

Presented at the ACMT Annual Scientific Meeting 2023 – San Diego, CA

Published in J Med Toxicol 2023;19(2):119-120.

## **121. Geographical Differences in Opioid, Stimulant, and Benzodiazepine Use Among Suspected Opioid Overdoses Presenting to the Emergency Department**

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**Background:** While previous research has examined geographical differences in opioid use, little is known about the regional differences in combinations of opioids, stimulants, and benzodiazepines among patients presenting to the emergency department for suspected opioid overdose.

**Research Hypothesis:** The combination of opioids and stimulants is more prominent in the West compared to the Northeast and Midwest.

**Methods:** This cohort is from the Toxicology Investigators Consortium (ToxIC) Fentanyl Study Group, an ongoing multicenter study across the United States. Consecutive emergency department patients with suspected opioid overdose were included across 8 sites from September 21, 2020 and October 1, 2022. Sites included the Northeast (New York, Pittsburgh, Newark, and Bethlehem), the Midwest (Grand Rapids and St. Louis), and the West (Portland and Los Angeles). Discarded serum from each patient was analyzed via liquid chromatography quadrupole time-of-flight mass spectroscopy to detect psychoactive substances and their metabolites. Chi-square tests were utilized to detect differences between analytes and geographical regions.

**Results:** The percentage of any opioid detected among suspected opioid overdose patients was 91.8% overall (N=537), and there were no differences in the prevalence of any opioid between regions. However, higher percentages of opioid and stimulant combinations were detected in the Midwest (61.7%) and the West (59.3%) compared to the Northeast (41.5%) ( $p < 0.001$ ). Additionally, combinations of opioids and benzodiazepines were highest in the West (35.6%) compared to the Northeast (32.2%) and Midwest (20.4%) ( $p = 0.01$ ). The combination of all three substances (opioids, stimulants, and benzodiazepines) was nearly twice as high in the West (27.1%) compared to the Northeast (15.1%) and the Midwest (12.6%) ( $p = 0.03$ ).

**Conclusion:** Combinations of opioids and stimulants were more prominent in the West compared to the Northeast and Midwest in a study among suspected opioid overdoses. This study demonstrates that ongoing public health surveillance is needed to identify regional emerging drug trends.