

Xylazine

Xylazine, a non-opioid veterinary tranquilizer not approved for human use, has been linked to an increasing number of overdose deaths nationwide in the evolving drug addiction and overdose crisis.¹ Studies show people exposed to xylazine often knowingly or unknowingly used it in combination with other drugs, particularly illicit [fentanyl](#).¹⁻⁴

While the full national scope of overdose deaths involving xylazine is unknown, research shows overdose deaths linked to xylazine have spread westward across the United States, with the largest impact in the Northeast. From 2015 to 2020, the percentage of all drug overdose deaths involving xylazine increased from 2% to 26% in Philadelphia. Xylazine was involved in 19% of all drug overdose deaths in Maryland in 2021 and 10% in Connecticut in 2020.¹

Research has shown xylazine is often added to illicit opioids, including fentanyl,³ and people report using xylazine-containing fentanyl to lengthen its euphoric effects.¹ Most overdose deaths linked to both xylazine and fentanyl also involved additional substances, including cocaine, heroin, benzodiazepines, alcohol, gabapentin,³ methadone, and prescription opioids.⁷

Also known as “tranq,”⁵ xylazine is a central nervous system depressant that can cause drowsiness and amnesia and slow breathing, heart rate, and blood pressure to dangerously low levels.^{6,7} Taking opioids in combination with xylazine and other central nervous system depressants—like alcohol or [benzodiazepines](#)—increases the risk of life-threatening overdose.^{1,8} Learn more about [the effects of taking more than one type of drug \(polysubstance use\)](#) from the U.S. Centers for Disease Control and Prevention (CDC).

In the event of a suspected xylazine overdose, experts recommend giving the opioid overdose reversal medication [naloxone](#) because xylazine is frequently combined with opioids.⁹ However, because xylazine is not an opioid, naloxone does not address the impact of xylazine on breathing.^{1,3,8} Because of this, experts are concerned that a growing prevalence of xylazine in the illicit opioid supply may render naloxone less effective for some overdoses.^{1,2,10} Emergency medical services should always be alerted to a suspected overdose. Learn more about [stopping overdose from the CDC](#).

Repeated xylazine use is also associated with skin ulcers, abscesses, and related complications.^{1,4,11} People report using xylazine or xylazine-containing drugs by injecting, snorting, swallowing, or inhaling.^{3,4}

NIDA-supported research is underway to continue to elucidate emerging drug use patterns and changes to the illicit drug supply across the United States, including the use of xylazine, synthetic opioids, and changes in patterns of polydrug use.

References

1. Friedman J, Montero F, Bourgois P, et al. [Xylazine spreads across the US: A growing component of the increasingly synthetic and polysubstance overdose crisis](#). *Drug Alcohol Depend.* 2022;233:109380. doi:10.1016/j.drugalcdep.2022.109380
2. Johnson J, Pizzicato L, Johnson C, Viner K. [Increasing presence of xylazine in heroin and/or fentanyl deaths, Philadelphia, Pennsylvania, 2010-2019](#). *Inj Prev J Int Soc Child Adolesc Inj Prev.* 2021;27(4):395-398. doi:10.1136/injuryprev-2020-043968
3. Thangada S, Clinton HA, Ali S, et al. [Notes from the field: Xylazine, a veterinary tranquilizer, identified as an emerging novel substance in drug overdose deaths - Connecticut, 2019-2020](#). *MMWR Morb Mortal Wkly Rep.* 2021;70(37):1303-1304. doi:10.15585/mmwr.mm7037a5
4. Reyes JC, Negrón JL, Colón HM, et al. [The emerging of xylazine as a new drug of abuse and its health consequences among drug users in Puerto Rico](#). *J Urban Health Bull N Y Acad Med.* 2012;89(3):519-526. doi:10.1007/s11524-011-9662-6
5. Johnson J, Pizzicato L, Johnson C, Viner K. [Increasing presence of xylazine in heroin and/or fentanyl deaths, Philadelphia, Pennsylvania, 2010-2019](#). *Inj Prev.* 2021;27(4):395-398. doi:10.1136/injuryprev-2020-043968
6. Capraro AJ, Wiley JF, Tucker JR. [Severe intoxication from xylazine inhalation](#). *Pediatr Emerg Care.* 2001;17(6):447-448. doi:10.1097/00006565-200112000-00012
7. Ruiz-Colón K, Chavez-Arias C, Díaz-Alcalá JE, Martínez MA. [Xylazine intoxication in humans and its importance as an emerging adulterant in abused drugs: A comprehensive review of the literature](#). *Forensic Sci Int.* 2014;240:1-8. doi:10.1016/j.forsciint.2014.03.015
8. Cho J, Spence MM, Niu F, Hui RL, Gray P, Steinberg S. [Risk of Overdose with Exposure to Prescription Opioids, Benzodiazepines, and Non-benzodiazepine Sedative-Hypnotics in Adults: a Retrospective Cohort Study](#). *J Gen Intern Med.* 2020;35(3):696-703. doi:10.1007/s11606-019-05545-y
9. Kariisa M, Patel, P, Smith H, Bitting J. [Notes from the field: Xylazine detection and involvement in drug overdose deaths — United States, 2019](#). *MMWR Morb Mortal Wkly Rep.* 2021;70(37):1300-1302. doi:10.15585/mmwr.mm7037a4
10. Nunez J, DeJoseph ME, Gill JR. [Xylazine, a veterinary tranquilizer, detected in 42 accidental fentanyl intoxication deaths](#). *Am J Forensic Med Pathol.* 2021;42(1):9-11. doi:10.1097/PAF.0000000000000622
11. Torruella RA. [Xylazine \(veterinary sedative\) use in Puerto Rico](#). *Subst Abuse Treat Prev Policy.* 2011;6(1):7. doi:10.1186/1747-597X-6-7