

The Use and Impact of Community Drug Checking Services



Susan Kingston; Ben Biamont; and Caleb Banta-Green, PhD, MPH, MSW, with contributions from members of the WA State Community Drug Checking Network

Key Points:

- Research consistently shows that **many people who use drugs:**
 - **do not want to be using fentanyl.**
 - **have other concerns about the safety of the drugs they use.**
 - **value both fentanyl test strips and more advanced drug checking technologies.**
- Drug checking services (DCS) have been shown to **effectively detect new psychoactive substances and potential dangers in the drug supply** which can inform timely public health alerts.
- Participants often **change their intended and/or actual drug use behavior** when they receive an unexpected drug checking result.
- Multiple studies have found that DCS **participants want DCS in places where they already use services and trust program staff.** They will also **engage in other co-located services.**
- DCS provide an opportunity for providers to **build connection and trust with participants** who often feel stigmatized and wary of accessing services.

Drug checking services (DCS) are rapidly gaining recognition as important tools to provide insight and services to address today’s unpredictable and toxic drug supply. This brief describes drug checking services, their use in Washington State, and the current research evidence supporting drug checking services.

What are drug checking services?

Drug checking services provide ways for people who use drugs (PWUD) to analyze the chemical contents of a drug sample so they can make safer, more informed choices about if or how they may use that drug. Community drug checking programs have been operating for several decades in Canada, Europe, Australia, and New Zealand and are increasingly common across the United States. [1]

In the most widely available DCS model, people who use drugs can “self-test” their drugs with immunoassay test strips (e.g., fentanyl test strips) distributed by harm reduction and other programs. Another DCS model provides *point-of-care* testing for PWUD in a range of settings (e.g., music events, nightclub venues, syringe services programs (SSPs), mobile outreach vehicles), often using more advanced testing technologies. Participants can provide samples in person (some programs also offer drop-off or mail-in options) and receive results in about 5-10 minutes. This model is often called “community-based drug checking.”

In research publications, the term “drug checking services” often refers to both self-test and point-of-care models. In this infobrief, “drug checking services” refers only to point-of-care models.

DCS are often integrated with other harm reduction services such as safer use supplies, overdose education, and health information. Many DCS sites also provide referrals or linkages (or in some cases, onsite access) to health care or treatment services. Drug checking services are always voluntary and anonymous.

Goals and benefits of community drug checking

The primary goal of drug checking services is to help people who use drugs make better-informed decisions about their drug use and reduce risks of overdose and other health consequences. DCS reaches people who use drugs, are at risk for overdose, and who may not be well-served by other community services. For many, DCS can be a critical entry point into other support services.

Drug checking helps INDIVIDUALS:

- know what might be in drugs so they can make more informed decisions about safer use.
- lower risk of overdose or other negative health problems.
- gain some control in an unregulated drug market.
- access harm reduction supplies, reliable information on safer use, and connection with other services.
- build trust with harm reduction and other service providers.

Drug checking also helps the COMMUNITY:

- know about risks in the local drug supply.
- quickly adjust public health response plans when new substances emerge.
- prevent overdose deaths and other adverse health outcomes.
- improve policies and practices for faster access to health care and treatment medications.

Drug checking technologies

There are [several drug checking technologies](#), each with its advantages and disadvantages. The most basic option is immunoassay tests (“test strips”). There are separate test strips available to detect fentanyl, xylazine, benzodiazepines, and other drugs. More advanced technology commonly used on site by DCS programs is Fourier-transform infrared (FTIR) spectroscopy. Samples are often sent to partner laboratories for additional chemical analysis.



Figure 1. FTIR spectroscopy machine and immunoassay test strip.

Because each of these technologies has its unique benefits and limits (Table 1), DCS programs often use both technologies on site to gather the fullest and most accurate information.



Neither of these technologies, however, can determine:

- how strong or pure the substances are.
- if substances found in the tested part of drug are also in the rest of the drug that wasn't tested (uneven mixture).
- if the sample is “safe” to use or not.

*“Drug checking looks for red flags, not green lights.”
-DanceSafe*

Drug checking services cannot tell—and are never used to tell— if a drug is safe to use.

Table 1. Benefits and limits of test strips and FTIR spectroscopy

<p>Test strips</p> 	<p>Benefits:</p> <ul style="list-style-type: none"> • Low-cost. • Easy to use. 	<p>Limits:</p> <ul style="list-style-type: none"> • Test for the presence of just <i>one</i> substance (i.e., only fentanyl, only xylazine). Cannot tell <i>how much</i> of that drug is present. • Can't detect all analogues or drugs with similar chemical structures. • User error can create false positives, false negatives, and invalid results.
<p>FTIR spectroscopy</p> 	<p>Benefits:</p> <ul style="list-style-type: none"> • Can detect all likely substances in the sample (e.g., main active ingredients, cutting agents, filler, or potential contaminants). 	<p>Limits:</p> <ul style="list-style-type: none"> • Can't detect substances that are less than 5% of the sample. • Can't test organic materials (mushrooms, marijuana, peyote etc.), liquids, or drugs active at very low levels like LSD and fentanyl. • Very novel substances might not be in current reference libraries. • Some substances may be missed in the initial interpretation of results.

The WA State Community Drug Checking Network

The WA State Community Drug Checking Network (CDCN)¹ is a partnership of organizations formed in 2022 to develop and implement a coordinated, statewide system of community-based drug checking. Network organizations use detailed protocols, participant input, and best practices to provide drug checking services for people who use drugs and provide aggregated testing results for the broader community.

CDCN members also participate in a number of regional and national drug checking practice and advocacy communities. The largest of these is the international *Alliance for Collaborative Drug Checking*, a learning space with nearly 300 members who provide drug checking services within harm reduction settings and work to advance drug checking policy, best practices, and research.

How are drug samples tested?

1. Participants **bring in small amounts of drugs** or residue to be analyzed. (Some sites provide secured containers for sample drop-off.)
2. Trained drug checking technicians **analyze the sample** with immunoassay test strips and/or FTIR spectroscopy (not all programs use the FTIR). Detailed protocols guide each step of the testing process.
3. Participants get **initial results** in 5-10 minutes. The technician explains the results and shares **harm reduction information and strategies** to help participants take steps to reduce health and



Figure 2. WA State drug checking technician discusses results with a participant.

¹ The network is funded by the Washington State Health Care Authority through a contract with the Addictions, Drug & Alcohol Institute (ADAI) at the University of Washington. ADAI provides technical assistance, training, and operational support to the network, in collaboration with Public Health–Seattle & King County. [Learn more at stopoverdose.org](https://www.stopoverdose.org).

overdose risks. Programs also provide referrals (and same-day, onsite access in some cases) to health care and treatment services.

4. A piece of the sample is then sent to a laboratory for **secondary testing** (with participant consent). Participants receive a wallet card with a QR code and numerical code linked to their specific secondary test results. The secondary results are compiled and reported back to program participants and made available online at: <https://adai.uw.edu/WAdata/DrugChecking/>.

Legal protections in WA State

With recent amendments to [WA State Law](#):

- It is legal for organizations and their staff to offer and do drug checking. These include public health programs, community-based HIV prevention programs, outreach, shelter/housing programs, and pharmacies.
- Test strips, drug checking machines, and other testing supplies are not considered drug paraphernalia.

The process of drug checking is also protected. The law states: *“Public health and syringe service program staff taking samples of substances and using drug testing equipment for the purpose of analyzing the composition of the substances or detecting the presence of certain substances are acting legally and are exempt from arrest and prosecution under RCW 69.50.4011(1) (b) or (c), 37 69.50.4013, 69.50.4014, or 69.41.030(2) (b) or (c).”*

What research has been done on drug checking services?

The bulk of research on the implementation, use, and impact of DCS has been conducted in other countries, often in the context of DCS at music events or supervised drug consumption sites. [2] Much has also been published about the relative effectiveness and limits of specific drug checking technologies. For a comprehensive summary of literature, several systematic reviews are available. [2, 8, 12]

Research from the United States about drug checking services, especially DCS in community settings like syringe services programs using FTIR spectroscopy, is rapidly emerging. **Below is evidence from the body of DCS research that may be most relevant and useful in the local context and that may help to answer common questions about drug checking services.**

Are people who use drugs interested in DCS?

Studies with people who use drugs, or more specifically inject drugs, consistently find **high levels of interest in and use of fentanyl test strips**. [2, 3, 4, 10, 12] In a 2022 study of people who inject drugs in San Diego, 84% of those asked said they would be **interested in an advanced spectroscopy service**, and most (87%) said they were willing to go to an SSP for spectroscopy if it were available. Eighty three percent (83%) said they were willing to use a drop box to leave drug samples for testing. [4] That willingness to use services, however, may be diminished if participants experience stigma, a lack of trust in the provider, or fear of police. [5, 6]

There is also evidence that some DCS **participants also test drugs on behalf of others**. A 2021 report from a drug checking service in Victoria, British Columbia noted that slightly over half (52%) of participants said they were checking drug samples for someone else or for themselves plus at least one other person. [7] “Third party” drug checking suggests that DCS may have wider benefit beyond just the individuals directly using the services.

Are DCS really needed if fentanyl is already so prevalent?

The reasons people use drug checking services may vary based on the drugs they use. Some studies have found that people using opioids were primarily interested in the mixture analysis to determine the approximate ratio of substances in a sample while people using stimulants (primarily methamphetamine) used drug checking primarily to identify (and thus avoid) fentanyl. [8, 9]

A recent survey in Chicago with 118 SSP participants who used illicit opioids found that:

- nearly all (92%) had recently used fentanyl or drugs they thought contained fentanyl.
- over half (56%) said they did not prefer fentanyl or drugs containing fentanyl.
- most (84%) were interested in testing their drugs for fentanyl. [10]

Yet when asked (via open-response question) what specific information respondents would want from drug checking, “confirming the presence of fentanyl” ranked behind other information. Participants more often wanted to know:

- the potency or concentration of drugs including but not exclusive to fentanyl (45%).
- what specific drugs were in the overall mixture (36%).
- whether harmful, unexpected cutting agents had been used (29%).

These results may demonstrate that **many people who use drugs:**

- **do not want to be using fentanyl.**
- **have other concerns about the safety of the drugs they use.**
- **would find value in both fentanyl test strips and more advanced drug checking technologies** to provide comprehensive information about the drugs they may or may not choose to use.

What effect do DCS have on participant behaviors?

Research on whether and how DCS influence intended or actual drug use behavior comes mostly from Europe and is limited almost exclusively to settings where individuals are testing drugs they intended to use at that site (e.g., music festivals, safe consumption sites). It is unclear how well these findings on intended use may apply in an American social and legal context and in point-of-care settings where people are testing drugs they may have already used.

Multiple studies from different countries and in different DCS settings have found that **participants often change their intended and/or actual drug use behavior when they receive an unexpected drug checking result** (i.e., the drug contained fentanyl or another unexpected substance, the drug was sold as something different). This includes less intention to use the drug, using a smaller amount, or disposing of the drug completely. Several studies of drug checking at music events show many participants decide not to use a drug or choose to dispose of a drug after it has been tested. [2]

Some authors suggest, however, that these behavior changes may not be reasonable options for participants at community-based drug checking sites (often people who inject drugs or those who live unhoused). Compared to music event attendees, these individuals tend to have higher acuity drug dependence and/or greater socioeconomic disadvantage, so discarding or not using the drugs tested may not be realistic options. [11]

Do DCS encourage more drug use?

Research on this particular outcome is limited to European studies of drug checking conducted at music festivals. These studies have found that **drug checking did not lead to drug use among people who never used drugs** and **did not increase drug use among people who already use drugs**. [12]

Do DCS users access other services?

Multiple studies have shown that **DCS participants:**

- **find it highly desirable to have DCS available in places where they already use services and trust program staff.**

- **will engage in services** such as risk reduction education, wound care, and testing for HIV and viral hepatitis. [2, 5]

“Part of the purpose of harm reduction is to try to get people plugged into services who are not actively receiving services... So if we integrate drug checking... they are more likely to take home the naloxone, they're more likely to see a psychiatrist, they're more likely to receive primary health care, and all of these components lead to an individual being healthier.”—Interview respondent [13]

In restrictive legal environments, co-locating DCS with other services also provides confidentiality and “plausible deniability” that the individual is not entering just to test drugs. [11, 13] Whether offered alone or within an array of services, DCS provide an opportunity to build connection and trust with people who often feel stigmatized and wary of accessing services. DCS can be a critical entry point into other support services. [14]

Can DCS find new substances in the drug supply?

DCS can be a **key source of information for monitoring the local drug supply and responding to changes** of concern. DCS have been shown to effectively identify local trends and detect new psychoactive substances and potential dangers in the drug supply that can inform timely public health alerts. [12]

What effect do DCS have on overdose rates?

It is extremely difficult to design and conduct a study to measure the correlation and impact of any single intervention on community-level measures like reduced overdose deaths. The drug supply is the most toxic it has ever been and is changing more quickly than ever. Since DCS are often provided along with harm reduction education, naloxone training and distribution, and healthcare services, it is difficult to isolate the impact of just one of those interventions. While this would be a valuable outcome to measure, reduction in overdose is just one of the many goals of drug checking services.

Topics for future research

As DCS scale up across the country, this is a unique and timely opportunity to conduct qualitative and quantitative research to learn about the use and outcomes of drug checking services. Important questions include:

- Do DCS engage *new* people into harm reduction services? What encourages or discourages repeated use of DCS?
- What are the linkage and utilization patterns of other harm reduction, health care, and support services that are promoted or co-located with DCS?
- How quickly and accurately do drug checking results and harm reduction education from the drug checking encounter diffuse through drug-use networks?
- How might DCS impact individual-level harm reduction strategies such as changing drug sellers, using with others present, using a drug more slowly, etc.?
- What are needs and best practices to building capacity of organizations to hire, train, and maintain testing staff?
- What more would DCS participants like from the DCS encounter? What other services would they like to see on site and in the community?
- What are meaningful and measurable outcomes that would show the full value of DCS beyond overdose prevention or reduced drug use?

More research and policy changes are needed to accelerate the scale-up and sustained funding of DCS. Research must also equitably represent racial, ethnic, and gender diversity and be conducted in different regions of the country to reflect variability of local drug markets and legal environments. It is essential that people who use drugs have an active and meaningful role in the codesign of DCS evaluation and research.

References

1. Park JN, Tardif J, Thompson E, Rosen JG, Lira JAS, Green TC. A survey of North American drug checking services operating in 2022. *Int J Drug Policy*. 2023 Oct 3;121:104206. doi: [10.1016/j.drugpo.2023.104206](https://doi.org/10.1016/j.drugpo.2023.104206).
2. Maghsoudi N, Tanguay J, Scarfone K, Rammohan I, Ziegler C, Werb D, Scheim AI. Drug checking services for people who use drugs: a systematic review. *Addiction*. 2022 Mar;117(3):532-544. doi: [10.1111/add.15734](https://doi.org/10.1111/add.15734).
3. Rammohan I, Bouck Z, Fusigboye S, Bowles J, McDonald K, Maghsoudi N, Scheim A, Werb D. Drug checking use and interest among people who inject drugs in Toronto, Canada. *Int J Drug Policy*. 2022 Sep;107:103781. doi:[10.1016/j.drugpo.2022.103781](https://doi.org/10.1016/j.drugpo.2022.103781).
4. Bailey K, Abramovitz D, Artamonova I, Davidson P, Stamos-Buesig T, Vera CF, Patterson TL, Arredondo J, Kattan J, Bergmann L, Thihalolipavan S, Strathdee SA, Borquez A. Drug checking in the fentanyl era: Utilization and interest among people who inject drugs in San Diego, California. *Int J Drug Policy*. 2023;118:104086. doi: [10.1016/j.drugpo.2023.104086](https://doi.org/10.1016/j.drugpo.2023.104086).
5. Carroll JJ, Mackin S, Schmidt C, McKenzie M, Green TC. The Bronze Age of drug checking: barriers and facilitators to implementing advanced drug checking amidst police violence and COVID-19. *Harm Reduct J*. 2022 Feb 4;19(1):9. doi: [10.1186/s12954-022-00590-z](https://doi.org/10.1186/s12954-022-00590-z).
6. Rammohan I, Bouck Z, Fusigboye S, Bowles J, McDonald K, Maghsoudi N, Scheim A, Werb D. Drug checking use and interest among people who inject drugs in Toronto, Canada. *Int J Drug Policy*. 2022 Sep;107:103781. doi:[10.1016/j.drugpo.2022.103781](https://doi.org/10.1016/j.drugpo.2022.103781).
7. Larnder A, Burek P, Wallace B, Hore DK. Correction to: Third party drug checking: accessing harm reduction services on the behalf of others. *Harm Reduct J*. 2021 Sep 27;18(1):100. doi: [10.1186/s12954-021-00548-7](https://doi.org/10.1186/s12954-021-00548-7).
Erratum for: *Harm Reduct J*. 2021 Sep 17;18(1):99.
8. Grace Rose C, Kulbokas V, Carkovic E, Lee TA, Pickard AS. Contextual factors affecting the implementation of drug checking for harm reduction: a scoping literature review from a North American perspective. *Harm Reduct J*. 2023 Sep 4;20(1):124. doi: [10.1186/s12954-023-00856-0](https://doi.org/10.1186/s12954-023-00856-0).
9. Olding M, Ivsins A, Mayer S, Betsos A, Boyd J, Sutherland C, Culbertson C, Kerr T, McNeil R. A Low-Barrier and Comprehensive Community-Based Harm-Reduction Site in Vancouver, Canada. *Am J Public Health*. 2020 Jun;110(6):833-835. doi: [10.2105/AJPH.2020.305612](https://doi.org/10.2105/AJPH.2020.305612).
10. Swartz JA, Lieberman M, Jimenez AD, Mackesy-Amiti ME, Whitehead HD, Hayes KL, Taylor L, Prete E. Current attitudes toward drug checking services and a comparison of expected with actual drugs present in street drug samples collected from opioid users. *Harm Reduct J*. 2023 Jul 7;20(1):87. doi: [10.1186/s12954-023-00821-x](https://doi.org/10.1186/s12954-023-00821-x).
11. Wallace B, van Roode T, Pagan F, Phillips P, Wagner H, Calder S, Aasen J, Pauly B, Hore D. What is needed for implementing drug checking services in the context of the overdose crisis? A qualitative study to explore perspectives of potential service users. *Harm Reduct J*. 2020 May 12;17(1):29. doi: [10.1186/s12954-020-00373-4](https://doi.org/10.1186/s12954-020-00373-4).
12. Giulini F, Keenan E, Killeen N, Ivers JH. A Systematized Review of Drug-checking and Related Considerations for Implementation as A Harm Reduction Intervention. *J Psychoactive Drugs*. 2023 Jan-Mar;55(1):85-93. doi:[10.1080/02791072.2022.2028203](https://doi.org/10.1080/02791072.2022.2028203).
13. Grace Rose C, Pickard AS, Kulbokas V, Hoferka S, Friedman K, Epstein J, Lee TA. A qualitative assessment of key considerations for drug checking service implementation. *Harm Reduct J*. 2023 Oct 17;20(1):151. doi: [10.1186/s12954-023-00882-y](https://doi.org/10.1186/s12954-023-00882-y).

14. Ondocsin J, Ciccarone D, Moran L, Outram S, Werb D, Thomas L, Arnold EA. Insights from Drug Checking Programs: Practicing Bootstrap Public Health Whilst Tailoring to Local Drug User Needs. *Int J Environ Res Public Health*. 2023 May 30;20(11):5999. doi: [10.3390/ijerph20115999](https://doi.org/10.3390/ijerph20115999).

Citation

Kingston S, Biamont B, Banta-Green C, WA State Community Drug Checking Network. The Use and Impact of Community Drug Checking Services. Seattle, WA: Addictions, Drug & Alcohol Institute, Department of Psychiatry & Behavioral Sciences, School of Medicine, University of Washington, November 2023.
<https://adai.uw.edu/download/8726/>