Advanced Drug Checking Services:
Considerations for Syringe Services Programs

Overdose mortality in the United States has reached record levels over the past decade, driven primarily by an unregulated and adulterated drug supply containing substances like illicitly manufactured fentanyl, fentanyl analogues, and more recently xylazine and benzodiazepines, among other emerging drugs.[1,2,3] Syringe services programs (SSPs) deliver essential, evidence-based services to people who use drugs and initially responded to these drug supply changes by providing drug checking services (DCS) like fentanyl test strips to participants.[4,5] Test strips are an affordable and accessible form of DCS and are an important tool for SSPs that cannot implement more advanced DCS. However, test strips can only test one substance at a time, cannot measure the proportion of adulterants present, and have a higher risk of inaccuracies, such as false positives when testing methamphetamine and MDMA or missing the presence of other forms of fentanyl like carfentanil.[6]

Of 466 SSPs responding to the National Survey of Syringe Services Programs...

96.4% distributed fentanyl test strips,

69.1% distributed xylazine test strips, and

11.2% distributed benzodiazepine test strips.[7]

Some SSPs have implemented more advanced DCS that rely on machines and techniques such as mass spectrometry and Fourier transform infrared spectroscopy (FTIR), which offer greater accuracy, test for multiple substances in a drug solution at the same time, and can determine which substances are in the solution.[8] SSPs are an ideal location for advanced DCS because many already provide other overdose prevention services, including education and naloxone distribution, and are trusted service providers for people who use drugs.

Staff members from 23 SSPs, ranging in organizational type and region, discussed their experiences with and considerations for DCS implementation.[9] Eight SSPs shared their experiences administering advanced DCS while 15 programs discussed barriers to adoption. Their experiences are summarized here alongside expert considerations and recent literature to support integration of advanced DCS in SSPs and other organizations that serve people who use drugs.

NSSSP NATIONAL SURVEY OF SYRINGE SERVICES PROGRAMS
NATIONAL HARM REDUCTION COALITION
RTI INTERNATIONAL
NASEN A DAVE PURCHASE INITIATIVE

HOW IT WORKS

Advanced DCS at SSPs involve using special machines and accompanying software to test drug samples participants provide. The results from individual tests can be shared with participants verbally, although some SSPs may only share aggregate data back to participants or the broader community through newsletters, public health announcements, or word of mouth. The most common and user-friendly type of machine used across North America is an FTIR, which uses infrared light and only requires a small amount of a drug to determine its make-up.[10] All eight SSPs that implemented advanced DCS noted leveraging partnerships with universities, state health departments, or other SSPs that have access to machines and trained technicians who can run them to interpret results. Three different models for implementing advanced DCS emerged from these partnerships:

- **Mail-based DCS.** Participants give their samples to SSP staff to mail to a partner laboratory such as The Street Drug Analysis Lab at the University of North Carolina at Chapel Hill. Results are sent back to the SSP to share with participants. Five SSPs offered advanced DCS through this model.
- **Partner-provided DCS.** Advanced DCS are provided at the SSP by partners. Two SSPs used this model.
- **Partner-funded DCS.** Partner provides funding earmarked for a machine and staff so the SSP can offer DCS directly. One SSP administered advanced DCS through this model.

Core Components of Advanced DCS

Collect sample and contact information from participants

Test sample with a specialized machine, review, and confirm results

Share results with participants, providers, and/or the wider community

THE SSP ADVANTAGE

- **SSP participant and community benefits.** Providing advanced DCS at SSPs can provide immediate overdose prevention support to participants, and data from these services can be used to track wide-scale and long-term drug supply trends in communities, which may prevent overdose in individuals who do not regularly visit an SSP.
- **Trusted relationships.** Organizations like SSPs that focus specifically on engaging people who use drugs and have developed trust and rapport with their program participants, which is necessary for engaging in a service like drug checking that may come with some legal risk. SSPs described their role in collaborative DCS as building additional trust with participants so they felt comfortable sharing drug samples with research partners or state health departments.
- **Flexible and innovative operations.** Although the core components of advanced DCS include using a machine and interpreting results, how and where these steps take place can be tailored to an SSP's infrastructure and capacity. Advanced DCS can happen in a brick and mortar setting or in a community-based setting through mobile services. Partnerships can support SSPs that do not have the funding or staff capacity to host their own machines. Programs in states that do not have a supportive legal environment for advanced DCS can try mail-based services. Furthermore, when the legal context restricts if and how SSPs offer DCS, SSPs can participate in legislative advocacy and help develop bills to improve the legal landscape—as they have done for other services previously.

Smith J, Ballantyne B, Philbrick S, Rodriguez Borja I, Wenger LD, Akiba CF, Hairgrove S, Kral A, Lambdin BH, & Patel SV (2026). Advanced drug checking services: Considerations for syringe services programs. RTI International. https://doi.org/10.5281/zenodo.16056143.

"We're also working on a project where we can start to send out…a weekly email—hopefully text [messages too]—[to] public health [departments], public safety [departments], anyone who uses drugs, and community members who want [information on the local drug supply], to share what we found that week. [The information] is not just going back to the person who donated the sample, it's going to anyone who might come across that batch."

—Health care organization in the Northeast

WHO TO ENGAGE

SSPs that implemented advanced DCS relied on partnerships with other organizations to address machine, staff, and space requirements. Engaging local, county, or state officials and law enforcement to create a more supportive legal context may further support implementation. Below is a list of groups that SSPs engaged beyond their participants to support advanced DCS.

- **Other SSPs.** Networking with other SSPs that have implemented advanced DCS or connecting with a peer-based group like the Alliance for Collaborative Drug Checking can provide insights. Some SSP representatives we interviewed described developing or being involved in a drug checking initiative that included other SSPs. Working with other SSPs can increase the drug sample volume throughout a community and improve insight into local drug supply trends.
- **Local and state governments.** SSP representatives described developing or advocating for legislation that supports DCS while others noted the benefits of fostering relationships with government officials. Two resources from the Legislative Analysis and Public Policy Association, one on drug paraphernalia laws by state and one providing a model drug checking equipment law, can help SSPs better understand the current landscape in their state and collaborate with their representatives to create legislation that authorizes DCS.
- **Law enforcement.** Even when laws are in place to protect DCS and other services for people who use drugs, engaging and educating local law enforcement about such services may further facilitate successful implementation. One SSP representative described early engagement with multiple city and county law enforcement agencies while planning advanced DCS implementation to avoid pushback later. Conversely, engaging with law enforcement may not always be possible or safe for a program, as highlighted by another representative who described their DCS efforts being halted by the local sheriff.

"Something we attempted to do here was get our own FTIR or mass spectrometer so that we could do on-site testing…We had put in for this grant, it was going to go before the county commissioners. And the morning that it was supposed to go up, the director of public health pulled it from the docket without telling anybody. And later we found out that he did that because of communication he was having with the sheriff's department…The sheriff was telling him, 'you need to not let them do this.'"

—Community-based organization in the South

- **Researchers.** Partnerships with universities were described as being mutually beneficial and often stemmed from a researcher's desire to pilot a drug checking program. SSPs have established relationships with people who use drugs and therefore access to drug samples, while the research team can offer funds to cover SSP staff time, host the machine, and may also have access to a laboratory for testing.
- **State health departments.** Several SSP representatives described partnerships with their state health departments, some of which provided funding directly to SSPs while others managed statewide drug checking initiatives that SSPs were involved in.

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"We're getting spectrometers, the state is getting spectrometers eventually, and [our director] will be piloting that program and be the first person trained…[the state] has done a lot of lining things up for drug checking legalization and made the legislature language really broad so that buying full scale testing equipment was allowable."

—Community-based organization in the West

CHALLENGES & OPPORTUNITIES

SSP staff highlighted several factors that influenced how they implemented advanced DCS.

Space and work infrastructure. Drug checking machines are relatively large and must be calibrated appropriately for accurate results. Hiring new staff members or providing staff with additional training to run the machines is also required. One SSP representative who had not implemented DCS described concerns about creating new roles and chains of responsibility that were beyond their program's capacity. SSPs may consider mail-based or partner-provided DCS if they do not have the space to store machines or staff capacity and knowledge needed to run the machine and interpret results.

We don't check drugs except for [distributing] fentanyl test strips. We would like to. It's just expensive, right? …But my worry more would be who do we train, what access do we have, and how do we maneuver the project beyond the machine? Who can read it accurately? …We can get the machine, but then what?

—Community-based organization in the South

Cost and financing. With SSPs already largely underfunded, offering DCS is nearly impossible without additional resources—machines can cost up to $50,000 while the median budget of SSPs in the United States was only $144,865 in 2023.[7] One SSP noted that even though the organization could afford a machine, they were concerned about their ability to sustain advanced DCS, which requires ongoing funds for staff capacity. Several SSP representatives discussed partnerships to address cost barriers, and some noted using federal funding sources.

DCS station with FTIR machine, test strips, and results on laptop. (Photo provided anonymously.)

Policies and laws. Until more recently, drug checking and paraphernalia laws varied widely among states and were often vague. As of 2024, there are 29 states in which possessing or using equipment like FTIR to check for adulterants other than fentanyl is no longer potentially subject to a drug paraphernalia penalty.[11] Still, SSPs and their participants must consider potential legal repercussions of possessing, handling, or transporting drugs, which is not always authorized by legislation. One SSP representative described writing their own bill—which later passed and became state law—to legalize carrying residual amounts of drugs for the purpose of drug checking.

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ADDITIONAL RESOURCES

For additional resources on offering advanced DCS at your organization, visit Drug Checking For The People.

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FTIR machine and fentanyl test strips (Photo courtesy of Nigel Brunsdon.)

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