



HARM REDUCTION AND OVERDOSE PREVENTION Fact Sheet

Evidence for Fentanyl Test Strips

Background


Fentanyl is a synthetic opioid that is 50 to 100 times more potent than morphine.¹ Across the United States, the illicit drug supply has been adulterated by fentanyl and fentanyl-related compounds, leading some people who use drugs (“PWUD”) to consume fentanyl unintentionally.² As a result, between May 2020 and April 2021, 64% of overdose deaths in the nation involved synthetic opioids, primarily illicitly manufactured fentanyl.³ A low-cost, high-impact harm reduction strategy for reducing the risk of overdose due to fentanyl contamination comes in the form of fentanyl test strips (“FTS”).⁴ At the price of approximately one dollar per disposable strip, FTS can detect the presence of fentanyl and many fentanyl analogs in drug samples dissolved in water.⁵

In April 2021, the Centers for Disease Control and Prevention (“CDC”) and the Substance Abuse and Mental Health Services Administration (“SAMHSA”) announced that, for the first time, federal funding could be used to purchase FTS for overdose response programs.⁶ A year later, the White House released a National Drug Control Strategy that called for expanding access to harm reduction interventions—including FTS—in an effort to “meet people where they are and engage them in care and services.”⁷ This fact sheet briefly discusses the emerging evidence that supports the broad distribution of FTS as one tool to reduce fentanyl-related harm.

Summary of evidence supporting fentanyl test strips

Fentanyl test strips are effective in drug detection

Research confirms that FTS detect the presence of contaminants in drug samples with high accuracy. One study from 2020 that examined the validity of portable drug checking devices found that FTS had a lower limit of detection (0.100 mcg/mL), a lower false positive rate (9.6%), and a lower false negative rate (3.7%) than both a hand-held Raman Spectrometer and a desktop Fourier-Transform Infrared Spectrometer in identifying fentanyl in drugs obtained by law enforcement pursuant to criminal investigations.⁸ Fentanyl test strips are also



effective at detecting the presence of certain fentanyl analogs, which are frequently involved in overdose deaths.⁹ A 2022 study found that FTS were able to detect 13 of 17 fentanyl analogs tested.¹⁰

Fentanyl test strips are effective in reducing risky drug use

Fentanyl test strips are distributed to PWUD in community-based and clinical settings nationwide. Across demographics, the vast majority of PWUD surveyed report a keen interest in using FTS.¹¹ Moreover, numerous studies have found that receiving a positive FTS result leads to behavioral changes among PWUD that mitigate the risk of overdose, including discarding drugs,¹² reducing drug doses,¹³ going slower,¹⁴ doing a “tester” shot,¹⁵ using drugs with someone else around,¹⁶ keeping naloxone nearby,¹⁷ and sharing FTS with friends perceived to be at high risk for fentanyl exposure.¹⁸ There is no empirical evidence that use of FTS results in increased drug use among PWUD,¹⁹ and it is unlikely that the availability of drug checking equipment promotes drug initiation.²⁰

Fentanyl test strips are associated with reduced overdose risk

Given the nascency of FTS as a harm reduction tool, more time and research are necessary to establish a causal relationship between FTS use and mortality. However, early studies link FTS use with decreased overdose risk. For example, the implementation of a vending machine in Cincinnati that dispensed harm reduction products, including FTS, was associated with a lower countywide incidence of unintentional overdose death.²¹ Additionally, at a supervised injection facility in Vancouver that offered FTS to clients, a client's reported intention to reduce their dose after testing their drugs was significantly associated with lower odds of overdose.²²

Updating state laws to remove barriers to fentanyl test strips

Despite the endorsement of harm reduction advocates, leaders in the federal government, and PWUD themselves, widespread adoption of FTS is often hindered by state laws that criminalize drug paraphernalia. In some jurisdictions, the statutory definition of drug paraphernalia includes objects used for “testing” or “analyzing” controlled substances—provisions which could apply to FTS.²³ Although arrests and prosecutions seldom stem from the use, possession, or distribution of drug checking equipment like FTS, the threat of criminal consequences may produce a chilling effect that deters uptake of FTS initiatives²⁴ and contributes to low awareness of FTS among PWUD.²⁵ Encouragingly, over half the states—including ten states between August 2021 and August 2022 alone—have modified their laws to clearly permit the possession and/or distribution of drug checking equipment like FTS.²⁶

Conclusion

Fentanyl test strips provide potentially actionable information to PWUD and are associated with reductions in risky drug-use behavior and overdose risk. Modifying or repealing drug paraphernalia laws to clarify that the distribution, possession, and use of FTS is not illegal would likely improve awareness of and access to this critical technology. States that have not already done so should strongly consider modifying their laws and providing funding to ensure that this promising technology is widely available.

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References

¹ *Fentanyl*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/opioids/basics/fentanyl.html> (last visited Feb. 24, 2023).

² *Id.*

³ *What Is Fentanyl?*, NATIONAL INSTITUTE ON DRUG ABUSE, <https://nida.nih.gov/research-topics/trends-statistics/infographics/what-fentanyl> (last visited Feb. 24, 2023).

⁴ Corey S. Davis et al., *Legality of Drug Checking Equipment in the United States: A Systematic Legal Analysis*, 234 DRUG & ALCOHOL DEPENDENCE 109425 (2022).

⁵ LEGISLATIVE ANALYSIS AND PUBLIC POLICY ASSOCIATION, FENTANYL TEST STRIPS (2021), <https://legislativeanalysis.org/wp-content/uploads/2021/05/Fentanyl-Teststrips-FINAL-1.pdf>.

⁶ *Federal Grantees May Now Use Funds to Purchase Fentanyl Test Strips*, CENTERS FOR DISEASE CONTROL AND PREVENTION (Apr. 7, 2021), <https://www.cdc.gov/media/releases/2021/p0407-Fentanyl-Test-Strips.html>.

⁷ *Fact Sheet: White House Releases 2022 National Drug Control Strategy that Outlines Comprehensive Path Forward to Address Addiction and the Overdose Epidemic*, THE WHITE HOUSE (Apr. 21, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/21/fact-sheet-white-house-releases-2022-national-drug-control-strategy-that-outlines-comprehensive-path-forward-to-address-addiction-and-the-overdose-epidemic/>.

⁸ Traci C. Green et al., *An Assessment of the Limits of Detection, Sensitivity and Specificity of Three Devices for Public Health-Based Drug Checking of Fentanyl in Street-Acquired Samples*, 77 INT'L J. DRUG POL'Y 102661 (2020).

⁹ Ju Nyeong Park et al., *Validation of a Lateral Flow Chromatographic Immunoassay for the Detection of Fentanyl in Drug Samples*, 240 DRUG & ALCOHOL DEPENDENCE 109610 (2022).

¹⁰ *Id.*

¹¹ See C. B. Mistler et al., *Fentanyl Test Strip Use and Overdose History Among Individuals on Medication for Opioid Use Disorder*, 8 AUSTIN J. PUB. HEALTH & EPIDEMIOLOGY 1117 (2021) (85% of participants recruited from an addiction treatment program in New Haven were willing to use FTS); Sean T. Allen et al., *Perspectives on Fentanyl Test Strip Use Among People Who Inject Drugs in Rural Appalachia*, 55 SUBSTANCE USE & MISUSE 1594 (2020) (among a sample of PWUD from two counties in West Virginia, those who reported frequently injecting heroin expressed high willingness to use FTS); Megan K. Reed et al., *"I Probably Got a Minute": Perceptions of Fentanyl Test Strip Use Among People Who Use Stimulants*, 92 INT'L J. DRUG POL'Y 103147 (2021) (among a sample of formerly incarcerated PWUD living with HIV in Philadelphia, 73.3% were interested in using FTS); Aleeya A. Barrolle et al., *A Pilot Study Assessing Client Understanding and Use of Fentanyl Test Strips for Harm Reduction*, 63 J. AM. PHARMACISTS ASS'N 295 (2023) (73% study participants receiving substance use treatment services recruited from a community mental health center in St. Louis indicated that they would like to be able to detect whether there is fentanyl in their drug before use); Sukhpreet Klaire et al., *Take-Home Drug Checking As a Novel Harm Reduction Strategy in British Columbia, Canada*, 106 INT'L J. DRUG POL'Y 103741 (2022) (more than 95% of individuals who participated in a pilot drug checking program in British Columbia stated they would use FTS again); Maxwell S. Krieger et al., *High Willingness to Use Rapid Fentanyl Test Strips Among Young Adults Who Use Drugs*, 15 HARM REDUCTION J. 7 (2018) (among a convenience sample of young adults who use drugs in Rhode Island, 95% reported that they planned to use FTS in the future); Ju Nyeong Park et al., *A Fentanyl Test Strip Intervention to Reduce Overdose Risk Among Female Sex Workers Who Use Drugs in Baltimore: Results from a Pilot Study*, 110 ADDICTIVE BEHAV. 106529 (2020) (96% of participants, sex workers who use drugs in Baltimore, reported being likely to use FTS in the future); Ju Nyeong Park et al., *Evaluation of Fentanyl Test Strip Distribution in Two Mid-Atlantic Syringe Services Programs*, 94 INT'L J. DRUG POL'Y 103196 (2021) (among a convenience sample of syringe services program clients surveyed in Maryland and Delaware, 49% of respondents in Maryland and 74% in Delaware reported being

interested or very interested in future FTS use); Susan G. Sherman et al., *Acceptability of Implementing Community-based Drug Checking Services for People Who Use Drugs in Three United States Cities: Baltimore, Boston and Providence*, 68 INT'L J. DRUG POL'Y 46 (2019) (of study participants in Baltimore, Boston, and Providence, 88.9% reported interest in taking home FTS for future use).

¹² See Jacqueline E. Goldman et al., *Perspectives on Rapid Fentanyl Test Strips As a Harm Reduction Practice Among Young Adults Who Use Drugs: A Qualitative Study*, 16 HARM REDUCTION J. 3 (2019); David Goodman-Meza et al., *Behavior Change After Fentanyl Testing at a Safe Consumption Space for Women in Northern Mexico: A Pilot Study*, INT'L J. DRUG POL'Y 103745 (2022); Mohammad Karamouzian et al., *Evaluation of a Fentanyl Drug Checking Service for Clients of a Supervised Injection Facility, Vancouver, Canada*, 15 HARM REDUCTION J. 46 (2018); Klaire et al., *supra* note 9; Maxwell S. Krieger et al., *Use of Rapid Fentanyl Test Strips Among Young Adults Who Use Drugs*, 61 INT'L J. DRUG POL'Y 52 (2018); Hayoung Oh et al., *Fentanyl Self-Testing in a Community-based Sample of People Who Inject Drugs, San Francisco*, INT'L J. DRUG POL'Y 102787 (2020).

¹³ See Goldman et al., *supra* note 10; Goodman-Meza et al., *supra* note 10; Karamouzian et al., *supra* note 10; Klaire et al., *supra* note 9; Krieger et al., *supra* note 10; Oh et al., *supra* note 10; Park et al. (2021), *supra* note 9; Park et al. (2020), *supra* note 9; Nicholas C. Peiper et al., *Fentanyl Test Strips As an Opioid Overdose Prevention Strategy: Findings from a Syringe Services Program in the Southeastern United States*, 63 INT'L J. DRUG POL'Y 122 (2019).

¹⁴ See Goldman et al., *supra* note 10; Klaire et al., *supra* note 9; Krieger et al., *supra* note 10; Park et al. (2021), *supra* note 9; Peiper et al., *supra* note 11.

¹⁵ See Goldman et al., *supra* note 10; Krieger et al., *supra* note 10; Park et al. (2021), *supra* note 9; Park et al. (2020), *supra* note 9; Peiper et al., *supra* note 11.

¹⁶ See Goldman et al., *supra* note 10; Klaire et al., *supra* note 9; Krieger et al., *supra* note 10; Park et al. (2021), *supra* note 9; Park et al. (2020), *supra* note 9.

¹⁷ See Goldman et al., *supra* note 10.

¹⁸ *Id.*

¹⁹ See Felix Betzler et al., *Drug Checking and Its Potential Impact on Substance Use*, 27 EUR. ADDICTION RSCH. 25 (2021).

²⁰ See Raoul Pieter Joost Koning et al., *Visitors of the Dutch Drug Checking Services: Profile and Drug Use Experience*, 95 INT'L J. DRUG POL'Y 103293 (2021).

²¹ Daniel Arendt, *Expanding the Accessibility of Harm Reduction Services in the United States: Measuring the Impact of an Automated Harm Reduction Dispensing Machine*, 63 J. AM. PHARMACISTS ASS'N 309 (2023).

²² Karamouzian et al., *supra* note 10.

²³ THE NETWORK FOR PUBLIC HEALTH LAW, LEGALITY OF DRUG CHECKING EQUIPMENT IN THE UNITED STATES: AUGUST 2022 UPDATE (2022), <https://www.networkforphl.org/wp-content/uploads/2023/01/Legality-of-Drug-Checking-Equipment-in-the-United-States-August-2022-Update.pdf>.

²⁴ *Id.*

²⁵ See Allen et al., *supra* note 9 (among a sample of PWUD from two counties in West Virginia, most were unaware of FTS); Mistler et al., *supra* note 9 (fewer than half of participants recruited from an addiction treatment program in New Haven were aware of FTS prior to the study).

²⁶ THE NETWORK FOR PUBLIC HEALTH LAW, *supra* note 23.