

RESEARCH UPDATE ON FENTANYL OUTBREAKS IN THE DAYTON, OH AREA:

Acryl Fentanyl and Furanyl Fentanyl Commonly Found in Overdose Death Cases

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DAYTON, OHIO. The Dayton area (Montgomery County, Ohio) has recently experienced dramatic increases in heroin and other opioid-related problems. Unintentional drug overdose deaths increased significantly from 127 in 2010 to 264 in 2014. In 2016, there were 349 overdose deaths in Montgomery County, and 251 of them screened positive for fentanyl. Preliminary data from 2017 indicate continuing increases in overdose deaths.

THE STUDY. The research project (R21DA042757) to characterize fentanyl outbreaks in the Dayton, Ohio, area builds on interdisciplinary collaboration between the researchers at the Center for Interventions, Treatment and Addictions Research and the Department of Chemistry at Wright State University, and longstanding partnership with the Montgomery County Coroner's Office/Miami Valley Regional Crime Lab (MCCO/MVRC) and Public Health-Dayton & Montgomery County.

TESTING. The research project developed and validated a qualitative and quantitative liquid-chromatography mass spectrometry (LC-MS/MS) assay for 24 fentanyl analogs/metabolites in biological matrixes (human blood and urine samples):

1-3-Methylfentanyl; 4ANPP; Acetyl Fentanyl; Acetyl Fentanyl 4-Methylphenethyl; Acryl fentanyl; AH7921; Alfentanil; Beta-Hydroxythiofentanyl; Butyryl Fentanyl/Isobutyryl Fentanyl; Butyryl Norfentanyl; Carfentanil; Despropionyl Para-Fluorofentanyl; Fentanyl; Furanyl Fentanyl; Furanyl Norfentanyl; Norfentanyl; Para-Fluorobutyryl/4-Fluoroisobutyrylfentanyl; Para-Methoxyfentanyl; Remifentanil; Remifentanil Metabolite; Sufentanil; U-47700; Valeryl Fentanyl

| Synthetic opioids/fentanyl analogues/metabolites | A. All cases (N=100) | B. Acryl Fentanyl Positives (N=56) | C. Furanyl Fentanyl Positives (N=39) |
|--|----------------------------|--|--|
| Fentanyl | 99 (99%) | 56 (100%) | 39 (100%) |
| Norfentanyl | 64 (64%) | 39 (70%) | 26 (67%) |
| Acryl fentanyl | 56 (56%) | | 25 (64%) |
| Despropionylfentanyl | 46 (46%) | 26 (46%) | 32 (82%) |
| Furanyl Fentanyl | 39 (39%) | 25 (45%) | |
| Carfentanil | 3 (3%) | 2 (4%) | 1 (2.6%) |
| Acetyl Fentanyl | 2 (2%) | 1 (2%) | 1 (2.6%) |
| Butyryl/isobutyrylfentanyl | 1 (1%) | 0 (0%) | 0 (0%) |
| Furanyl Norfentanyl | 1 (1%) | 1 (2%) | 1 (2.6%) |
| U47700 | 1 (1%) | 1 (2%) | 1 (2.6%) |

PRELIMINARY

FINDINGS. As of April 24, 2017, the Montgomery County Coroner's Office Toxicology Laboratory completed testing of **100 accidental drug overdose death cases that occurred in Montgomery County in 2017** (the most recent completed case is dated February 27, 2017). The majority of the cases were white (91%) and male (65%). Average age was 40.1 (SD 11.8). Most individuals were Montgomery County residents (89%). Almost all cases tested positive for fentanyl (99%). **About 56%**

tested positive for acryl fentanyl and 39% for furanyl fentanyl. There were 2 acetyl fentanyl positive cases, and 3 carfentanil positives (Table A). Only 3 cases tested positive for heroin. The majority of cases tested positive for more than one type of fentanyl analogue. All acryl fentanyl and furanyl fentanyl cases also tested positive for fentanyl; about 45% of acryl fentanyl cases also tested positive for furanyl fentanyl (Table B-C).

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