



Revised 3/22/2023

## Fentanyl Test Strip Guidance

Overdose deaths in the United States have increased dramatically over the past decade. According to data from the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics, 106,699 people lost their lives to an overdose in 2021. Fentanyl remains the primary driver of these rising overdose trends with fentanyl-related overdose deaths increasing 22 percent between 2020 and 2021.<sup>1</sup> Provisional data from the CDC show these increases in fentanyl-related overdose deaths have continued into 2022.<sup>2</sup>

Fentanyl is a synthetic opioid approximately 50 times stronger than heroin. Pharmaceutically-manufactured fentanyl is used medically; however, fentanyl-related overdose deaths have been attributed to illicitly manufactured fentanyl (IMF) and fentanyl analogues that have become increasingly common in the unregulated drug supply.<sup>3</sup> (For the purposes of this document, IMF and fentanyl analogues will be termed “fentanyl”). In 2021, 6,037 New Yorkers lost their lives to an overdose death. Synthetic opioids, like fentanyl, were involved in 75 percent of these deaths.<sup>4</sup>

In addition to fentanyl contributing to the rising rates of opioid overdose deaths, the co-involvement of fentanyl in cocaine and methamphetamine deaths also is becoming more prevalent.<sup>5,6</sup> The increasing trends in stimulant-related deaths are attributed to a wider availability of illicit stimulants and a rise in the co-use of opioids and stimulants.<sup>6</sup> However, the unintentional exposure to fentanyl in both powder and crack cocaine, methamphetamine, and in counterfeit medications such as oxycodone, hydrocodone, and benzodiazepines presents a significant risk of overdose for people who use drugs (PWUD).<sup>6,7</sup>

Qualitative research indicates that some people use fentanyl because of preference, while others use fentanyl because of its ubiquity in the unregulated drug supply.<sup>8,9</sup> PWUD have concerns about the risks of fentanyl and they express interest in drug checking methods that allow them to be more informed about the substances they are buying so they can make changes in how they use them to avoid an overdose.<sup>10-12</sup>

There are evidence-based harm reduction strategies that can be implemented to prevent overdoses. These best practices include making [naloxone](#) and fentanyl test strips (FTS) available to all PWUD. Using an immunoassay on a paper strip, FTS are an easy-to-use tool to provide a rapid qualitative detection of fentanyl in a substance.<sup>13,14</sup> Because fentanyl commonly is found in the drug supply, it is recommended that programs obtain and dispense FTS to anyone who uses substances regardless of their substance of intended use, presence of a substance use disorder, or date of last use.

### Evidence Supporting the Use of Fentanyl Test Strips

Fentanyl test strips have significant utility as a public health and engagement tool for PWUD. Seminal research has found FTS outperform Raman spectrometer and Fourier-transform infrared (FTIR) spectrometer drug checking technologies in the detection of fentanyl and its analogues in various forms of substances (pill, powder, crystals, rock).<sup>13,15</sup> Compared with Raman and FTIR spectrometers, FTS have the lowest detection limit (0.100 mcg/mL) and a high sensitivity (>96.3%) and specificity (>90.4%) for fentanyl.<sup>13</sup>

Using FTS to test a substance prior to using that substance promotes behavioral changes such as not using alone, having naloxone nearby, and adjusting one's use to a smaller amount, if fentanyl is present.<sup>16-20</sup> These behavioral changes can reduce the risk of fatal overdose. A pilot study examining FTS usefulness as a tool for PWUD showed that in addition to being easy to use, FTS increase the overall awareness and understanding of fentanyl and promote universal precautions around substance use such as to "start low and go slow".<sup>21</sup> "Start low and go slow" is a precautionary measure for using substances in an unregulated drug supply that involves starting with a smaller amount of a substance (also called a "test shot") and waiting to see what the substance's effects are before using more.

FTS are also a powerful engagement tool for providers and allow for the subsequent education about fentanyl and sharing of fentanyl-specific harm reduction strategies among peers. FTS provide an opportunity for providers to reach PWUD other than opioids who also may be at risk of overdose from fentanyl. This has led to the expansion of overdose education and naloxone distribution to a broader community of PWUD.<sup>21</sup>

In 2021, in response to the fentanyl-driven overdose crisis, the CDC and the Substance Abuse and Mental Health Services Administration (SAMHSA) began allowing federal funds to be used to purchase FTS as a public health tool to reduce a person's risk for overdose.<sup>22</sup> This policy change provides the opportunity to dedicate more resources for overdose prevention across communities.

## **How to Use Fentanyl Test Strips**

Although FTS originally were designed to test for the presence of fentanyl in urine, FTS are best utilized when sampling drug residue prior to use. This allows for a person to be informed about their substances and adjust the way they use them accordingly.<sup>16,21</sup> While FTS cannot determine the quantity, purity, or type of fentanyl in the substance, they have demonstrated utility in detecting whether fentanyl is present or not. FTS detect effectively the presence of fentanyl and several known fentanyl analogues including carfentanil, acetyl fentanyl, butyryl fentanyl, remifentanil, ocfentanil, sufentanil, p-fluoro fentanyl, furanyl fentanyl, valeryl fentanyl, and 3-methyl fentanyl.<sup>13,14</sup>

FTS can give a false positive result in samples that have high concentrations of a substance. A false positive occurs when a test strip indicates fentanyl is present in the substance when it isn't. False positives are more common when methamphetamine, MDMA (ecstasy, Molly), and diphenhydramine (a common cutting agent found in heroin) are present in the substance.<sup>23</sup> To avoid false positives, it is recommended to dilute the sample to one teaspoon of water for every 10mg of powder or crystals when testing methamphetamine and MDMA.<sup>24</sup> For all other substances, dilute the sample using a half teaspoon of water for every 10mg of the substance. FTS can also give false negatives (when a test strip indicates fentanyl is not present when it is); however, the false negative rate for FTS (3.7%) is significantly lower than the false negative rates for both Raman spectrometer and FTIR spectrometer drug checking technologies.<sup>13</sup>

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If the substance tests positive for fentanyl, there are steps that can be taken to reduce the risk of overdose. See **Appendix A** for detailed instructions on using FTS to test substances and harm reduction strategies if a substance tests positive for fentanyl.

## Conclusion

Fentanyl test strips are an important tool to prevent overdose deaths. With recent federal support, there are more opportunities to make this lifesaving resource available to people who are served throughout all OASAS programs. FTS provide feedback to PWUD on the presence of fentanyl in their substances and allows them to employ other harm reduction strategies such as keeping naloxone nearby, not using alone or using the [Never Use Alone](#) hotline (800-484-3731) and starting low and going slow. For more information on preventing and responding to overdoses, visit the OASAS [Community Overdose Prevention and Education](#) page. See **Appendix B** for answers to frequently asked questions about fentanyl and FTS.

## Appendix A: How to use FTS to test substances for the presence of fentanyl<sup>25-27</sup>:

**Step 1:** Place a small amount of the substance (at least 10mg) into a clean and dry container like an aluminum cooker or the bag that the substance came in

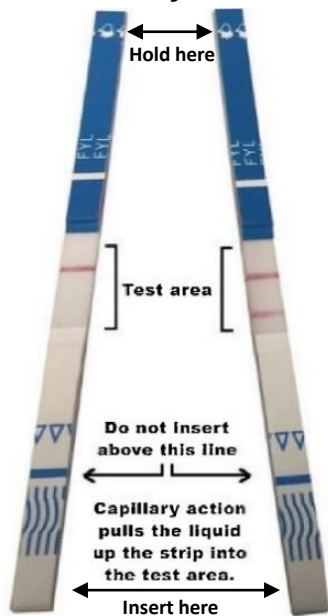
- 10mg is approximately the amount that can cover Abraham Lincoln's hair on a penny
  - 10mg micro scoops are available for purchase at [DanceSafe](#)
- Fentanyl may not be distributed evenly throughout the substance which can result in the sample testing negative for fentanyl while another part of the substance has fentanyl in it
  - See **Table 1** for tips to prepare an evenly distributed sample for FTS

**Step 2:** Add sterile water using the following dilution rates and mix thoroughly:

- For methamphetamine and MDMA: 1 teaspoon of sterile water per 10mg of powder or crystals
  - 1 teaspoon is:
    - One 5mL blue sterile water vial
    - Approximately the amount that can fill a soda bottle cap or aluminum cooker
- For all other substances: ½ teaspoon of sterile water per 10mg of the sample
  - ½ teaspoon is:
    - Half of a 5mL blue sterile water vial

**Step 3:** Holding the solid blue end of the test strip (which has a cartoon hand on it), insert the end of the test strip that is marked with wavy blue lines into the water (don't insert past the solid blue line above the wavy lines) and let it absorb for approximately 15 seconds. See **Figure 1** for a visual of a fentanyl test strip.

**Figure 1. Fentanyl Test Strip Visual<sup>20</sup>**







**Step 4:** Remove the strip from the water and place it on a flat surface for 2 to 5 minutes

**Step 5:** Read the results (**See Figure 2**):

- Sample is positive for fentanyl: A single red line appears
  - Note: This is opposite from how the results are read on other common tests like pregnancy or at-home COVID-19 tests
- Sample is negative for fentanyl: Two red lines appear
- Invalid results: No lines appear at all or a single pink line on the right-hand side of the test appears

**Figure 2. Reading Fentanyl Test Strip Results<sup>26</sup>**

<b>Positive test:</b> If you are not planning to use fentanyl, avoid using the drugs, or start low and go slow.	
<b>Negative test:</b> Remember, no test is 100% accurate and your drugs may still contain fentanyl.	
<b>Invalid test:</b> Retest your drugs.	 

**Step 6:** Use these strategies to reduce the risk of overdose:

- Have someone with you when using or use the [Never Use Alone](https://www.neverusealone.org/) Hotline (800-484-3731)
- Keep naloxone nearby so someone can administer it to the persons who are using substances if they experience an overdose
- Start low and go slow
- Avoid mixing substances

Because there is still a risk of overdose from other substances, these strategies are useful regardless of the substance being used to detect the presence of fentanyl

**Table 1: Tips for Preparing a Sample for FTS**

Tips for preparing a sample by modality of use	Tips for preparing a sample by substance of use
<p>Injecting</p> <ol style="list-style-type: none"> <li>1. Prepare the shot and set the needle aside</li> <li>2. Add water back into the cooker following <b>Step 2</b> instructions and stir well</li> <li>3. Following the instructions in <b>Step 3</b>, insert the FTS directly into the cooker</li> </ol>	<p>Powdered substances (See <i>modality of use tips</i>)</p> <ol style="list-style-type: none"> <li>1. Prepare the shot and set the needle aside</li> <li>2. Add water back into the cooker following</li> <li>3. <b>Step 2</b> instructions and stir well</li> <li>4. Following the instructions in <b>Step 3</b>, insert the FTS directly into the cooker</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>1. Finely crush the substance</li> <li>2. Place 10mg of the substance into a clean and dry container (example: an aluminum cooker or bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions and stir well</li> </ol>
<p>Insufflation (“sniffing”)</p> <ol style="list-style-type: none"> <li>1. Finely crush the substance</li> <li>2. Place 10mg of the substance into a clean and dry container (example: an aluminum cooker or the bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions and stir well</li> </ol>	<p>Pills and Tablets</p> <ol style="list-style-type: none"> <li>1. Finely crush the entire pill or tablet into a fine powder <b>OR</b> break off a piece of the pill or tablet and crush it into a fine powder</li> <li>2. Place 10mg of the powder into a clean and dry container (example: an aluminum cooker or bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions</li> </ol>
<p>Smoking</p> <ol style="list-style-type: none"> <li>1. Break off a small piece (about 10mg) of the substance</li> <li>2. Place it into a clean and dry container (example: an aluminum cooker or bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions and stir well</li> </ol>	<p>Rocks and Crystals</p> <ol style="list-style-type: none"> <li>1. Break off a small piece (about 10mg) of the substance</li> <li>2. Place it into a clean and dry container (example: an aluminum cooker or the bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions and stir well</li> </ol>

<p>Rectal (“booty bumping”) (See <i>substance of use tips</i>)</p> <ol style="list-style-type: none"> <li>1. Break off a small piece (about 10mg) of the substance <b>OR</b> finely crush the entire substance</li> <li>2. Place 10 mg of the substance into a clean and dry container (example: an aluminum cooker or the bag that the substance came in)</li> <li>3. Add water into the container following <b>Step 2</b> instructions and stir well</li> </ol>	<p>Speedball (opioids &amp; cocaine)</p> <ol style="list-style-type: none"> <li>1. Prepare the shot and set the needle aside</li> <li>2. Add water back into the cooker following <b>Step 2</b> instructions and stir well</li> <li>3. Following the instructions in <b>Step 3</b>, insert the FTS directly into the cooker</li> </ol>
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## Appendix B: Frequently Asked Questions on Fentanyl and FTS

### ***Can a person overdose from touching or being near fentanyl?***

A person cannot overdose from touching or being in a space near fentanyl (referred to as dermal or inhalational exposure to fentanyl). The position of the American College of Medical Toxicology (ACMT) and American Academy of Clinical Toxicology (AACT) is that the risk of overdose through this type of incidental contact with fentanyl is extremely low.<sup>28</sup> Risk from inhalational exposure to fentanyl would take 200 minutes of exposure at the highest airborne concentration levels to reach a 100 mcg dose of fentanyl.<sup>28</sup> While there are transdermal delivery systems (patches) for fentanyl that are pharmaceutically used, they are specifically formulated to absorb through the skin. According to ACMT and AACT, “it is very unlikely that small, unintentional skin exposures to tablets or powder would cause significant opioid toxicity, and if toxicity were to occur it would not develop rapidly.”<sup>28</sup>

The perceived fear of overdose from dermal and inhalational exposure to fentanyl is common among law enforcement and emergency responders<sup>29</sup> and often repeated through media reports<sup>30</sup> which has subsequently spread misinformation and panic about fentanyl.<sup>31</sup> This fentanyl panic not only drives stigma against PWUD,<sup>32</sup> it may lead to the anxiety-based responses that are often seen in first responder “overdoses” from dermal and/or inhalational exposure to fentanyl.<sup>33</sup> Symptoms of these incidental exposures to fentanyl are often described as “dizziness” or “feeling like the body shutting down” that are consistent with an anxiety or panic attack, not with the signs of an opioid overdose.<sup>28</sup> (See below for signs of an opioid overdose compared to signs of an anxiety or panic attack). Providing first responders with fact-based information about fentanyl, including the lack of risk of overdose from dermal and inhalational exposure to fentanyl, can reduce these perceived fears and “promote a more effective public health response to the overdose crisis.”<sup>33</sup>

<b>Signs of opioid overdose:</b>	<b>Signs of an anxiety or panic attack:</b>
Blueish color of skin, lips, nail beds (depending on baseline skin tone) Falling asleep or loss of consciousness Non-responsive to stimuli Miotic (pinpoint) pupils Slowed heart rate (possibly)	Sense of impending doom or danger Fear of loss of control or death Dizziness, lightheadedness, or faintness Trembling or shaking Meiotic (enlarged) pupils Rapid, pounding heart rate

Slowed breathing or not breathing at all	Breathing rapidly (hyperventilation): can lead to fainting
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For more information, visit the OASAS [Community Overdose Prevention and Education](#) page

### ***Is fentanyl resistant to naloxone?***

Fentanyl is not naloxone resistant. Naloxone is an opioid antagonist that blocks the effects of all opioids and effectively can reverse an opioid overdose, including overdoses due to fentanyl. Because fentanyl (an opioid) is the leading driver of overdose deaths, when responding to an overdose, assume an opioid is involved and administer naloxone. If an individual is not responding 2-3 minutes after the first dose of naloxone, a second dose of naloxone should be administered. If an individual is not responding to 1-2 doses of naloxone, suspect it is a polysubstance overdose and activate emergency medical services and perform rescue breathing.

Anecdotal reports of needing more naloxone are likely due to the under recognition of polysubstance overdoses or because people aren't waiting long enough between the first and second doses of naloxone. Research has demonstrated that the standard amount of naloxone effectively can reverse an overdose whether the person is using heroin, fentanyl, or heroin with fentanyl.<sup>34,35</sup> Fentanyl-involved overdoses do not require more doses of naloxone<sup>34,35</sup> or higher dose naloxone formulations.<sup>36</sup> For more information on responding to overdoses, visit the OASAS [Overdose Prevention](#) page.

### ***What is “rainbow fentanyl,” and do we need to be concerned?***

The U.S. Drug Enforcement Administration (DEA) issued a [warning](#) about “rainbow fentanyl” in August 2022 suggesting it was a new marketing plan targeting children and young people. However, fentanyl is sold often in [a variety of colors](#) and multi-colored counterfeit medications that mimic pharmaceutical medications have been [found commonly](#) in the unregulated drug supply. It has not been [proven](#) these multi-colored counterfeit medications are specifically targeting children and young people, however; there is a significant risk of overdose when these counterfeit medications unknowingly contain fentanyl. While the rate of adolescent drug use has not increased, their risk of death from fentanyl-involved overdoses, particularly from counterfeit medications, has substantially increased since the end of 2019.<sup>37,38</sup> Parents can help to [prevent these deaths](#) by talking to adolescents about the risks of fentanyl, knowing how to recognize the signs of an overdose and how to respond with naloxone, and connecting them with evidence-based care when it is needed. The [Partnership to End Addiction](#) offers education and tools for parents. For more information, visit the [OASAS Prevention](#) page.

### ***Will the FTS show how much fentanyl is present in the sample?***

FTS measure the qualitative presence of fentanyl (present or absent) but cannot provide further quantitative information on the amount of fentanyl in the sample. As an evidence-based harm reduction tool, their ability to provide information on the presence of fentanyl allows PWUD to adjust their use accordingly. It is recommended that FTS be utilized in addition to other lifesaving harm reduction measures, such as encouraging people to have someone with them when using substances or use the [Never Use Alone](#) hotline (800-484-3731), keeping naloxone nearby, and to start with a small amount of the substance and go slowly.

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## ***Where can I get FTS?***

In an effort to curb the overdose epidemic in NYS, the NYS Office of Addiction Services and Supports (OASAS) is making FTS available to all OASAS providers and NYS Office of Mental Health (OMH) clinics through the [MATTERS Network](#) platform. PWUD can access FTS directly through the MATTERS Network, [Next Distro](#), and their local [syringe services program](#) (SSP).

### **Instructions for providers to request FTS:**

1. Visit <https://mattersnetwork.org/request-test-strips/>
2. Click on “I am a Network Partner”
3. Enter “Organization Type” (community partner)
4. Fill out all required information on the form
  - a. Mailing address should be for the program site that the FTS are to be shipped to.
5. Where did you hear about this service?
  - a. OASAS
6. Submit

#### Note:

- Order no more than you anticipate needing for the next 2-3 months
- FTS orders can arrive within a week, if ordered early; restrictions can affect shipping (e.g., holidays, storms, closures, etc.).

For any questions, send an email to [harmreduction@oasas.ny.gov](mailto:harmreduction@oasas.ny.gov) or visit [oasas.ny.gov/harm-reduction](https://oasas.ny.gov/harm-reduction).

### **Instructions for PWUD to request FTS:**

1. Visit <https://mattersnetwork.org/request-test-strips/>
2. Click on “I am a Patient”
3. Fill out all required information on the form
  - a. Mailing address should be for the location that the FTS are to be shipped to.
4. Submit

#### Note:

- It is also important for PWUD to be connected to their local SSP for access to comprehensive harm reduction services
- PWUD who live outside of NYC, or those without access to an SSP, can order FTS and other harm reduction supplies confidentially through Next Distro.

## ***What substances can I test with FTS?***

It is recommended that FTS be used to test substances that are used commonly with opioids and/or have been found to be mixed with fentanyl in the unregulated drug supply. Therefore, research has demonstrated the utility of FTS in detecting fentanyl in heroin, powder and crack cocaine, pressed pills, methamphetamine, and MDMA. Because fentanyl is not found in the cannabis supply, it is not recommended to use FTS to test cannabis.

## ***Is fentanyl in the cannabis supply?***

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Fentanyl is not being added to the cannabis supply. Instances where police preliminary field testing have found positive samples of cannabis with fentanyl are the result of cross contamination (substances being mixed together by the end user). When the samples are retested with more definitive confirmatory testing later in a lab under sterile conditions, the tests have been negative. The U.S. Drug Enforcement Administration has not found fentanyl in any of its [seized cannabis](#) products. Despite this, widespread anecdotal reports of contamination of cannabis with fentanyl have persisted in the media.<sup>39</sup>

There has been, however, one lab-confirmed case of cannabis with fentanyl. In 2021, The Connecticut Overdose Response Strategy (CT-ORS) and the Connecticut Department of Public Health, Office of Emergency Medical Services issued a press release reporting the first lab-confirmed case of cannabis with fentanyl.<sup>40</sup> The CT-ORS later determined this was an isolated case that was a result of unintentional contamination.<sup>41,42</sup> Because this is the first, and only, instance of a lab-confirmed case of cannabis with fentanyl, there is no evidence supporting fentanyl is being added to the cannabis supply.

It is also important to consider that cannabis is legal in some jurisdictions, generally more socially acceptable, and perceived as less harmful than opioids are. This is true particularly for fentanyl, which is perceived as extraordinarily harmful.<sup>31</sup> In addition to spreading myths, this type of fentanyl panic drives stigma<sup>32</sup> that contributes to shame around the use of substances, particularly young people who may be using opioids intentionally or unintentionally. A person may report anecdotally having used only cannabis, because of its legal status and social acceptability, which may result in an underreporting of what substances actually were being used.

In NYS, the Marijuana Regulation and Taxation Act created a comprehensive regulatory structure for overseeing the licensure, cultivation, production, distribution, sale, and taxation of cannabis. For more information visit the [NYS Office of Cannabis Management](#).

### ***Will insurance pay for FTS?***

Insurance does not cover FTS and they cannot be prescribed. However, due to recent policy changes, federal funding now can be used to purchase FTS.

### ***Does making FTS more available lead to more substance use?***

Like other evidence-based harm reduction strategies, expanding the availability of FTS does not lead to more substance use. FTS enable PWUD to be more informed about the substances they are using and leads to safer substance use and reduces the risk of overdose from fentanyl.

### ***How many FTS should be distributed?***

FTS should be distributed in an amount that meets the needs of PWUD. FTS are a tool that allows persons who uses substances to practice universal precautions around their substance use each time that they use. Asking persons open-ended and nonjudgmental questions about their substance use, including the frequency of use, will provide an opportunity for them to share with you how many FTS they might need from you.

### ***Are there other drug checking strategies that can detect what other substances are in the sample and how much of the substance is present?***

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In addition to FTS, more sophisticated drug checking technologies are becoming more widely available to help both communities and PWUD test local drug supplies. These other technologies include gas chromatography/mass spectrometry (GC/MS) machines. These machines are being piloted at [Drug User Health Hubs](#) and other locations across NYS. In these pilots, a sample of the substance is sent to a central laboratory to determine the chemical composition of the contents. The results from the laboratory are available several days later; therefore, these technologies can provide drug surveillance feedback regarding trends in the drug supply within a community. The NYC Department of Health and Mental Hygiene (DOHMH) recently launched a point of care drug checking pilot project using FTIR machines.<sup>43</sup> There are current efforts at OASAS seeking to build on these technologies to provide point-of-care drug checking. Point-of-care drug checking would allow a sample to be assessed rapidly and the results relayed to the person who intends to use it so they can adjust their use accordingly. Drug checking is an effective harm reduction tool and is well accepted by PWUD.<sup>44</sup> All drug checking strategies, including FTS, are best implemented when they are met with engagement around other harm reduction strategies like those discussed in **Appendix A**.

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