

### 115. Synthetic cathinones among patients presenting to emergency departments with life-threatening or severe overdose

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**Background:** During recent years, various synthetic cathinones have been discovered in the drug supply. The objective of this study was to describe presentations involving synthetic cathinones, including concomitant substances involved and geographic distribution in patients presenting to emergency departments with severe or life-threatening opioid or stimulant overdose.

**Methods:** The Toxicology Investigators Consortium (ToxIC) Drug Overdose Toxicology Surveillance (DOTS) Reporting Program is an ongoing multicenter study consisting of 17 U.S. medical centers (Food and Drug Administration Contract #75F40122D00028/ 75F40123F19002). Patients 13 years and older presenting to the emergency department with a suspected severe or life-threatening opioid or stimulant overdose are approached for consent. Patient interviews and chart reviews are conducted. Blood is tested qualitatively using liquid chromatography (LC) quadrupole time-of-flight mass spectrometry (MS) and quantitative measurements using LC tandem quadrupole MS. The current analysis includes patients enrolled between April 2023 and March 2024 who had synthetic cathinones detected in their blood. Central/ site IRBs approved this study, and all patients provided informed consent.

**Results:** Among the 293 patients with completed laboratory analyses, 11 patients (0.3%) had synthetic cathinones detected in the blood. Four synthetic cathinones were found: dimethylpentylone (n 1/4 11), pentylone (n 1/4 8), eutylone (n 1/4 3) and n-cyclohexyl butylone (n 1/4 1). All patients were located at two hospitals in Washington, DC and Baltimore, MD. All patients had other analytes detected. Fentanyl was detected in five of these patients, and synthetic cannabinoids were detected in six. Five patients self-reported using synthetic cannabinoids, two marijuana, two opioids, one phencyclidine and one refused to answer. Based on the initial clinical presentation, eight patients presented with suspected opioid overdose (opioids only found in 4 of 8), two presented for “undifferentiated” overdose, and one presented with stimulant overdose. Ten of the eleven patients (91%) received naloxone prior to hospital arrival. Patients were between 30 and 69 years old (mean 42.4 years), and 73% were male. Of these eleven patients, five patients had synthetic cathinone quantitative levels above the level of quantitation (10ng/ mL). No patient required intubation, and only one patient was admitted to the intensive care unit.

**Conclusion:** Synthetic cathinones may be detected in a small percentage of patients with suspected opioid overdose, without the patient's knowledge of such co-exposures. Further study is required to understand the unique contribution of synthetic cathinones to these polydrug overdose clinical presentations.