

Novel Synthetic Opioids Cases Reported to the ToxIC Registry, August–October 2018

Meghan Spyres, MD; Paul Wax, MD; Sharan Campleman, PhD;
Jeffrey Brent, MD, PhD; Diane Calello, MD
American College of Medical Toxicology, Phoenix, AZ

For this Brief, all cases involving exposure to novel opioids were reviewed. Between August 1, 2018 and October 31, 2018, 241 opioid cases were reported to ToxIC by medical toxicologists from across the United States. Thirty five (15%) of the cases represented novel opioids, including 31 fentanyl/fentanyl analog cases, 3 loperamide cases, and 1 U-47700 case. As shown in Table 1, these cases came from 12 states, with a wide geographic distribution across the United States. The average age of patients presenting with novel synthetic opioid use was 32 years (range: 15 months to 71 years). Overall, 71% of these were male, and 80% represented intentional exposures to novel synthetic opioids, with 75% of these from misuse or abuse and 11% from attempts at self-harm (see Table 1). Toxicologic treatment was administered in 86% of the cases including naloxone in 49%. Fourteen percent of the patients died; 4 deaths were in fentanyl cases, and 1 case involved loperamide as a secondary agent. Of the 20 fentanyl-intentional-misuse or abuse cases, 85% reported the nature of use to be “to get high”; 5% of these cases reported the nature of use to be “using medication without a prescription.” Case studies are provided for three of these cases.

Method

In the ToxIC registry, a mandatory sentinel event detector field is used to flag novel and emerging exposures. Novel (or “new”) psychoactive substances (NPS) are defined as substances of abuse that are not controlled by the 1961 Convention on Narcotic Drugs or by the 1971 Convention on Psychotropic Substances that may pose a public health threat.^[1]

For this bulletin, the sentinel field was queried in November 2018 to identify novel opioid cases reported between August 1, 2018 and October 31, 2018. The entire registry was then searched for substances identified by the detector, and all primary and secondary agent opioid exposures were further searched for any additional novel cases not flagged by the detector. See the inaugural *Toxic Brief* for a detailed description of information captured by the sentinel event detector for the ToxIC registry.

Selected Case Studies

Case studies for three of the cases reported by medical toxicologists to the ToxIC registry between August and October 2018 are highlighted as follows. One case was selected for each novel synthetic opioid identified.

Case 1: Fentanyl

A 34-year-old woman presented to a hospital in Michigan after intentionally taking fentanyl (a synthetic opioid) to get high. She presented with hypotension, respiratory depression, and coma. She had evidence of acute kidney injury on her laboratory evaluation. She was given IV fluids, naloxone antidote, and vasopressors. She required intubation and mechanical ventilation and was admitted to the intensive care unit (ICU). Despite maximal efforts, she did not survive her overdose.

Toxicology Investigators Consortium (ToxIC)

ToxIC is a toxico-surveillance registry and research network of physicians specifically qualified in the field of medical toxicology.

Medical toxicologists in 35 participating sites across the United States consult with medical facilities to diagnose and manage the adverse effects of exposure to natural toxins, drugs, and chemical substances, including drugs of abuse. Core information on these cases is provided to the American College of Medical Toxicology (ACMT) as part of the ToxIC Registry. The ToxIC registry contains more than 65,000 cases providing a uniform array of reliable clinical data on patients. Approximately 8,000 cases are added each year.

ToxIC is operated by the American College of Medical Toxicology ([ACMT](http://www.acmt.org)).

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Table 1: 35 Novel Opioids Cases Identified by Medical Toxicologists and Reported to ToxIC, Aug.–Oct. 2018

Case	Gender	Age	State	Drug	Exposure
1	M	22 mos	AZ	Fentanyl	Unintentional Use: Pediatric Exploratory
2	M	31	AZ	Fentanyl	Intentional Use: Misuse/Abuse
3	M	25	AZ	Fentanyl	Intentional Use: Misuse/Abuse
4	M	16	AZ	Fentanyl	Intentional Use: Misuse/Abuse
5	M	63	AZ	Fentanyl	Intentional Use: Misuse/Abuse
6	M	33	AZ	Fentanyl	Intentional Use: Unknown
7	M	24	AZ	Fentanyl	Intentional Use: Misuse/Abuse
8	M	19	AZ	Fentanyl	Intentional Use: Misuse/Abuse
9	M	17	AZ	Fentanyl	Intentional Use: Misuse/Abuse
10	M	30	AZ	Fentanyl	Intentional Use: Misuse/Abuse
11	M	33	AZ	Fentanyl	Intentional Use: Misuse/Abuse
12	M	32	AZ	Fentanyl	Intentional Use: Misuse/Abuse
13	F	51	CA	Fentanyl	Intentional Use: Self-Harm
14	M	27	CA	Loperamide	Intentional Use: Unknown
15	M	24	GA	Fentanyl	Addiction Medicine Consult
16	M	35	IN	Fentanyl	Intentional Use: Drug Concealment
17	M	19	IL	Fentanyl	Intentional Use: Misuse/Abuse
18	M	21 mos	MA	Fentanyl	Unintentional Use: Pediatric Exploratory
19	F	34	MI	Fentanyl	Intentional Use: Misuse/Abuse
20	M	28	MO	Fentanyl	Withdrawal
21	F	15 mos	MO	Fentanyl	Unintentional Use: Pediatric Exploratory
22	F	69	NJ	Fentanyl	Intentional Use: Misuse/Abuse
23	F	30	NY	Loperamide	Intentional Use: Self-Harm
24	F	27	NY	Fentanyl	Addiction Medicine Consult
25	F	71	PA	Fentanyl	Unintentional Use: Accidental
26	F	42	PA	Fentanyl	Intentional Use: Misuse/Abuse
27	M	53	PA	Fentanyl	Intentional Use: Misuse/Abuse
28	F	14	PA	Loperamide	Intentional Use: Self-Harm
29	M	50	PA	Fentanyl	Intentional Use: Misuse/Abuse
30	M	32	PA	Fentanyl	Intentional Use: Unknown
31	F	29	PA	Fentanyl	Intentional Use: Misuse/Abuse
32	M	50	PA	Fentanyl	Intentional Use: Misuse/Abuse
33	M	49	PA	Fentanyl	Intentional Use: Misuse/Abuse
34	M	36	PA	Fentanyl	Intentional Use: Misuse/Abuse
35	M	15	VA	U-47700	Intentional Use: Misuse/Abuse

Case 2: U-47700

A 15-year-old boy presented to a hospital in Virginia after intentionally taking U-47700 (a synthetic opioid) to get high. He presented with signs of an opioid toxidrome, including respiratory depression without additional clinical or laboratory abnormalities. He required naloxone antidote administration, intubation with mechanical ventilation, and admission to the ICU for monitoring. He survived his overdose.

Case 3: Loperamide

A 30-year-old woman presented to a hospital in New York after intentionally overdosing on loperamide (an antidiarrheal agent with opioid effects in large doses) and gabapentin in an attempt at self-harm. On presentation, she had signs of an opioid toxidrome, including respiratory depression, and required naloxone antidote administration. She was placed on a

naloxone drip and was given activated charcoal. No additional clinical or laboratory abnormalities were found. She did not require intubation or mechanical ventilation but was admitted to the ICU for monitoring. She survived her overdose.

Conclusions/Implications

Fifteen percent of opioid cases reported to the ToxIC registry over a 3-month period were novel opioid cases. Most cases were reported from Pennsylvania and Arizona (60%), involved males (71%), and were related to intentional misuse/abuse (77%). Given the limitations in standard drug screens to detect these novel cases, this is likely to be an underrepresentation of the true number of novel opioid cases. Most novel cases included in this review were a result of fentanyl or its derivatives. Notably, a significant number of cases reported here resulted in substantial clinical toxicity, including deaths, despite most cases being misuse/abuse (i.e., to get high), not self-harm attempts.

Limitations

Toxic case accrual is limited to medical centers that have medical toxicologists on staff. Participating sites are in 21 states but do not represent a population-based sampling and cannot be used to produce prevalence estimates. The results are intended to be used for epidemiologic and descriptive purposes. Analytical confirmation is rarely obtained as such laboratory analysis is not generally part of the clinical consultation and rarely has impact on the treatment plan. Although all participating sites have been trained to use the sentinel event detector field, a drug that would be considered new or emerging by one investigator may be considered less novel by another. These results reflect a brief period of time and may not be representative of larger trends.

References

1. UNODC. 2015. United Nations Office on Drugs and Crime World Drug Report.

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