ToxIC Fentalog Study Group — Quarterly NPS Report

CLINICAL | **Q3 2022**

PURPOSE: This report provides new information regarding comprehensive drug testing of clinical toxicology specimens collected after suspected opioid overdoses in cities across the United States (U.S.).

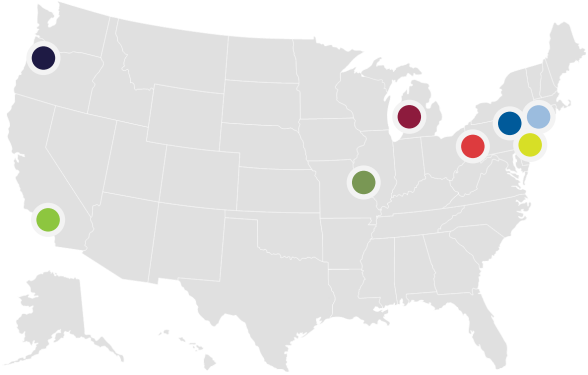
OVERVIEW: Drug use can lead to adverse events and overdose scenarios where individuals present to emergency departments (EDs) for clinical evaluation and/or treatment. The culprit can be traditional drugs (e.g., heroin, fentanyl, cocaine, methamphetamine) or novel psychoactive substances (NPS); however, proper drug testing methodologies must be used for accurate identification and characterization. Street-level drug preparations can contain undeclared or unwanted substances (e.g., toxic adulterants or NPS) which can potentiate effects or lead to adverse reactions. Understanding emerging drug trends and drug testing results can help direct new or revised approaches to clinical treatment and harm reduction.

OBJECTIVE: A partnership between the American College of Medical Toxicology (ACMT) and the Center for Forensic Science Research and Education (CFSRE) was established to comprehensively assess the role and prevalence of synthetic opioids and other drugs among suspected overdose events in the U.S.

SAMPLE SOURCE: Patients presented to EDs within ACMT's Toxicology Investigators Consortium (ToxIC) experiencing a suspected opioid overdose. Residual, discarded biological samples were obtained for testing against an expansive library of drugs and other substances. Our findings provide a near real-time assessment of the drug market and allude to resulting implications on clinical institutions.

TOXICOLOGY TESTING: Analysis was performed via liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS). The scope of testing targeted more than 1,000 drugs, including a vast majority of NPS and metabolites. Drug classes included opioids, benzodiazepines, cannabinoids, stimulants, and hallucinogens, among other drugs.

ACKNOWLEDGEMENTS: This report was prepared by Alex Manini, MD; Alex J. Krotulski, PhD; Sara E. Walton, MS; Paul Wax, MD; Jeffery Brent, MD, PhD; Kim Aldy, DO; Alexandra Amaducci, DO; Diane Calello, MD; Adrienne Hughes, MD; Anthony Pizon, MD; Michael Levine, MD; Evan Schwarz, MD; Bryan Judge, MD; and Barry K. Logan, PhD, F-ABFT. The authors acknowledge ACMT personnel, ToxIC investigators, and CFSRE staff for their contributions. Funding was received from the National Institute on Drug Abuse (NIDA) from the National Institutes of Health (NIH), Award Number: R01DA048009. The opinions, findings, conclusions and/or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of NIDA, NIH, or other agencies. For more information about NPS Discovery, contact npsdiscovery@cfsre.org or visit www.npsdiscovery.org.



PITTSBURGH, PA

- 75% positive for at least one opioid
- Fentanyl (75%) commonly detected, followed by heroin (25%) and tramadol (25%)
- Opioid and stimulant use commonly observed (75%)
- NPS: *p*-Fluorofentanyl (25%), Clonazolam

BETHLEHEM, PA

- 97% positive for at least one opioid
- Fentanyl (88%) commonly detected
- Opioid and stimulant use observed (53%); benzodiazepine and opioid use less common (25%)
- *p*-Fluorofentanyl detected w/o fentanyl
- NPS: *p*-Fluorofentanyl (25%), *o*-Fluorofentanyl (6%), Valerylfentanyl, ADB-PINACA

NEW YORK, NY

- 88% positive for at least one opioid
- Fentanyl (65%) commonly detected, followed by methadone (26%), heroin (15%), and oxycodone (15%)
- Opioid and benzodiazepine use observed (32%); opioid and stimulant use (21%)
- PCP detected alongside fentanyl
- NPS: *p*-Fluorofentanyl (21%), Bromazolam, Flubromazepam, MDMB-4en-PINACA

NEWARK, NJ

- 89% positive for at least one opioid
- Fentanyl (78%) commonly detected, followed by methadone and tramadol (11%)
- Opioid and stimulant use observed (44%); opioid and benzodiazepine use (17%)
- PCP detected alongside fentanyl
- NPS: *p*-Fluorofentanyl (11%), Clonazolam

ST. LOUIS, MO

- 95% positive for at least one opioid
- Fentanyl (93%) very commonly detected
- Opioid and stimulant use common (63%); opioid and benzodiazepine use was less common (15%)
- MDMA detected alongside fentanyl (5%)
- NPS: *p*-Fluorofentanyl (10%), Bromazolam, Flubromazepam

PORTLAND, OR

- 74% positive for at least one opioid
- Fentanyl (68%) commonly detected, followed by heroin (16%)
- THC and metabolites detected (32%)
- Opioid and stimulant use observed (53%); opioid and benzodiazepine use less common (21%)
- NPS: *p*-Fluorofentanyl (11%), Bromazolam

LOS ANGELES, CA

- 90% positive for at least one opioid
- Fentanyl (75%) commonly detected, followed by heroin (5%) & methadone (5%)
- Opioid and stimulant use observed (45%); opioid and cannabinoid use (15%); opioid and benzodiazepine use (10%)
- Xylazine not detected in opioid samples
- *p*-Fluorofentanyl detected w/o fentanyl
- NPS: *p*-Fluorofentanyl (15%), *o*-Fluorofentanyl (5%)

GRAND RAPIDS, MI

- 89% positive for at least one opioid
- Fentanyl (74%) commonly detected, followed by tramadol (8%) and heroin (8%)
- Opioid and stimulant use observed (55%); opioid and benzodiazepine use (21%)
- *p*-Fluorofentanyl detected w/o fentanyl
- NPS: *p*-Fluorofentanyl (11%), Clonazolam, Flualprazolam, BZO-POXIZID, ADB-5Br-INACA, MDMB-5Br-INACA, 4CN-CUMYL-BINACA, ADB-HEXINACA, 3,5-ADB-4en-PFUPPYCA

cfsre | NPS DISCOVERY

ACMT American College of Medical Toxicology

ToxIC Toxicology Investigators Consortium