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#### 004. Prevalence Of Adulterants in Acute Opioid Toxic Patients

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**Background:** Adulterants may be contaminants from illicit manufacturing, added as bulking agents, and intentionally added for synergistic effects. We describe adulterants confirmed in a cohort of opioid overdose patients presenting to the emergency department (ED).

**Hypothesis:** This study sought to determine if the types of adulterants change over time or by region.

**Methods:** The Toxicology Investigators Consortium (ToxIC) Fentalog Study Group has an ongoing multi-center prospective case series of presumed opioid overdose patients presenting to nine US EDs. Discarded blood from adult patients with acute opioid overdose were collected and analyzed via liquid chromatography quadrupole time-of-flight mass spectrometry. Sites were located in three regions: West (California, Oregon); Central (Michigan, Missouri); East (Pennsylvania, New York, New Jersey). Cases were further analyzed via time; (period 1: September-December 2020; period two: January-April 2021; period 3: May-August 2021).

**Results:** A total of 378 subjects were identified; 68% male, median (IQR) age 40 (31-53). The following adulterants were found: Diphenhydramine (15.6%), hydroxyzine (11.6%), levamisole (23.0%), local anesthetics (23.6%), phenacetin (18.5%), and quinine (26.4%). Regional variation occurred for both levamisole and quinine. Levamisole was found in one (2.7%) Western sample vs. 32 (29.6%) Central US samples and 54 (23.2%) Eastern samples ( $p = 0.004$ ; 95% CI 8.3-26.7%). Quinine was more commonly encountered in the Central US; 1 (2.7%) Western samples vs. 54 (50%) Central US samples and 45 (19.3%) Eastern samples ( $p = 0.013$ ; 95% CI 4.5-22.2%). Diphenhydramine use increased with time; 8 (9.4%) samples from period one vs. 23 (20%) samples from period three ( $p = 0.04$ ; 95% CI 0.36-20.0). Quinine also increased over time: 12 (14.1%) in period one vs. 43 (37.3%) in period three. Phenacetin decreased over time; 21 (24.7%) in period one vs. 14 (12.2%) in period three ( $p = 0.0021$ ; 95% CI 1.76-23.7%).

**Conclusion:** Adulterants are commonly encountered in opioid overdose and change over time and location.