The Prevalence of Fentanyl in New York City's Unregulated Drug Supply as Measured Through Drug Checking Offered at Syringe Service Programs

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Background

- In New York City (NYC), the rate of drug poisoning (overdose) deaths has more than quadrupled from 10.2 per 100,000 residents in 2000 to 44.0 per 100,00 residents in 2023.
- Fentanyl has become increasingly involved in overdose deaths, with the percentage of overdose deaths involving fentanyl increasing from 2% in 2012 to 80% in 2020.
- In response, NYC's Department of Health and Mental Hygiene (DOHMH) has strengthened its harm reduction strategies as part of the city's comprehensive overdose response plan.
- To provide real-time information to people who use drugs, DOHMH partnered with community-based syringe service programs (SSP) to conduct a pilot study of point-of-care drug checking.

Methods

- Between November 2021 and December 2023, the pilot study offered drug checking and harm reduction education to participants at community-based SSP operating at fixed sites.
- A drug checking technician was responsible for using the drug checking technology and administering a survey to collect data about the participant's experience.
- Point-of-care drug checking included use of immunoassay test strips and a Fourier-transform infrared (FTIR) spectrometer.

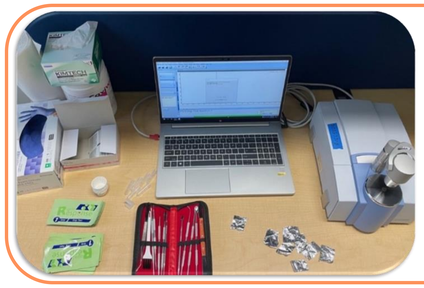


Figure 1. Tools, materials, and equipment used for point-of-care drug-checking.

Source: NYC Health Department's drug checking team (2024)

- While point-of-care provides immediate results to participants, a crucial component of any drug-checking service is the capacity to perform secondary laboratory testing, especially as technicians develop proficiency with drug-checking technologies.
- DOHMH contracted with the Center for Forensic Research and Education (CFSRE) to provide secondary laboratory analysis of collected drug samples, including gas chromatography-mass spectrometry (GC/MS) and liquid chromatography quadrupole time of flight mass spectrometry (LC/QTOF-MS).

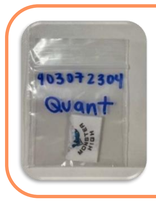


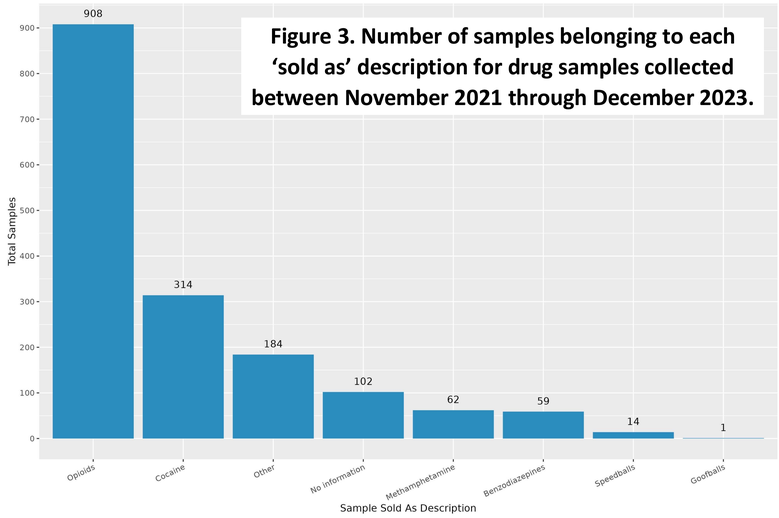
Figure 2. Packaged sample to be sent to a secondary testing partner.

Source: NYC health Department's drug checking team (2024)

- Fentanyl positivity was calculated for each drug checking technology (i.e., immunoassay test strip, FTIR, and secondary laboratory testing).
- Fentanyl positivity was further stratified by descriptions of what a sample was sold as, specifically opioids, cocaine, methamphetamine, and benzodiazepines.

Results

- Across the study period, N=397 unique SSP participants brought in n=1083 drug samples to be checked. An additional n=561 drop-off samples were received for a total analytic sample of N=1644.



- Fentanyl positive among opioids samples was very high, although the positivity varied depending on the drug checking technology (FTS: 95.3%; FTIR: 84.7%; secondary laboratory testing: 89.3%).
- None of the cocaine (n=131), methamphetamine (n=29), or benzodiazepine (n=29) samples sent for secondary testing were found to contain fentanyl.

Table 1. Fentanyl-positivity between Fentanyl Test Strip (FTS) and Fourier transform infrared (FTIR) spectrometry

Drug category	Sample Counts: Sample sold as	Sample Counts: Sample confirmed to be	Fentanyl Test Strip Results: Missing	Negative	Positive	Total	% Fentanyl Positive[a]
	N	*N*	*N*	*N*	*N*	*N*	*%*
Opioid	908	908	14	42	852	894	95.3%
Cocaine	314	309	6	294	9[b]	303	3.0%
Methamphetamine	62	62	3	59	0	59	0%
Benzodiazepines	59	59	0	58	1[c]	59	1.7%

Drug category	Sample Counts: Sample sold as	Sample Counts: Sample confirmed to be	Technician-operated FTIR Results[d]: Missing	No Fentanyl Identified	Fentanyl Identified	Total	% Fentanyl Positive[a]
	N	*N*	*N*	*N*	*N*	*N*	*%*
Opioid	908	908	0	139	769	908	84.7%
Cocaine	314	309	0	308	1[e]	309	0.3%
Methamphetamine	62	62	0	62	0	62	0%
Benzodiazepines	59	59	0	59	0	59	0%

a: % Fentanyl Positive calculated as: Positive / Total, where Total is the sum of positive (or identified) and negative (or not identified) results.
b: Of these 9 samples, 8 have secondary laboratory results that did not identify fentanyl. We consider these 8 observations to be false positives.
c: Secondary laboratory results for this sample did not identify fentanyl. We consider this observation to be a false positive.
d: FTIR has a limit of detection. Any compound present in the FTIR testing sample in a quantity below the limit of detection cannot be identified.
e: This sample was analyzed during a technician's training phase. The secondary laboratory results for this sample did not identify fentanyl. We consider this observation to be a false positive.

Results (continued)

- A small number of observations (n=5) were omitted from the fentanyl calculations as they represented complex real-world scenarios.
- Each scenario speaks to the critical important of understanding an individual's substance use and how that context can impact drug checking.
- Conversations between drug checking technicians and participants can help reveal critical information that can inform drug checking results.

Table 2. Contextual information revealed through point-of-care drug checking

Participant brought in a sample that was **sold as cocaine** and **stored it in a dope** bag. Drug-checking results indicated the presence of **both cocaine and fentanyl** in the participant's sample.
SSP outreach staff brought in a sample on behalf of a participant. The sample was reported to be **sold as cocaine**. Visual inspection showed that the sample was a **beige powder**. Drug-checking technician and secondary laboratory testing confirmed that it was a dope sample and did not contain cocaine.
Participant brought in a sample that they **thought was cocaine**. Drug checking by technician **identified components that were more consistent with a bag of dope**. After talking with technician, **participant realized** that they had brought in their dope bag instead of their cocaine bag.
Participant brought in samples that were **sold to them as cocaine**. Visual inspection showed that the samples had a purple color and sticky, tar-like texture. The Drug-checking technician and secondary laboratory testing found components consistent with dope samples and did not contain cocaine.

Limitations

- All drug checking samples were voluntarily provided by participants who engaged with established syringe service programs in NYC and thus may not represent the entire unregulated drug supply of NYC.
- A small number of drug samples were missing testing results, most commonly secondary laboratory results.

Conclusions

- A local health department, working in close collaboration with community partners, was able to launch a point-of-care drug checking pilot study.
- The overwhelming majority of samples sold as opioids contained fentanyl.
- The prevalence of fentanyl in samples sold as stimulants was very low.
- Talking to the people who provided the drug checking samples was essential in interpreting findings and informing relevant harm reduction strategies.
- Due to its success, the pilot study will continue as a public health program.

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