K23 Postmortem Toxicology Trends in the United States Before and During the COVID-19 Pandemic

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Learning Overview: The goal of this presentation is to highlight the postmortem drug of abuse trends in United States cases received in 2019 and 2020.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing new information on drug class and specific drug trends in postmortem toxicology before and during the COVID-19 pandemic.

Introduction: Since the beginning of 2020, the United States has experienced an unprecedented public health crisis due to the novel coronavirus (COVID-19). Measures implemented to reduce the spread of COVID-19 in the United States have significantly altered people's lifestyles. To investigate the effects of COVID-19 on postmortem drug trends, all United States cases submitted to NMS Labs during 2019 and 2020 were reviewed.

Objective: The objective of this study was to identify variations in the drug of abuse trends by drug class and the individual analyte in the postmortem cases that NMS Labs received during 2019 and 2020.

Methods: Drugs of abuse, specifically those belonging to the barbiturate, benzodiazepine, cannabinoid, hallucinogen, hypnotic/sedative, inhalant, opioid, and stimulant drug classes were identified in postmortem cases throughout the United States, including the District of Columbia, Puerto Rico, and the Virgin Islands. Cases that confirmed for any drug class between January 1 and July 31, 2019, and between January 1 and July 31, 2020, were included in this study.

Results: Between January 1 and July 31, 2019, 51,880 postmortem cases matching the criteria discussed in the methods section were identified. The prevalence of each drug class was determined as a percentage of total cases and are shown here in descending order: opioids (53%), stimulants (38%), cannabinoids (36%), benzodiazepines (26%), hypnotics/sedatives (1.0%), barbiturates (0.93%), hallucinogens (0.54%), and inhalants (0.49%). The most common analytes confirmed for each drug class were fentanyl (opioid, 28%), amphetamine (stimulant, 23%), delta-9 Tetrahydrocannabinol (delta-9 THC) (cannabinoid, 33%), alprazolam (benzodiazepines, 10%), ketamine (hypnotic/sedative, 1.0%), butalbital (barbiturate, 0.80%), phencyclidine (hallucinogen, 0.43%), and 1,1-difluoroethane (inhalant, 0.49%).

A total of 40,496 cases between January 1 and July 31, 2020, were identified according to the previously described study criteria representing a decrease of 11,384 cases compared to the same period in 2019. This decrease may be due to several factors, including a reduction in overall travel and limited interpersonal contact. The prevalence of each drug class was similar to 2019, but with slight variations in the order of the least abundant drug classes: opioids (56%), stimulants (41%), cannabinoids (39%), benzodiazepines (23%), hypnotics/sedatives (0.95%), hallucinogens (0.78%), barbiturates (0.75%), and inhalants (0.18%). The most confirmed analytes for each class were identical to that of 2019 with slight variations in frequency: fentanyl (37%), amphetamine (23%), delta-9 THC (36%), alprazolam (9.0%), ketamine (0.90%), phencyclidine (0.66%), butalbital (0.69%), and 1,1-difluoroethane (0.18%).

Conclusions: Modest differences in nationwide postmortem drug trends were observed in this study, suggesting that the effects of the COVID-19 pandemic were more nuanced. Opioid, stimulant, and cannabinoid confirmations increased by 3% from 2019 to 2020. By contrast, a decrease in hypnotic/sedative (0.05%), barbiturate (0.18%), inhalant (0.31%), and benzodiazepine (3%) confirmations was observed. The number of cases positive for each analyte varied slightly from 2019 to 2020, with the most noticeable being an increase in fentanyl (8.6%). These variations in drug trends may be due to several factors related to the COVID-19 pandemic—including reduced social interactions, disruptions in drug supply chains, and economic uncertainty—warranting further investigation.

Postmortem, Drug Trends, COVID-19

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