsible for sedation and slowed breathing, as well as delta (δ) receptors. It also weakly activates kappa (κ) receptors, which may help reduce alcohol cravings. Onset of action is typically within 2 to 5 minutes.

The most important difference between nalmefene and naloxone is duration of action. Nalmefene has a plasma half-life of approximately 11 hours compared to only 60 to 90 minutes for naloxone, and its effects on brain opioid receptors last roughly 29 hours versus about 2 hours for naloxone.[10] This makes nalmefene particularly relevant in overdoses involving long-acting synthetic opioids like fentanyl, where naloxone may wear off and allow symptoms to return. However, if nalmefene triggers withdrawal in an opioid-dependent person, those symptoms may be far more prolonged and severe than with naloxone.

Nalmefene is FDA-approved for the emergency treatment of known or suspected opioid overdose and can also be used to reverse opioid effects after surgery. In the European Union, it is additionally approved to help reduce alcohol consumption in adults with alcohol dependence. Caution is warranted in opioid-dependent individuals, patients on buprenorphine (whose high receptor affinity may limit reversal), and those with heart disease, as abrupt opioid reversal can cause serious cardiovascular events. Major medical toxicology organizations currently recommend that nalmefene should not replace naloxone as the primary opioid antidote, as naloxone has decades of proven safety data while real-world comparative evidence for nalmefene remains limited.[11] Most experts view nalmefene as an additional option for specific clinical scenarios rather than a first-line replacement.

Fig 4. Opvee Nasal Spray. Accessed from www.opvee.com

Pharmacists' Role in Overdose Prevention

Pharmacists play a key role in overdose prevention because they are highly accessible and often the final healthcare professionals to review a medication before dispensing. They can identify excessive doses, duplicate therapy, drug interactions, and other overdose risk factors. [12,13] For patients receiving opioids, pharmacists should:

- Review the total daily morphine milligram milliequivalent (MME), while recognizing that mm-hmm is a clinical guide rather than an exact measure of overdose risk.
- Use additional caution and reassess therapy when opioid dosage reaches or exceeds 50 MMM per day
- Consider opioid tolerance, recent dose changes, concurrent benzodiazepines or other central nervous system depressants, previous overdose, substance use history, and relevant medical conditions. [14]

- Provide naloxone education and access, teach overdose recognition and emergency response, and promote safe medication storage and disposal. [12-15]
- Review the prescription drug monitoring program (PDMP) for overlapping prescriptions, multiple prescribers or pharmacies, and high-risk medication combinations. [14,16]
- Discuss unexpected PDMP findings nonjudgmentally and coordinate with the patient and prescriber rather than using the information alone to deny treatment or label misuse.[14,16]

Through medication review, patient counseling, PDMP assessment, naloxone access, and collaboration with other healthcare professionals pharmacists are essential members of the overdose prevention team.[12,13]

Fig 5. Pharmacist Counseling Graphic.
Accessed from: PharmacyTimes.com

Resources for Help: Substance Abuse & Overdose

For Pharmacists and Technicians

- **SAMHSA:** Provider toolkits, clinical guidance, training materials, and treatment resources
  samhsa.gov | 1-800-662-4357
- **CDC Opioid Prescribing Guidance:** Recommendations for safer opioid prescribing, dispensing, risk assessment, and naloxone use
  cdc.gov/opioids
- **Overdose-Reversal Training:** Naloxone and other opioid-reversal training may be available through APhA, state pharmacy organizations, and boards of pharmacy.
- **FDA Opioid Analgesic REMS:** Education on opioid safety, patient counseling, overdose prevention, and medication disposal
  fda.gov
- **Prescription Drug Monitoring Program:** Use your state PDMP to review controlled-substance histories and identify potentially high-risk medication combinations.

For Patients and Families

- **SAMHSA National Helpline:** Free, confidential treatment information and referrals in English and Spanish
  1-800-662-4357 — Available 24/7
- **988 Suicide & Crisis Lifeline:** Call or text **988** for immediate mental health or substance-use crisis support.
- **FindTreatment.gov:** Search for local mental health and substance-use treatment services.
- **Narcotics Anonymous:** Find recovery meetings at **na.org**.
- **Al-Anon and Nar-Anon:** Support for families and loved ones
  al-anon.org | nar-anon.org
- **Naloxone Access:** Naloxone is available over the counter and through many pharmacies. Ask a pharmacist how to obtain and use it.
- **Medical Emergency:** If someone may be experiencing an overdose, administer naloxone when available and call **911 immediately**.

The last "dose" …

"All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing poison."

-Paracelsus (1493 to 1541, German-Swiss physician; father of toxicology)

https://www.aaas.org/membership/scientia/paracelsus-man-who-brought-chemistry-medicine

So, know the dose, know the risks, and keep naloxone close!

References:

1. SAMHSA: 2024 National Survey on Drug Use and Health (NSDUH) Releases [Internet]. U.S. Department of Health & Human Services. Rockville, MD: Substance Abuse and Mental Health Services Administration. Updated 2025 Sept 08 [Accessed 2026 Jul 16]. Available from: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health/national-releases/2024
2. Substance Use Disorder (SUD) [Internet], 2024 Sept 09. Cleveland, Ohio: Cleveland Clinic. [Accessed 2026 Jul 16]; [about 6 screens]. Available from: https://my.clevelandclinic.org/health/diseases/16652-drug-addiction-substance-use-disorder-sud
3. International Overdose Awareness Day. Overdose basics. OverdoseDay.com. [Internet] [Published 2021] [Accessed 2026 Jul 14] Available from: https://www.overdoseday.com/overdose-basics/
4. Pathway Recovery's Editorial Staff. What Drugs Lead to Pinpoint Pupils (Miosis) Drug Symptoms? [Internet] [Accessed 2026 Jul 14]. Available from:https://pathwaysrecovery.com/blog/drug-symptoms-pinpoint-pupils/
5. Burgess L. Antidepressant Overdose Symptoms and Treatment [Internet]. [Updated 2025 Nov 27] [Accessed 2026 Jul 14]. Available from https://www.medicalnewstoday.com/articles/325495#emergency-treatment
6. Metzger D. 2025 Annual Report. Alabama Opioid Overdose and Addiction Counsel. [Published 2025 Dec 31]. [Accessed 2026 Jul 14]. Available from: https://mh.alabama.gov/wp-content/uploads/2026/01/Alabama-Opioid-Overdose-and-Addiction-Council-Report-2025.pdf
7. Jordan MR, Patel P, Morrisonponce D. Naloxone. [Updated 2024 May 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; [Updated :2026 Jan] [Accessed 2026 Jul 14]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441910/
8. Adapt Pharma Incorporated Editorial Staff. Quick Start Guide ; Opioid Overdose Response Instructions. Adapt Pharma Inc. Published 2015. [Accessed 2026 Jul 14]. Available from: https://www.dhs.state.il.us/OneNetLibrary/27896/documents/19DOPP/NARCAN-Quick-Start-Guide.pdf
9. Nalmefene Hydrochloride injection, solution [package insert]. San Diego, CA: PCI San Diego, Inc. May 2026 [Accessed 2026 Jul 17]. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3abfbffc-9e52-4fc6-ae92-6e0a97f4afe7

10. Cipriano A, Apseloff G, Kapil RP, He E, Shet M, Harris SC. Time course of reversal of fentanyl-induced respiratory depression in healthy subjects by intramuscular nalmefene and intramuscular and intranasal naloxone. J Clin Pharmacol [Internet]. 2025 Feb [Accessed 2026 Jul 16];65(2):206-216. Available from: https://accp1.onlinelibrary.wiley.com/share/IUNPIZMQNRWIIKGSWVNK?target=10.1002/jcph.6132
11. Stolbach AI, Mazer-Amirshahi ME, Nelson LS, Cole JB. American College of Medical Toxicology and the American Academy of Clinical Toxicology position statement: nalmefene should not replace naloxone as the primary opioid antidote at this time. Clin Toxicol (Phila) [Internet]. 2023 Nov [Accessed 2026 Jul 16] ;61(11):952-955. Available from: https://doi.org/10.1080/15563650.2023.2283391
12. Bailey AM, Wermeling DP. Naloxone for opioid overdose prevention: pharmacists' role in community-based practice settings. Ann Pharmacother. 2014 [Accessed 2026 Jul 17] ;48(5):601-606. doi:10.1177/1060028014523730.
13. Rawal S, Osae SP, Cobran EK, Albert A, Young HN. Pharmacists' naloxone services beyond community pharmacy settings: a systematic review. Res Social Adm Pharm. 2023 [Accessed 2026 Jul 16] ;19(2):243-265. doi:10.1016/j.sapharm.2022.09.002.
14. Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC clinical practice guideline for prescribing opioids for pain, United States, 2022. MMWR Recomm Rep. 2022 [Accessed 2026 Jul 17];71(3):1-95. doi:10.15585/mmwr.rr7103a1.
15. Binswanger IA, Koester S, Mueller SR, et al. Naloxone co-dispensing with opioids: a cluster randomized pragmatic trial. J Gen Intern Med. 2022 [Accessed 2026 Jul 17];37(11):2624-2633. doi:10.1007/s11606-021-07174-6.
16. Centers for Disease Control and Prevention. Prescription drug monitoring programs: what clinicians need to know. [Updated 2024 May 6]. [Accessed 2026 Jul 19]. Available from: https://www.cdc.gov/overdose-prevention/hcp/clinical-guidance/prescription-drug-monitoring-programs.html
17. US Food and Drug Administration. FDA updates prescribing information for all opioid pain medicines to provide additional guidance for safe use. Published April 13, 2023. [Accessed 2026 Jul 19]. Available from: https://www.fda.gov/drugs/drug-safety-communications/fda-updates-prescribing-information-all-opioid-pain-medicines-provide-additional-guidance-safe-use

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