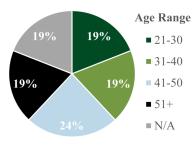
## December 2020

# Fluorofentanyl Identified in Forensic Casework as Wave of Fentanyl-Related Substances Appears in the United States



19% • M • F • N/A 31%



**Purpose:** The objective of this public announcement is to notify public health and public safety, law enforcement, clinicians, medical examiners and coroners, laboratory personnel, drug treatment providers, and other related communities about new information surrounding a proliferating synthetic opioid *para*-fluorofentanyl.

**Background:** Synthetic opioids are chemically manufactured drugs, often accompanied with unknown potency and adverse effects or health risks. New synthetic opioids may be mixed with more traditional opioids, creating additional risk and danger for recreational drug users. Synthetic opioids may be distributed in powder or tablet form. In the United States (U.S.), an alarming increase in the number of deaths linked to synthetic opioid use has been reported. The primary adverse effect associated with synthetic opioid use is respiratory depression, often leading to death.

**Summary:** Fentanyl is overwhelmingly the most prevalent synthetic opioid identified in forensic casework in the U.S. Fentanyl was first introduced into the heroin supply around 2006, later gaining a stronghold on the market. In the early 2010's, public health agencies began reporting a sharp increase in adverse events and deaths attributed to fentanyl-related substances (e.g. acetylfentanyl, furanylfentanyl, and carfentanil). The presence of these substances on recreational drug markets quickly became a serious health and safety concern. As a result, the Drug Enforcement Administration in 2018 enacted a scheduling order to place all fentanyl-related substances under Schedule I. Based on data from forensic laboratories, this action led to a sharp decline in fentanyl analogue positivity across the U.S. and a shift back to fentanyl. However, in mid-to-late 2020, select fentanyl analogues emerged and began proliferating in forensic casework, linked to postmortem and drugged driving investigations. Fluorofentanyl was identified as early as 2016 in the U.S. and Europe, but overall detections remained low until recent months. Positivity of *para*-fluorofentanyl began increasing in Q3 2020 and within a few months this fentanyl analogue has been identified in 16 forensic cases. *para*-Fluorofentanyl is commonly found in combination with fentanyl, but the concentration ratio between these two substances varies (0.003 to 26); *para*-fluorofentanyl is the primary synthetic opioid in multiple cases. *para*-Fluorofentanyl is a potent synthetic opioid with reported potency similar to fentanyl. Our laboratories continue to monitor the emergence of fentanyl analogues, including structurally similar halogenated counterparts.

## **Recommendations for Public Health**

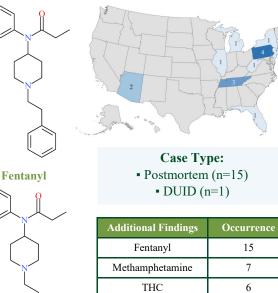
- Develop surveillance programs for rapid identification of drugs emerging on the recreational market.
- Engage local poison centers and clinicians to assist with treatment of affected patients.
- Monitor geographical drug trends.
- Raise awareness about the risks and dangers associated with opioid use.
- Make naloxone available to drug users.
- Implement available methods developed for fentanyl and its analogues.

#### **Recommendations for MEs & Coroners**

- Be aware that fentanyl analogues may appear and disappear without warning.
- Test for fentanyl analogues and biomarkers in suspected opioid overdose scenarios.
- Be aware toxic concentrations of synthetic opioids in biological specimens can be low; LC-MS sensitivity may be required.
- Consult with toxicologists regarding the potency and toxicity of fentanyl analogues.

Acknowledgements: This report was prepared in collaboration between CFSRE and NMS Labs by Donna M. Papsun, MS, D-ABFT, Alex J. Krotulski, PhD, Amanda L.A. Mohr, MS, D-ABFT, M.J. Menendez, JD, and Barry K. Logan, PhD, F-ABFT. The opinions, conclusions, and/or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of local, state, or federal agencies.

## *para*-Fluorofentanyl



Cocaine

Heroin

**Geographical Distribution** 

5

4

#### **Recommendations for Clinicians**

- Be attentive to signs and symptoms associated with opioid use (e.g. sedation, respiratory depression).
- Naloxone should be administered to reverse critical respiratory depression.
- Be mindful that hospital drug testing methods may not detect fentanyl, its analogues, or other new opioids.
- Counsel about the dangers of synthetic opioid products and other drugs.

### **Recommendations for Laboratories**

- Access analytical data available publicly for the identification of fentanyl analogues and new opioids.
- Develop sensitive and up-to-date testing procedures for synthetic opioids.
- Prioritize analytical testing of seized drug samples taken from drug overdose scenes during death investigations.
- Share data on synthetic opioid drug seizures with local health departments, medical examiners, and coroners.

#### References and Related Articles:

 Hassanien, SH; Bassman, JR; Perrien Naccarato, CM; Twarozynski, JJ; Traynor, JR; Iula, DM; Anand, JP. (2020) In vitro pharmacology of fentanyl analogs at the human mu opioid receptor and their spectroscopic analysis. Drug Testing and Analysis, doi.org/10.1002/dta.2822.
WHO: Fentanyl Analogues / ortho-Fluorofentanyl

SWGDRUG: <u>para-Fluorofentanyl Monograph</u>

## **Rapid NPS Testing Now Available:**

If your agency suspects synthetic opioid toxicity with no identifiable cause of death or your jurisdiction is noticing an increase in overdose patients requiring analytical testing, contact NPS Discovery at the Center for Forensic Science Research and Education (CFSRE); a non-profit organization in collaboration with local and federal agencies which can provide rapid testing of novel drug outbreaks in the United States.

Website: www.npsdiscovery.org Email: npsdiscovery@cfsre.org