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154. Comparison of Self-Reported Drug Use and Adjudicated Causality in Polydrug Overdose Presentations

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Background: Polydrug exposure is increasingly common in overdose. Discrepancies between patient-reported drug use and toxicology laboratory findings complicate efforts to determine which substances primarily contribute to a patient's toxicity. Evaluating the relationship between patient-reported substance use and causality can be best determined by quantitative and qualitative blood testing.

Hypothesis or Research Question: How does patient-reported substance use compare with laboratory-determined causality in overdose patients?

Methods: This analysis utilized data from the Toxicology Investigators Consortium (ToxIC) Drug Overdose Toxicology-Surveillance (DOTS) Reporting Program. Patients aged >13 years who presented with emergency departments at 17 participating medical centers with an apparent life-threatening opioid or stimulant overdose between April 2023 and September 2024 that provided informed consent were included. Structured interviews on current and past drug use patterns were conducted. Extensive state-of-the-art qualitative and quantitative blood toxicology analyses were performed by the Center for Forensic Science Research and Education. Two medical toxicologists independently reviewed each case for tolerance, precipitated withdrawal or stimulant intoxication, and substances contributing to the overdose. Any discrepancies were resolved by a third reviewer or group consensus. Descriptive statistics compared self-reported substance use associated with the overdose presentation, detected substances, and case adjudicated causality.

Results: Among 995 patients enrolled, 933 completed the interview. Almost half (n=446; 43%) reported taking opioids only, 19% reported stimulants only, 13% reported other drugs only, and 25% reported other drug combinations (e.g., alprazolam, cannabis). Among those who reported taking fentanyl only (n = 199), 189 (95%) had fentanyl present, but only 31% of those who reported taking only cocaine (n = 734) had no fentanyl, nonfentanyl, or fentanyl analogues (n=0.1%). Three percent of patients who reported taking heroin reported only detected street heroin with no fentanyl. Among patients who reported cocaine only (n = 86), 64% had cocaine, benzoylecgonine, cocaethylene. However, 48% (n = 31) had no

benzoylecgonine, cocaethylene, nor cocaine ($p < 0.001$). Among patients who reported cocaine only ($n = 86$), 64% had cocaine, benzoylecgonine, or cocaethylene. However, 48% ($n = 31$) had no benzoylecgonine, cocaethylene, nor cocaine ($p < 0.001$). Notably, fentanyl was detected in 72% of patients who reported taking cocaine only and 50% of patients who reported taking methamphetamine only.

Conclusion: Patient self-reports often underestimate opioid involvement, particularly in cases of intended stimulant use, highlighting the value of quantitative and qualitative blood tests allowing for the definitive determination of causative substances.

Toxic: *This research was performed by the ACMT Toxicology Investigators Consortium*