

The smoking of fentanyl is rising in San Francisco: A deadly new risk for overdose

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Fentanyl, typically sold in compressed powder chunks, (and a few methamphetamine shards) and the materials commonly used to consume them via inhalation. Credit: Ciccarone et al., 2024, PLOS ONE, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

Now that smoking has replaced injecting as the most common way to

consume fentanyl, UCSF researchers have uncovered an increased risk of fatal overdose from the residue that accumulates in smoking equipment.

The researchers found that people both shared [fentanyl](#) resin and consumed it accidentally. This may be increasing the risk of overdose, especially among those who use the [equipment](#) to smoke other drugs, like methamphetamine, and have not developed tolerance to opioids like fentanyl.

"The risk of overdose when sharing smoking devices with fentanyl resin could be seen as analogous to the risk of shared injection paraphernalia and HIV transmission," said Daniel Ciccarone, MD, MPH, Justine Miner Professor of Addiction Medicine at UC San Francisco in the Department of Family & Community Medicine, who is the first author of the paper. "Harm reduction-based and culturally attuned education campaigns need to be rapidly advanced to address this new risk."

The paper is the first to explore fentanyl resin as a key contributor to overdose and appears May 22 in [PLOS ONE](#).

Smoking fentanyl is rising locally and nationally

San Francisco reached an all-time high of 806 deaths in 2023, with 653 from fentanyl. Nationwide, the number of fentanyl deaths declined modestly in 2023, dropping from 76,226 to 74,702; but they remain high, and fatal overdoses from psychostimulants, including methamphetamine and cocaine, are on the rise.

In recent years, mirroring national trends, fewer people in San Francisco have been injecting fentanyl and more have been smoking it. But the beliefs and behaviors surrounding this development have not been well understood to date.

To conduct the study, the researchers observed people in their own environment in 2022, conducting face-to-face interviews with 34 participants who were recruited from syringe service programs.

They asked about the progression of the participants' [substance use](#), as well as their modes of use, experiences with overdose, and the changes they had observed in the local drug supply. The interviews were supplemented with daily field notes, video-recorded smoking sequences, and photography of drugs and equipment.

The researchers observed that fentanyl was extremely cheap, as low as \$10 a gram; and most people used foil to smoke it, although glass bubbles, bongs, and dabbing devices were also popular. The quality of the fentanyl varied, and people had no apparent method to determine it. Participants could gauge potency upon inhalation, however, and they had developed techniques to regulate their dose. Several participants reported frequent use, up to one or more grams a day.

Shared equipment poses significant dangers

It was both the difficulty of injecting and the fear of overdose that motivated people to start smoking fentanyl instead. Smoking was also more social, and people shared equipment, drugs, and information. The researchers were surprised to find that this caused participants to reflect on the changing risk environment for people with varying opioid tolerances and to develop strategies to protect others.

Early during fieldwork, the researchers observed an interaction in which a random person attempted to borrow a glass pipe from a participant, who vehemently refused. The participant explained that the pipe had been used for fentanyl and did not want to share it with someone who only used methamphetamine. Smoked fentanyl and methamphetamine residues look similar, and the equipment used often overlaps.

"The [overdose](#) risk arises when there is a potential mismatch between the potency of the residual drug and the recipient's tolerance," Ciccarone explained.

While some participants took precautions to prevent others from using their smoking equipment and overdosing on the residues, the shared smoking culture still poses increased risks, particularly given high consumption rates.

"This highlights the need for data that can inform harm reduction education that is understanding of and responsive to the perceptions of people who use opioids," Ciccarone said. "Pacing, increasing awareness of dosages consumed, and checking tolerance of residue recipients are potentially viable interventions deserving further exploration."

More information: Innovation and adaptation: The rise of a fentanyl smoking culture in San Francisco, *PLoS ONE* (2024). [DOI: 10.1371/journal.pone.0303403](#)

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