

Xylazine

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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 Pennsylvania. 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.

In the event of a suspected xylazine overdose, experts recommend giving the opioid overdose reversal medica-

tion 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.

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. (Ref. 12., Reproduced from National Institute on Drug Abuse)

Metabolism and Analysis

The veterinarian pharmaceutical xylazine is formulated in various concentrations of 20, 100 and 300 mg/ml. This is, however, not the primary route of ingestion in humans. Street mixtures of opioids and fentanyl that are cut with xylazine are sold to addicts seeking use of illicit opioids. The concentration of target opioid is not known to the user because of the dilution effect of the cutting agent. Further, the cutting agent is itself a drug with synergistic qualities. This leads to unpredictable doses and often results in the demise of the user.

There are two primary sources of data for the analysis of human samples that are found to be positive for xylazine. These two labs are the State Forensic labs that analyze samples on affected or erratic drivers arrested for driving under the influence

of drugs (DUID) and Coroner's Offices laboratories documented cause of death (MDI) due to drug overdose. The result from these two sources were evaluated for the concentration of xylazine for 2.5 years with the results of 2.8% positive for xylazine for all the DUID cases with the range of values of 5.1-450 ng/mL. For the medical examiner there was 2.1% positive for xylazine with a range of values of 5.0-11,000ng/mL.

San Diego Reference Laboratory has developed a HPLC/MS/MS method for xylazine in urine samples. There are no automated screening immunoassay methods available. This would be a specialty test and must be ordered on each individual suspected specimen.

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