K50   A Carfentanil Outbreak in Florida in 2016

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Learning Overview: After attending this presentation, attendees will understand the sociodemographic information, geographic and temporal patterns, and prescription histories associated with a fatal overdose outbreak caused by the introduction of carfentanil to a local illicit drug supply. Deaths concentrated in the Sarasota, FL, area were compared to other carfentanil-involved fatal overdoses in Florida from June to December 2016 as this synthetic opioid spread throughout the state.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by sharing outbreak details and warning signs for more targeted, rapid responses to emerging novel psychoactive substances. Illicitly manufactured fentanyl analogs pose a serious public health threat and have changed the way the opioid overdose epidemic must be approached in the United States. Accelerated reporting, reliable data sharing systems, and proactive pharmacovigilance are needed when combating this dynamic crisis.

Methods: Data sources for this study included the Florida drug-Related Outcomes Surveillance and Tracking (FROST) System and the Electronic-Florida Online Reporting of Controlled Substance Evaluation Program (E-FORCSE), which acts as the Florida Prescription Drug Monitoring Program (PDMP). Date-of-death information was provided by the District 12 Medical Examiner's Office. Descriptive statistics, chi-square tests, and epidemic curves compared characteristics of the Sarasota area with the remainder of the state.

Results: Of the 548 statewide carfentanil deaths in 2016, 114 (20.8%) occurred in the Sarasota area, a region that only accounts for 4.0% of Florida's population. The Sarasota overdose epidemic began with four deaths in June 2016, peaked with 37 deaths in July, and declined substantially by November. In July, more carfentanil deaths occurred in this area than the rest of the state combined (n=17). The height of the outbreak did not occur for the rest of Florida until October (137 deaths, 25.0% of the state total), demonstrating an approximate two-month lag. Most decedents in Sarasota were White males (73.7%) and over one-third of all decedents were between 25 and 34 years old. Concomitant drugs in both Sarasota and the rest of Florida included cocaine (50.9%), oxycodone (9.6%), and alprazolam (23.7%). However, carfentanil-positive decedents in Sarasota were less likely to test positive for heroin (7.9% v. 23.5%), fentanyl (7.0% v. 22.6%), and other fentanyl analogs (1.8% v. 25.8%). According to statewide PDMP data, at least one controlled substance was dispensed within two years prior to death in 94 decedents (82.5%), and half (n=47) filled the prescription within one year of death. Approximately 21.1% of decedents had no or insufficient evidence of a prescription.

Discussion/Conclusion: Timing and concomitant substance patterns suggest Sarasota was a point of entry for carfentanil in the state of Florida. This study demonstrates that rapid, geographically targeted responses are necessary to mitigate similar incidents during their early stages and additional steps are necessary to prevent similar outbreaks in the future. For example, Florida medical examiners now have access to the state PDMP, strengthening the medicolegal death investigation process with clinical data, for improved surveillance and response to fatal overdoses. However, this incident demonstrated that additional efforts are needed to determine how pharmacovigilance signals, such as unusual prescribing patterns, can initiate early intervention. Further, new "listening platforms" (e.g., drug-focused social media) and data systems (e.g., emergency medical services transports) may assist authorities with the rapid identification of emerging drugs in communities. In this incident, law enforcement and the media were the first entities to caution the public of the carfentanil outbreak in Florida, emphasizing the need for local, interagency data-sharing and more effective, standardized communication among stakeholders. The forensic toxicology backlog and the resulting delay in cause-of-death reporting by medical examiners are often the rate-limiting steps for such communication. Establishing routine methods for fentanyl analog analysis and identifying novel substances remains a significant challenge for laboratories across the country. The Centers for Disease Control and Prevention's (CDC's) Enhanced State Opioid Overdose Surveillance (ESOOS) Program provides funding to support more timely and comprehensive data acquisition, including toxicology for both non-fatal and fatal opioid overdoses, as well as the assessment of risk factors associated with fatal overdoses. In the future, these data will alert public health and safety organizations to changes in the illicit drug market that have the potential to develop into fatal outbreaks, facilitating efforts for more effective responses.

Carfentanil, Epidemiology, Fatal Drug Overdoses