

Overdose from unintentional fentanyl use when intending to use a non-opioid substance: an analysis of medically-attended opioid overdose events

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BACKGROUND

- In 2022, opioid overdoses caused over 70,000 deaths in the U.S. and 649 deaths in San Francisco, with 91% attributable to fentanyl and related analogues
- Deaths involving stimulants (i.e. cocaine and methamphetamine) also attributed to fentanyl have become increasingly common nationwide, but not much is known about unintentional fentanyl use among people who primarily use non-opioid substances
- Nationally and locally, opioid overdose mortality has disproportionately affected Black individuals
- We sought to determine the prevalence of and racial and ethnic disparities in unintentional fentanyl use among people experiencing a medically-attended opioid overdose

METHODS

- We reviewed 448 consecutive records of suspected overdoses from June to September 2022 attended by a specialized post-overdose response team in San Francisco
- We applied a case definition for opioid overdose to paramedic records and abstracted data on intended substance use prior to overdose (Table 1)
- We calculated the proportion of opioid overdoses attributed to intentional and unintentional opioid use and compared demographics. Among those reporting no intentional opioid use, we examined which substances people intended to use

Unintentional fentanyl use among people without opioid tolerance may cause a significant proportion of opioid overdoses in San Francisco, particularly among individuals who use stimulants



RESULTS

- Among events meeting case criteria with data on intended substance use, intentional opioid use was reported by 57.3%, 98.0% of whom intended to use fentanyl (Table 2)
- No intentional opioid use was reported by 42.7%, with most intending to use stimulants (72.6%), including methamphetamine and cocaine
- No intentional opioid use was reported by 58.5% of Black, 52.4% of Latinx, and 28.8% of White individuals (p=0.021), and by 57.6% of women and 39.5% of men (p=0.061)

Conclusions

- We find preliminary evidence that unintentional fentanyl use may contribute substantially to opioid overdose in San Francisco
- Attention to unintentional use, particularly among people who use stimulants, should be a priority for overdose prevention efforts and efforts to address racial disparities in overdose mortality
- Existing interventions including naloxone distribution, drug testing services, access to safer use equipment to reduce cross-contamination, and overdose prevention sites should be scaled up

Table 1: Opioid overdose criteria				
Narrative includes at least 1 of the following: - report of suspected overdose to dispatcher - unresponsiveness to verbal or physical stimuli (per bystander or EMS)	AND	Naloxone administration: Administered by either EMS or bystander prior to EMS arrival	AND	Symptom improvement: Narrative includes at least 1 of the following: - Responsive to verbal or physical stimuli - Improvement in respiratory rate

Table 2. Unintentional and Intentional Opioid Exposure By Survivor Demographics and Intended Substance Use

	Overall (n, % of total sample)	Unintentional Opioid (n, % of subgroup with outcome)	Intentional Opioid (n, % of subgroup with outcome)	P-value
Total	N=171	N=73	N=98	
Race and ethnicity				0.021 ^a
Asian	5 (2.9%)	2 (40.0%)	3 (60.0%)	
Black or African American	41 (24.0%)	24 (58.5%)	17 (41.5%)	
Hispanic or Latinx	21 (12.3%)	11 (52.4%)	10 (47.6%)	
White	66 (38.6%)	19 (28.8%)	47 (71.2%)	
Other race/ethnicity	15 (8.8%)	8 (53.3%)	7 (46.7%)	
Missing	23 (13.5%)	9 (39.1%)	14 (60.9%)	
Gender				0.061 ^b
Women	33 (19.3%)	19 (57.6%)	14 (42.4%)	
Men	129 (75.4%)	51 (39.5%)	78 (60.5%)	
Non-Binary	1 (0.6%)	1 (100%)	0 (0%)	
Missing	8 (4.7%)	2 (25.0%)	6 (75.0%)	
Age				0.043 ^c
Mean, y (SD)	40.2 (13.0)	42.7 (14.2)	38.3 (11.8)	
Median, y [Min, Max]	38.0 [19.0, 77.0]	41.0 [21.0, 77.0]	36.0 [19.0, 73.0]	
	Overall (n, % of total sample)	Unintentional opioid (n, % of outcome)	Intentional Opioid (n, % of outcome)	
Intended substance				
Fentanyl	96 (56.1%)	0 (0%)	96 (98.0%)	
Heroin	2 (1.2%)	0 (0%)	2 (2.0%)	
Any stimulant	53 (31.0%)	53 (72.6%)	0 (0%)	
Methamphetamine	32 (18.7%)	32 (43.8%)	0 (0%)	
Cocaine, crack	11 (6.4%)	11 (15.1%)	0 (0%)	
Cocaine, powder	8 (4.7%)	8 (11.0%)	0 (0%)	
Stimulant, unspecified	2 (1.2%)	2 (2.7%)	0 (0%)	
Cannabis	15 (8.8%)	15 (20.5%)	0 (0%)	
Other substance	5 (2.9%)	5 (6.8%)	0 (0%)	

^aFisher's exact test after excluding individuals with missing race/ethnicity data; p=0.042 when including missing data as race/ethnicity category. ^bFisher's exact test after excluding individuals with missing gender data; p=0.089 when including missing data as gender category. ^cWilcoxon rank-sum test.