



## Brief Report

# Updated Developments in Fentanyl Use among Psychiatric Emergency Room Patients

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### Abstract

**Background and objectives:** Opioid overdose-related deaths in the US continue to increase. The primary aim of this study is to determine the rates of fentanyl in the urine drug screens of all patients who presented to the psychiatric emergency room at VA Connecticut over a 7-month period in 2022 and how this compares to 2018.

**Methods:** Data were collected for all patients during a 7-month period in 2022. There were 581 total patient presentations, 400 of which were unique. Collected data included demographic information, psychiatric diagnosis, and urine drug screen for illicit substances, including fentanyl.

**Results:** Over 18% of patients screened positive for fentanyl, 26% for cocaine and only 7% for non-fentanyl opioids. From 2018 to 2022 the use of non-fentanyl opioids decreased, and the use of fentanyl-only and cocaine-related fentanyl increased. This suggests an overall shift from non-fentanyl opioids to fentanyl, and an increase in the combination of fentanyl and cocaine.

**Discussion and conclusions:** Fentanyl continues to be frequently used among psychiatric emergency room patients. Additionally, trends in use suggest a dangerous shift towards fentanyl-only use and fentanyl use in combination with cocaine. Given the relative potency of fentanyl compared to traditional opioids, special attention should be paid to harm reduction strategies, naloxone administration and buprenorphine inductions.

**Scientific significance:** This is a follow-up study to track trends of fentanyl use in psychiatric emergency room patients. These findings extend the current state of knowledge by replication in a psychiatric emergency room and build upon previously published results to track trends.

### Introduction

Despite numerous public health and policy efforts, opioid overdose deaths continue to increase. From 2019 to 2020, the age-adjusted rate of drug overdose deaths in the US increased by 31%, from 21.6 per 100,000 to 28.3 per 100,000. In 2020, 75% of overdose deaths involved an opioid. The specific opioid involved in these deaths has also changed; in 2020, 82.3% of opioid-related overdose deaths involved fentanyl [1]. CDC's National Center for Health Statistics reported an increase in fentanyl overdose deaths from 57,834 in 2020 to 71,238 in 2021 [2]. Additionally, annual drug overdose deaths involving heroin continue to be in steady decline [3].

While heroin and other opioid-related emergency department visits declined in 2021, fentanyl-related emergency department visits steadily rose throughout 2021 [4]. In addition to the exceptionally high risk of death involved in its use, fentanyl presents several challenges in management in the emergency room setting. Very high potency fentanyl overdoses can be resistant to naloxone treatment [5-8]. Additionally, fentanyl presents novel management challenges for buprenorphine induction. Standard induction protocols and withdrawal assessments were created to treat withdrawal from opioids such as heroin [9]. However, fentanyl has much greater potency, much greater receptor affinity, and longer half-life than previously available opioids, making precipitated withdrawal more likely [10].

The primary aim of this study is to understand the pattern of fentanyl use by veterans served by the VA Connecticut Healthcare system and how it compares to 2018. This study will determine the rates of fentanyl in the urine drug screens of all patients who presented to the Psychiatric Emergency Room (PER) at VA Connecticut over 7 months in 2022, to determine how the presence of fentanyl relates to other opioids and cocaine, and to compare these data to a prior study conducted in 2018.

## Methods

### Sample

The PER at VA Connecticut operates 24 hours per day, 7 days per week as an autonomously-functioning, distinct unit located adjacent to the Medical Emergency Room (MER), with a maximum census of 14 patients. The majority of patient presentations to the PER are voluntary, and the average length of stay is approximately 24 to 36 hours. The most common diagnoses are alcohol use disorder (60%), PTSD (40%), cocaine use disorder (30%), depression (30%), opioid use disorder (20%), and bipolar disorder (20%). The total percentage exceeds 100% as many patients have comorbid diagnoses.

Data were collected for all patients who presented to the PER between June 1, 2022 and December 31, 2022. During this study period there were 581 total patient presentations, 400 of which were unique patient presentations. Demographic data included psychiatric diagnosis, presenting complaint, disposition plan, and Urine Drug Screen (UDS) for the presence of opioids, cocaine, cannabis, benzodiazepines, methadone, amphetamines, and fentanyl. Positive fentanyl screens were sent for confirmation testing only in cases with a high clinical suspicion of a false positive result (e.g. UDS positive only for fentanyl in an 86-year-old male with dementia and an active trazodone prescription). These data were then compared to results from a previous study conducted at the PER in 2018 [11].

This study was granted IRB exemption.

### Test

UDS tests, which include screening for amphetamines, barbiturates, benzodiazepines, cocaine, opiates, cannabinoids, and oxycodone, were performed on the Abbott Architect ci 200. The Multigent cocaine immunoassay has both high sensitivity and high specificity in detection of the primary cocaine metabolite, benzoylecgonine. The Multigent opioid immunoassay has high sensitivity for opiates (morphine, codeine, heroin, and their metabolites) but is variably sensitive for the semisynthetic opioids (oxycodone, hydrocodone, hydromorphone, etc.).

The Immunalysis screen detects fentanyl, norfentanyl, and several related analogues. False positive results may occur in patients taking trazodone, labetalol, or second-generation antipsychotics. False negative results may occur in the presence of these substances at lower values than the screening cutoff (1 ng/mL). Confirmatory fentanyl tests (LC/MS/MS, performed at Quest Diagnostics in Chantilly, VA) only detect fentanyl and norfentanyl, leading to a possible lack of clarity regarding suspicion of a false positive result.

## Results

### Demographics

The median age was 56, with a range of 21 to 89. 93.45% identified as male, 6.37% identified as female, and 0.17% identified as transgender female. Diagnoses included alcohol use disorder (66.27%, n=385), depression (41.48%, n=241), cocaine use disorder (38.21%, n=222), and PTSD (38.04%, n=221). Presenting complaints included alcohol use, cocaine use, suicidal ideation, depression, anxiety, psychosis and opioid use. The most common disposition plan was transfer to an inpatient facility for stabilization.

### Urine Drug Screen Results

Of the 366 urine samples checked for fentanyl, 68 (18.58%) were positive. Of 427 urine samples checked for opioids and cocaine, 31 (7.26%) were positive for opioids and 114 (26.70%) were positive for cocaine.

### Comparison to Prior Study

Although the total number of patients presenting to the PER declined from 746 in 2018 to 581 in 2022, the percentage of unique patient presentations did not (67% in 2018, 69% in 2022). The two study groups were demographically similar in age, gender, most prevalent disorders, average length of stay, and disposition plan.

Refer to Table 1 for detailed results. Interesting trends are highlighted. The overall rate of fentanyl in the UDS was relatively unchanged from 15.67% to 18.58% of those positive for fentanyl, the rate of other opioids decreased from 68.33% to 29.41% and the rate of cocaine increased from 48.33% to 61.76%. The rate of being positive for fentanyl and other opioids but negative for cocaine decreased from 40.00% to 8.82%. Also, of those positive for fentanyl, the rate of being positive for cocaine and negative for other opioids increased from 20.00% to 41.18%. The overall positive rate of non-fentanyl opioids decreased from 15.58% to 7.26% of those positive for cocaine, there was an increase in fentanyl positivity from 28.43% to 37.72%. Finally, of those positive for cocaine and negative for other opioids, there was an increase in fentanyl positivity from 15% to 29%.

<b>Fentanyl</b>	<b>2018 Study</b>	<b>2022 Study</b>
Total Samples	383	366
(+) Fentanyl	60 (15.67%, n=383)	68 (18.58%, n=366)
(-) Fentanyl	323 (84.33%, n=383 )	298 (81.42%, n=366)
<b>Of all Positive for Fentanyl:</b>		
(+) Opioids	41 (68.33%, n=60)	20 (29.41%, n=68)
(-) Opioids	19 (31.67%, n=60)	47 (69.12% n=68)
(+) Opioids (+) Cocaine	17 (28.33%, n=60)	14 (20.59%, n=68)
(+) Opioids (-) Cocaine	24 (40.00%, n=60)	6 (8.82%, n=68)
(+) Cocaine	29 (48.33%, n=60)	42 (61.76%, n=68)
(-) Cocaine	31 (51.67%, n=60)	26 (38.24%, n=68)
(+) Cocaine (-) Opioids	12 (20.00%, n=60)	28 (41.18%, n=68)
(-) Cocaine (-) Opioids	5 (8.33%, n=60)	20 (29.41%, n=68)
<b>Opioids</b>		
Total Samples	380	427
(+) Opioids	63 (16.58%, n=380)	31 (7.26%, n=427)
(-) Opioids	317 (83.42%, n=380)	396 (92.74%, n=427)
<b>Of all Positive for Opioids:</b>		
(+) Fentanyl	41 (65.08%, n=63)	21 (67.74%, n=31)
(+) Cocaine	22 (34.92%, n=63)	14 (45.16%, n=31)
<b>Cocaine</b>		
Total Samples	380	427
(+) Cocaine	102 (26.84%, n=380)	114 (26.70%, n=427)
(-) Cocaine	278 (73.16%, n=380)	313 (73.30%, n=427)
<b>Of all Positive for Cocaine:</b>		
(+) Fentanyl	29 (28.43%, n=102))	43 (37.72%, n=114)
(-) Fentanyl	73 (71.57%, n=102)	71 (62.28%, n=114)
(+) Opioids	22 (21.57%, n=102)	14 (12.28%, n=114)
(-) Opioids	80 (78.43%, n=102)	100 (87.72%, n=114)
<b>Of all Positive for Cocaine and Negative for Opioids:</b>		
(+) Fentanyl	12 (15.00%, n=80)	29 (29.00%, n=100)
(-) Fentanyl	68 (85.00%, n=80)	71 (71.00%, n=100)

## Discussion

These results suggest a shift away from the use of traditional opioids. The percentage of screened patients who tested positive for opioids fell from about 17% in 2018 to 7% in our sample. While most positive fentanyl samples in 2018 were also positive for opioids, the reverse was true in our 2022 study. Samples that were positive for opioids and fentanyl but negative for cocaine also declined from 2018 to 2022.

However, the shift away from traditional opioids does not represent a decrease in use but rather a progressive shift to fentanyl, whether by itself or as an adulterant. About 19% of all screened patients in our sample tested positive for fentanyl, a troubling statistic given the high mortality associated with fentanyl use and this included all presentations to the PER, including those without substance use concerns. Concurrent use of cocaine and fentanyl remains an escalating safety issue [12,13]. From 2018 to 2022, the percentage of samples that were positive for fentanyl and cocaine but negative for other opioids doubled, from 20% to 41%. Additionally, whether sought out intentionally or unintentionally ingested as “fake heroin,” pure fentanyl appears to be becoming more prevalent in our population; the percentage of samples that were positive for fentanyl only (negative for both opioids and cocaine) increased from 8% in 2018 to 29% in 2022.

The initial study in 2018 focused on opioids and cocaine due to reports of fentanyl having been found in heroin and cocaine and no evidence at the time that other illicit substances had been laced with fentanyl. However, there are now reports of fentanyl being found in virtually every illicit substance [14,15]. Indeed, in our sample three patients were positive solely for fentanyl and cannabinoids, one patient was positive for fentanyl and illicit benzodiazepines, and one patient was positive for fentanyl, cannabinoids, and illicit benzodiazepines. Future studies could examine rates of fentanyl use in a wider variety of drugs.

The exponential rise of fentanyl in our country’s drug landscape requires us to reexamine our longstanding diagnostic and treatment approaches. We must expand our standard UDS panel, which at present tests for traditional opioids only, to screen for the drug that is now both more prevalent and more deadly. Naloxone kits, previously available primarily to individuals who use opioids, should be made widely available to reflect the high degree of fentanyl adulteration in a wide variety of recreational drugs. New buprenorphine induction protocols must be developed for fentanyl users to avoid the severe precipitated withdrawal elicited by those currently available. Fentanyl testing kits should be widely distributed, and patients should be educated on their use.

Practical constraints in available testing resources in the VA setting may potentially present a limitation to this study. It is possible that that false positive fentanyl results may be

undetected in cases in which clinical suspicion of a false positive result was low and thus confirmation testing was not pursued. Conversely, since the fentanyl UDS detects fentanyl analogues but the confirmation testing at the VA does not, positive screens with negative confirmations may represent true positives in the case of illicit fentanyl analogues. Although this study provides data regarding prevalence of fentanyl use in our sample, our patients’ awareness of, motivation for, and relationship to fentanyl use remains unknown. Adding patient self-report and interview measures to data collection could help foster deeper understanding of both intentional and nonintentional fentanyl use to develop more effective treatment strategies.

## Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

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