

# Fentanyl Test Strips

MAY 2021

## INTRODUCTION

“Drug checking” is a form of harm reduction in which drugs purchased on the street are chemically analyzed in order to determine the composition of the substance or the presence of an adulterant. While drug checking programs are more readily available in parts of Europe and Canada, the inconsistency and recent high rate of adulteration in the American illicit drug supply has led to an increased interest in drug checking in the U.S. One form of drug checking is the distribution and use of fentanyl test strips (FTS), which are disposable, single-use tests that can detect the presence of fentanyl or fentanyl analogs in a substance.

Fentanyl is increasingly being found in the black market drug supply across the U.S. and is commonly being used by drug dealers as an adulterant in opioids, such as heroin, and stimulants in an attempt to stretch their supply and increase their profits. Moreover, fentanyl is often pressed into counterfeit pills (*e.g.*, oxycodone or Xanax) and sold on the street to unknowing purchasers who believe that they are buying legitimate pharmaceutical drugs. Fentanyl is 50 times more potent than heroin. Since most of the buyers/users are unaware that the substances they are ingesting contain fentanyl, they fail to take necessary harm reduction measures, such as having naloxone available or using around other people, when consuming their drugs. The unintended use of fentanyl by individuals, especially those who have not built up a tolerance for opioids, has led to a spike in drug overdose deaths around the country. In Massachusetts, for example, in 2019, 93 percent of fatal overdoses in the commonwealth involved fentanyl.

In an effort to help curb the spike in drug overdose

deaths largely driven by fentanyl and fentanyl analogs, the Centers for Disease Control and Prevention and the Substance Abuse and Mental Health Services Administration announced, on April 7, 2021, that federal funding can now be used to purchase FTS. The hope is that individuals will use FTS to determine if their drugs have been adulterated with fentanyl so that they can take steps to reduce their risk of overdose, such as choosing to snort or smoke their drugs instead of injecting them.

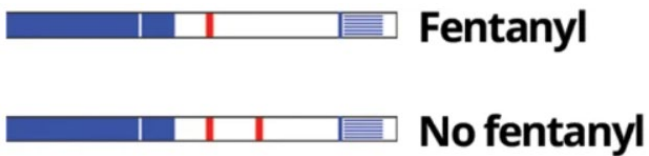
This fact sheet sets forth how FTS work, their harm reduction benefits, and the current challenges surrounding their legality.

## FENTANYL TEST STRIP TECHNOLOGY

Smaller than a pencil, using the same technology as an at-home pregnancy test, and originally developed to detect the presence of fentanyl in urine, FTS are now often used off-label to detect the presence of fentanyl in drug samples prior to ingestion. The majority of FTS on the market are manufactured by BTNX, Inc., a Canadian biotechnology company that specializes in drug testing research and development. FTS manufactured by BTNX, Inc. cost one dollar per strip and are 96-100 percent accurate in detecting the presence of fentanyl. The BTNX strips can detect at least 10 fentanyl analogs, including carfentanyl.

The recommended method for using FTS is to dissolve all of the substance intended to be consumed (*e.g.*, powder or a crushed pill) in water. If an individual decides to dissolve the entire dose, he or she will have the option to drink the dissolved solution after testing. Once the substance is thoroughly dissolved, one end of the FTS is dipped into the solution for approximately 15 seconds. The strip should then be placed on a flat surface for two minutes before it is read and interpreted. If one line appears in the testing window

after the recommended waiting period, the substance is positive for fentanyl or one of its analogs. If two lines appear, the substance is negative for fentanyl. If no lines appear, the test is invalid and should be repeated with a new strip.



Harm reduction experts recommend that every bit of a substance the individual intends to consume be tested; however, some individuals are not willing or able to dissolve their entire dose. In that instance, individuals can test the residue from inside of the packaging (*e.g.*, baggie) containing the drugs. To test the residue using this method, the individual should empty the baggie of any pills or powder and add water to the baggie to dissolve the residue. The FTS can then be dipped into the water in the baggie, after which the test can proceed as set forth above. This method should only be used as a last resort, however, as any fentanyl added to the drug may not be distributed evenly throughout the product and might not, therefore, show up in the residue. For similar reasons, testing only half or part of a pressed pill is discouraged.

While FTS are a cheap, fast, and easy method to perform drug checking, there are some drawbacks to this method. First, although FTS are highly accurate when used properly, any user error can result in inaccurate or uninterpretable results. If an individual dips the FTS into too little or too much solution or fails to wait the two minutes before interpreting the results, the results may not be reliable. Second, there is emerging evidence to suggest that FTS may be cross-reactive with certain levels of methamphetamine. To avoid the possibility of a cross-reaction, experts recommend diluting methamphetamine samples in a greater amount of water than would normally be used to dilute a sample before testing the methamphetamine for fentanyl contamination. Third, FTS do not measure the quantity or potency of fentanyl present in a drug sample. An FTS can only inform the user that the substance contains fentanyl; it does not provide information on how much fentanyl is in the substance or whether the substance contains a lethal dose. Finally, individuals using FTS may falsely

interpret a negative result. While the FTS may be negative, the sample may nonetheless contain a fentanyl analog that is not detected by the FTS. Additionally, a negative result does not mean that the sample is completely safe to consume, as it may contain other non-fentanyl adulterants. Before FTS are distributed to individuals, harm reduction organizations should educate individuals on how to properly use the tests and interpret the results so that they are able to make the most informed decisions concerning drug consumption.

## FENTANYL TEST STRIPS AS A FORM OF HARM REDUCTION

Proponents of FTS support their distribution and use among people who use drugs as a method of harm reduction. Harm reduction advocates believe that FTS empower individuals to make informed choices regarding their drug use and help to prevent accidental overdoses. Additionally, distributing FTS to individuals through harm reduction programs or interactions with law enforcement provides an opportunity to engage individuals in recovery. Every interaction harm reduction and recovery advocates have with people who use drugs offers the individual a possible connection with treatment and other social services, such as housing.

In the past few years, several studies have investigated the efficacy of FTS and whether they cause behavioral changes in the individuals who use them. In a 2018 study entitled, the “Fentanyl Overdose Reduction Checking Analysis Study (FORECAST),” researchers at the Johns Hopkins Bloomberg School of Public Health sought to gauge whether people who use drugs and other stakeholders (*e.g.*, harm reduction organizations) would be interested in using drug checking technologies, including FTS. Researchers conducted interviews with 335 people who use drugs in Baltimore, Boston, and Providence. When asked about their drug use, 256 respondents believed they had consumed fentanyl at least once, and 85 percent of those individuals stated that they wished they had known fentanyl was in the substance before they consumed it. Of all respondents, 85 percent desired to know about the presence of fentanyl before using drugs, and 89 percent agreed that drug checking would make them feel better about protecting themselves from an overdose. Additionally, 70 percent of respondents

reported that knowing that their drugs contained fentanyl would lead them to modify their behavior. When researchers asked service providers, such as harm reduction organizations, about drug checking, they supported the idea, citing that it would be an additional way to engage with people who use drugs and would present an opportunity to provide education and connect them to various services, including needle exchanges and treatment. Moreover, service providers liked the idea of using FTS due to their ease of use and distribution so that individuals could use the strips on their own.

In a 2019 study, researchers at Brown University's School of Public Health trained individuals who use drugs to test their drug sample or drug residue with an FTS before consumption. When the participants were interviewed a month later, most who used FTS expressed positive opinions regarding the utility and simplicity of the tests. Participants also expressed that they appreciated being able to use FTS at home or in private rather than having to take their drugs somewhere to be tested. Being able to use FTS in private allowed individuals to avoid the feeling of being judged and the fear of legal ramifications stemming from their drug use. Additionally, upon receiving a positive FTS result, many participants stated that they were motivated to engage in harm reduction practices, including using a smaller dose, having naloxone nearby, using the drug with someone else around, or choosing not to use the drug at all.

In 2019, RTI International, a research institute, led and published a study on FTS. One hundred and twenty-five people who used drugs completed an online survey about their most recent FTS use. The survey indicated that 81 percent of participants used FTS prior to consuming their drugs and, out of those who did, 43 percent reported a change in drug use

behavior, and 77 percent indicated increased feeling of safety from experiencing an overdose by using FTS. Using a smaller dose of the drug than usual was the most commonly reported change in drug use behavior (32 percent) followed by performing a tester shot, which entails injecting a small amount of a drug sample to assess its potency before deciding whether to inject the remainder of the dose (17 percent), snorting instead of injecting (10 percent), and pushing the plunger more slowly while the needle is still in the vein to gradually assess the effect of the drug (9 percent).

While more studies are needed to fully understand whether FTS are a valid tool in changing behavior and preventing overdose, early studies suggest that FTS may be a good addition to current evidence-based overdose prevention and harm reduction efforts.

## LEGAL CHALLENGES CONCERNING THE USE OF FTS

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One of the main obstacles to getting FTS to the individuals most in need of them are state laws regarding the use and possession of drug paraphernalia. In most states, drug paraphernalia includes “testing equipment used, intended for use, or fashioned specifically for use in identifying, or in analyzing the strength, effectiveness or purity of controlled substances.” Possession or use of drug paraphernalia is often criminalized. Although these laws are not generally enforced with regard to the use or possession of FTS, because there is a risk of criminal penalties, individuals and organizations that might otherwise be willing and able to distribute FTS as part of harm reduction services may be hesitant to do so.

Currently, 32 states have drug paraphernalia laws that include controlled substances testing equipment.<sup>1</sup> However, two of those states – North Dakota and

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<sup>1</sup> ALA. CODE § 13A-12-260 (2021); ARK. CODE ANN. § 5-64-101 (West 2021); CAL. HEALTH & SAFETY § 11014.5 (West 2021); CONN. GEN. STAT. ANN. § 21a-240 (West 2021); FLA. STAT. ANN. § 893.145 (West 2021); GA. CODE ANN. § 16-13-1 (West 2021) (“drug related objects”); HAW. REV. STAT. ANN. § 329-1 (West 2021); IDAHO CODE ANN. § 37-2701 (West 2021); 710 ILL. COMP. STAT. ANN. 600/2 (West 2021); IND. CODE ANN. §§ 35-48-4-8.3 and -8.5 (West 2021); IOWA CODE ANN. § 124.414 (West 2021); KY. REV. STATE ANN. § 218A.500 (West 2021); LA. STAT. ANN. § 40:1021 (2021); MICH. COMP. LAWS ANN. § 333.7451 (West 2021); MISS. CODE ANN. § 41-29-105 (West 2021); MO. ANN. STAT. § 195.010 (West 2021); MONT. CODE ANN. § 45-10-101 (West

2021); N.H. REV. STAT. ANN. § 318-B:1 (2021); N.J. STAT. ANN. § 2C:36-1 (West 2021); N.C. GEN. STAT. ANN. § 90-113.21 (West 2021); N.D. CENT. CODE ANN. § 19-03.4-01 (West 2021); OHIO REV. CODE ANN. § 2925.14 (West 2021); OKLA. STAT. ANN. tit. 63 § 2-101 (West 2021); OR. REV. STAT. ANN. § 475.525 (West 2021); 35 PA. STAT. AND CONS. STAT. ANN. § 780-102 (West 2021); R.I. GEN. LAWS ANN. § 21-28.5-1 (West 2021); S.D. CODIFIED LAWS § 22-42A-1 (2021); TENN. CODE ANN. §§ 39-17-402 and -425 (West 2021); TEX. HEALTH & SAFETY § 481.002 (West 2021); UTAH CODE ANN. § 58-37A-3 (West 2021); VT. STAT. ANN. tit. 18 § 4475 (West 2021); and WASH. REV. CODE ANN. § 69.50.102 (West 2021).

Vermont<sup>2</sup> – have other laws that specifically allow the use of FTS by harm reduction programs. In North Dakota, syringe exchange programs are permitted, pursuant to the newly enacted law, to provide “supplies,” which include test strips, to program participants and, further, provides that they are not considered drug paraphernalia under state law. Vermont law allows fees collected from drug manufacturers to be used for the purchase and distribution of FTS. Additionally, 10 states (Arizona, Delaware, Kansas, Maine, Massachusetts, Minnesota, Nevada, New Mexico, West Virginia, and Wisconsin<sup>3</sup>) have bills pending in their state legislatures that would exclude FTS from the definition of “drug paraphernalia” or that would otherwise allow the possession and use of FTS. Colorado, Maryland, Virginia, and the District of Columbia<sup>4</sup> specifically exclude FTS or testing kits generally from the definition of “drug paraphernalia,” while Nebraska, New York, South Carolina, and Wyoming<sup>5</sup> do not include testing equipment in the definition. Finally, Alaska does not have a definition for “drug paraphernalia.”

Simply because a jurisdiction includes testing equipment in its definition of “drug paraphernalia” does not necessarily mean that harm reduction organizations and others are prohibited from distributing or using FTS. For example, Massachusetts law includes testing equipment in its definition, but the Police Assisted Addiction and Recovery Initiative (P.A.A.R.I.) in Massachusetts initiated a three-month pilot program in 2020 where it partnered with 11 police departments across the commonwealth to distribute fentanyl test kits to individuals who were at risk of an overdose. Each test kit contained three FTS, a brochure outlining how to use the strips, information regarding naloxone, and information on how to contact both

the Massachusetts Substance Use Helpline and a P.A.A.R.I. recovery coach. In December 2020, P.A.A.R.I., in partnership with Brandeis University, received a grant to continue to distribute the fentanyl test kits.

Other states that have instituted FTS distribution programs, despite having a drug paraphernalia law that includes testing equipment, include California, Connecticut, New Jersey, Ohio, Texas, Utah, and Washington. Additionally, Maine recently began a program that allows police departments to distribute FTS. Currently, Maine’s drug paraphernalia law includes testing equipment; however, they are one of the 10 states with a bill pending that would change that.

According to an article published in the American Journal of Public Health (AJPH), evaluations of harm reduction programs that provide FTS to participants “demonstrate that [those who inject drugs] are both willing and able to use knowledge gained from FTSs to reduce overdose risk.” However, if organizations are reluctant to distribute FTS because of the potential legal ramifications, the benefit of these test strips is not realized. The authors of the AJPH article suggest that the best solution is to repeal paraphernalia laws entirely. The more likely scenario is that states will continue to introduce legislation to exempt FTS from the definition of “drug paraphernalia.”

## CONCLUSION

FTS are a useful tool in the fight against overdoses and can lead to changes in an individual’s drug use as well as provide an opportunity to engage individuals in recovery. In order to take advantage of this tool, changes are needed in the way these testing supplies are treated, primarily through amending state drug paraphernalia laws.

<sup>2</sup> See N.D. CENT. CODE ANN. § 23-01-44 (West 2021) and VT. STAT. ANN. tit. 33 §§ 2004 and 2004a (West 2021).

<sup>3</sup> S.B. 1486, 2021 55<sup>th</sup> Leg., First Reg. Sess., (Ariz. 2021); S.B. 76, 151<sup>st</sup> Gen. Assemb., Reg. Sess. (Del. 2021); H.B. 2277, 2021-2022 Legis. Sess., Reg. Sess. (Kan. 2021); H.P. 732, 130<sup>th</sup> Leg., Reg. Sess. (Me. 2021); H.B. 2125, 192<sup>nd</sup> Gen. Ct., Reg. Sess. (Mass. 2021); S.B. 990, 192<sup>nd</sup> Gen. Ct., Reg. Sess. (Mass. 2021); H.F. 883, 92<sup>nd</sup> Leg., Reg. Sess. (Minn. 2021); H.F. 928, 92<sup>nd</sup> Leg., Reg. Sess. (Minn. 2021); S.F. 1142, 92<sup>nd</sup> Leg., Reg. Sess. (Minn. 2021); S.F. 1724, 92<sup>nd</sup> Leg., Reg. Sess. (Minn. 2021); A.B. 345, 81<sup>st</sup> Leg., Reg. Sess. (Nev. 2021); H.B. 17, 55<sup>th</sup> Leg., First Sess. (N.M. 2021); S.B. 13, 55<sup>th</sup> Leg., First Sess. (N.M. 2021); S.B. 363, 55<sup>th</sup> Leg., First Sess. (N.M. 2021); S.B. 264, 85<sup>th</sup> Leg., 1<sup>st</sup> Sess. (W. Va. 2021); A.B. 68,

2021-2022 Leg., Reg. Sess. (Wis. 2021).

<sup>4</sup> COLO. REV. STAT. ANN. § 18-18-426 (West 2021); D.C. CODE ANN. §§ 48-1101 and -1103 (West 2021); MD. CODE ANN. CRIM. LAW § 5-101 and HEALTH-GEN. § 24-908; and VA. CODE ANN. §§ 18.2-265.1 and 54.1-3466 (West 2021).

<sup>5</sup> NEB. REV. STAT. ANN. § 28-439 (West 2021); N.Y. GEN. BUS. § 850 (McKinney 2021); S.C. CODE ANN. § 44-53-110 (2021); and WYO. STAT. ANN. § 35-7-1002 (West 2021).

## RESOURCES

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Boden, Sarah. “Fentanyl Test Strips Could Save Lives, But They’re Illegal in Pennsylvania.” *90.5 WESA*, August 13, 2019. <https://www.wesa.fm/science-health-tech/2019-08-13/fentanyl-test-strips-could-save-lives-but-theyre-illegal-in-pennsylvania>.

Campo-Flores, Arian. “Fentanyl’s New Foe: A Quick Test Strip that can Prevent Overdoses.” *Wall Street Journal*, January 2, 2019. <https://www.wsj.com/articles/fentanyls-new-foe-a-quick-test-strip-that-can-prevent-overdoses-11546252200>.

Centers for Disease Control and Prevention. “Federal Grantees May Now Use Funds to Purchase Fentanyl Test Strips.” April 7, 2021. <https://www.cdc.gov/media/releases/2021/p0407-Fentanyl-Test-Strips.html>.

Columbus Public Health. “Fentanyl Exposure.” <https://www.columbus.gov/Templates/Detail.aspx?id=2147505536>.

Conde, Ximena. “Parents and Camden County Officials Hope Free Fentanyl Test Strips will Reduce Overdose Deaths.” *WHYY*, February 25, 2020. <https://whyy.org/articles/parents-and-camden-county-officials-hope-free-fentanyl-test-strips-will-reduce-overdose-deaths/>.

Connecticut Department of Public Health. “Fentanyl Testing to Prevent Overdose: Information for Healthcare Providers and People Who Use Drugs.” [https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/AIDS--Chronic-Diseases/Prevention/DPH\\_FentanylTestStrips.pdf](https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/AIDS--Chronic-Diseases/Prevention/DPH_FentanylTestStrips.pdf).

DanceSafe. “How to Test Your Drugs for Fentanyl.” Last modified Fall 2020. <https://dancesafe.org/wp-content/uploads/2020/10/DS-fentanyl-instruction-2020.pdf>.

Davis, Corey, Derek Carr, and Elizabeth Samuels. “Paraphernalia Laws, Criminalizing Possession and Distribution of Items Used to Consume Illicit Drugs, and Injection-Related Harm.” *American Journal of Public Health*, 109, no. 11 (September 2019): e1-e4.

[https://www.researchgate.net/publication/335940120\\_Paraphernalia\\_Laws\\_Criminalizing\\_Possession\\_and\\_Distribution\\_of\\_Items\\_Used\\_to\\_Consume\\_Illicit\\_Drugs\\_and\\_Injection-Related\\_Harm](https://www.researchgate.net/publication/335940120_Paraphernalia_Laws_Criminalizing_Possession_and_Distribution_of_Items_Used_to_Consume_Illicit_Drugs_and_Injection-Related_Harm).

Goldman, Jacqueline E., et al. “Perspectives on Rapid Fentanyl Test Strips as a Harm Reduction Practice Among Young Adults Who Use Drugs: A Qualitative Study.” *Harm Reduction Journal* 16, no. 3 (2019). <https://harmreductionjournal.biomedcentral.com/track/pdf/10.1186/s12954-018-0276-0.pdf>.

Guilfoil, John. “P.A.A.R.I. Announces Fentanyl Test Strip Pilot Project.” *PAARI: The Police Assisted Addiction and Recovery Initiative*, April 3, 2020. <https://paarius.org/2020/04/03/p-a-a-r-i-announces-fentanyl-test-strip-pilot-project/>.

Lieberman, Amy. “Removing Legal Barriers to Drug Checking Can Help Reduce Drug-Related Harm.” *The Network for Public Health*, April 8, 2020. <https://www.networkforphl.org/news-insights/removing-legal-barriers-to-drug-testing-can-help-reduce-drug-related-harm/>.

Mars, Sarah G., Jeff Ondocsin, and Daniel Ciccarone. “Toots, Tastes and Tester shots: User Accounts of Drug Sampling Methods for gauging Heroin Potency.” *Harm Reduction Journal* 15, no. 26 (2018). <https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-018-0232-z#citeas>.

National Harm Reduction Coalition. “Fentanyl Test Strip Pilot.” Last modified October 5, 2020. <https://harmreduction.org/issues/fentanyl/fentanyl-test-strip-pilot/>.

## RESOURCES CONTINUED

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National Harm Reduction Coalition. “Fentanyl Use and Overdose Prevention Tips.” Last modified September 8, 2020. <https://harmreduction.org/issues/fentanyl/fentanyl-use-overdose-prevention-tips/>.

Peiper, Nicholas C., et al. “Fentanyl Test Strips as an Opioid Overdose Prevention Strategy: Findings from a Syringe Services Program in the Southeastern United States.” *International Journal of Drug Policy* 63 (2019): 122-128. <https://www.sciencedirect.com/science/article/pii/S0955395918302135>.

Schreiber, Evan. “Police Departments to Distribute Fentanyl Test Strips to Fight Overdose.” *KATU*, March 16, 2021. <https://katu.com/news/recover-northwest/police-departments-to-distribute-fentanyl-test-strips-to-fight-overdose>.

Sherman, Susan G., et al. “Fentanyl Overdose Reduction Checking Analysis Study.” *Johns Hopkins Bloomberg School of Public Health*, February 6, 2018. [https://www.btnx.com/files/Johns\\_Hopkins\\_Fentanyl\\_Executive\\_Summary.pdf](https://www.btnx.com/files/Johns_Hopkins_Fentanyl_Executive_Summary.pdf).

Utah Department of Health. “Fentanyl Test Strip Pilot Project.” Published 2020. <https://ptc.health.utah.gov/wp-content/uploads/2020/12/FTS-Report-Q1-2020-Final.pdf>.

Washington State Department of Health. “Fentanyl Test Strip Project.” <https://www.doh.wa.gov/YouandYourFamily/DrugUserHealth/OverdoseandNaloxone/FentanylTestStrip>

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