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“They’re not waking up”: Xylazine Identification is Paramount to Public Health

John Wainwright

12/14/2023

The [opioid](#) epidemic in the United States has resulted in devastating consequences, with over 645,000 Americans losing their lives from opioid-related overdoses since 1999 (CDC, 2023), affecting countless families and communities. Synthetic opioids, particularly fentanyl, play a significant role in the escalation of opioid overdoses. In recent years, Xylazine has emerged as a notable substance found among other additives in opioid mixtures (DEA, 2023). Xylazine, colloquially known as “Tranq,” short for tranquilizer, is an alpha-2 adrenergic agonist that can cause sedation, analgesia, hypotension, and muscle relaxation (Alexander, 2022). Xylazine can cause skin lesions typically presenting as ulcerations on the extremities, hence its other nickname, “the zombie drug,” (Morphet 2023). Xylazine is most often injected but can also be snorted, smoked, inhaled, or taken orally. When combined with opioids, xylazine increases the potential for fatal respiratory depression. In addition to the synergistic respiratory depression when combining opioids and xylazine, the rescue drug for opioid overdoses, naloxone, better known as Narcan®, a mu-opioid antagonist, does not act on the alpha-2 receptors; thus, xylazine is not counteracted by naloxone. Because opioid overdoses are traditionally more common, responders may be unaware of xylazine exposure and may delay respiratory support in exchange for repeated yet unsuccessful doses of naloxone. Worse, there is no human-tested antidote for xylazine-related overdoses (Alexander, 2022). Healthcare providers tasked with treating those who overdose on xylazine have little to offer except for supportive care and possibly mechanical ventilation via intubation if necessary. A 2022 [study](#) highlighted a serious lack of surveillance

testing and, therefore, a scarcity of information concerning xylazine. Until recently, testing for xylazine required gas chromatography-mass spectrometry, which is time-consuming, costly, and unrealistic in an emergency medicine setting (Alexander, 2022).

In October of 2022, the Center for Forensic Science Research & Education [suggested](#) the use of xylazine test strips to check for contaminated drugs. The test strips do not require extensive training or sample preparation, and thus they could be disseminated to the public quickly. Users or health officials can dissolve their samples in a few drops of water and add them to the test strip. Results are read in as little as two to four minutes. The test strip then produces one line in the control area in the presence of xylazine and two lines, one in the control and one in the test area, for negative samples. The testing process looks and feels similar to point-of-care and at-home COVID testing.

The limit of detection (LOD) is advertised to be 650ng/mL (Shuda, 2022). For context, the dosages found in opioid mixtures in a West Virginia review of xylazine-related deaths ranged from 5,000ng/mL to 210,000ng/mL (Sibbesen, 2022), well above the LOD. While instructions for the xylazine test strips indicated that the precise volume of 140uL should be added to the strip for testing, experimenting with various volumes ranging from 2-4 drops of a plastic pipette (66.2uL to 149.8uL, respectively) correctly revealed the presence of xylazine in all three cases (Shuda, 2022). This is important because it highlights the practicality of on-the-street use of xylazine test strips to prevent xylazine overdoses. One important caveat was that samples determined to have interfering drugs such as diphenhydramine, lidocaine, levamisole, MDMA, or methamphetamine may produce false positive results in the absence of xylazine (Shuda, 2022).

The need for tests is rapidly growing, as health officials expect the xylazine overdoses and abuse to increase. In [June](#) of 2023, the State of New York ordered 100,000 xylazine tests for both healthcare providers and the public as a harm reduction measure. During an interview with Dr. Chinazo Cunningham, commissioner of the Office of Addiction Services and Supports, she stressed the importance of people becoming educated on xylazine's impact in communities and how to utilize tools to check if xylazine is in the substance they are using (New York, 2023).

Today, a quick Google search of 'xylazine' yields article after article of tragedy and the sounding of alarms. The opioid epidemic continues to accelerate and has killed over 100,000 Americans in the last year, sparing no communities. A [New York Post](#) story from August of 2023 recounts another tragic loss of life. Irene Swartz, a New York City resident and fiancée of now-deceased Travis Eddy, illustrates, "There was no texting, talking to him, screaming at him... There was just a body on the floor... The love of my life, on the floor, because of a drug he decided to use was laced [with] xylazine... I told him several times, 'I don't want to find you, it will kill me if I lose you, but the addiction was so strong... he was gone'" (Morphet, 2023). To prevent more tragedies from occurring, it is imperative our health systems utilize tools to prevent xylazine-related overdose deaths, such as xylazine test strips, and we must fervently investigate antidotes to counteract the effects of xylazine.

The author has no conflicts to report.

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