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### **23. Quantitative xylazine and fentanyl concentrations following nonfatal opioid overdose from the Toxicology Investigators Consortium Drug Overdose Toxicology-Surveillance (DOTS) reporting program multicenter study**

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**Background:** Xylazine-adulterated fentanyl was deemed an emerging threat by the Office of National Drug Control Policy in April 2023. However, the impact of xylazine on fentanyl overdose has been difficult to describe due to limited human data in non-fatal overdose, the inability to measure the relative concentrations of each drug in patients suffering from overdose, differences in opioid tolerance, and redistribution depending on frequency of use. This study aims to describe xylazine and fentanyl concentrations and serious outcomes following nonfatal overdose reported to a toxicology-surveillance reporting program.

**Methods:** The Toxicology Investigators Consortium (ToxIC) Drug Overdose Toxicology-Surveillance (DOTS) Reporting Program (Food and Drug Administration Contract #75F40122D00028/ 75F40123F19002) prospectively enrolls patients 13 years and older who presented to 17 U.S. emergency departments following presumed nonfatal opioid or stimulant overdose. DOTS collects data from chart reviews and patient interviews, including demographic, clinical, and contextual information. The Center for Forensic Science Research and Education analyzes patients' blood samples for detection and quantitation of >1100 substances using liquid chromatography quadrupole time-of-flight mass

**Research Question:** What is the association of PRISM III and PIM3 scores with mortality and length of stay (LOS) among pediatric patients in the Pediatric Intensive Care Unit (PICU)?

**Results:** As of 14 March 2024, 293 patients presenting to participating EDs with severe or life-threatening overdose were enrolled with completed laboratory analyses. Of the 226 patients with fentanyl detected, 59 had xylazine; 31 patients had xylazine levels above the level of quantitation (1 ng/mL) while 28 patients had trace amounts of xylazine (<1 ng/mL). Among the patients with xylazine levels >1 ng/mL, the average age was 41 years (IQR 1/421) and 66% were male. After restricting analyses to only those with blood drawn within 4 hours of ED presentation, 23 patients had xylazine levels >1 ng/mL. Descriptive differences were noted in xylazine and fentanyl levels for all clinical outcomes; both xylazine and fentanyl levels were, on average, higher in the patients with more severe outcomes compared to those without these outcomes.

**Conclusion:** These preliminary data are the first to report fentanyl and xylazine concentrations following nonfatal opioid over-dose stratified by serious outcomes. In a sub-cohort of overdose patients exposed to both xylazine and fentanyl, higher concentrations were observed for patients with severe outcomes. However, future analyses should incorporate statistical testing and multivariable approaches as the patient enrollment in DOTS continues to grow.