

Alcohol and Drug Monitoring for Community Supervision

This technology brief is the third document in a four-part series (Figure 1) on technologies to support the monitoring and supervision of individuals on pretrial release, probation, and parole (i.e., community supervision). The goal of this series is to offer foundational insights from use cases, examine the challenges of community supervision, highlight example products, and discuss the future of select technologies and their implications for community supervision. This brief highlights technologies and solutions used to monitor alcohol and drug use for persons on community supervision.¹

Key Takeaways

- Providing reliable, timely, and cost-effective monitoring of alcohol and drug use for persons on community supervision as a condition of their release is a serious challenge given high-volume caseloads and concerns with public safety.
- Innovation in drug monitoring is hindered by technological limitations, such as the ability to test for multiple substances, and logistical challenges, such as issues with chain of custody.
- The COVID-19 pandemic acutely affected drug monitoring for persons on community supervision. Some agencies opted for oral fluid and sweat patch testing over urine testing, while other agencies opted to stop testing altogether to avoid close contact between persons on supervision and supervision officers.
- Although remote solutions for alcohol monitoring are on the market and are used in the context of community supervision, the equivalent for drug monitoring does not exist.
- Alcohol and drug monitoring solutions play a role in community supervision today. However, more research is needed to determine if there is a clear link between regular testing and reduced recidivism or changed behavioral health outcomes.

Community supervision, or community corrections, is a broad term used to identify strategies to execute noncustodial sanctions imposed by either a court or a paroling authority. These sanctions are most commonly applied (1) as a form of pretrial release or diversion, (2) postconviction as a term of probation or another alternative to incarceration initiative, or (3) post-incarceration in the form of parole.² As a condition of supervision, many individuals are required to abstain from alcohol and drug use and are subjected to substance use monitoring. Alcohol and drug monitoring in the context of community supervision refers to the process of regularly testing a person on community supervision for alcohol and controlled and noncontrolled substances to verify their sobriety. Alcohol and drug monitoring aims to reduce recidivism and help with treatment goals. Supervision officers face challenges with providing sensitive, specific, timely, and cost-effective alcohol and drug monitoring given high-volume caseloads, persons presenting variable risks, and the evolving landscape of illicit drugs. Alcohol monitoring and drug monitoring present different challenges and rely on different technologies and thus are discussed separately in this report. Innovative technology-enabled solutions for alcohol monitoring have advanced differently compared with solutions for drug monitoring. Inclusion of a product in this report does not represent a recommendation, endorsement, or validation of product claims by the Department of Justice, National Institute of Justice, RTI International, or CJTEC.

Technologies to Enhance Community Supervision

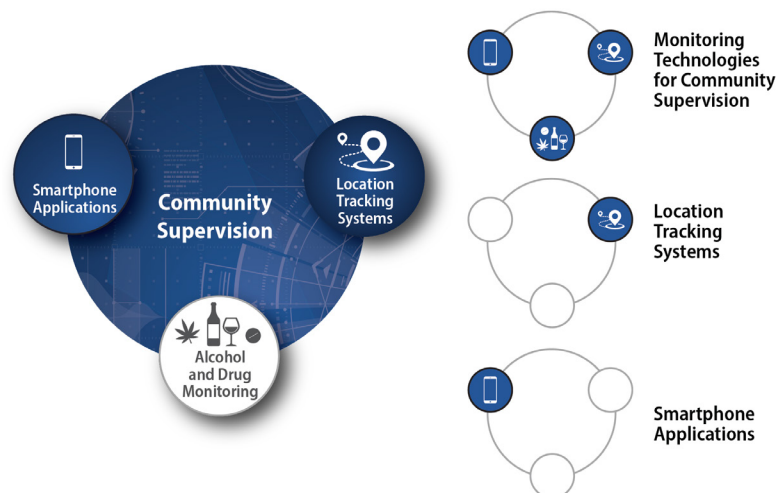


Figure 1: This brief focuses on alcohol and drug monitoring in community supervision; additional documents in this series address other aspects of community supervision.



Context

Alcohol and drug monitoring for persons on community supervision is meant to deter use and reduce recidivism. Historically, persons on community supervision, as well as those under corrections more broadly, have high rates of substance misuse; thus, possession and use of impairing substances have traditionally been one of the most common conditions ordered on parolees.^{3,4} Monitoring an individual for alcohol and drug use is a common standard or special condition of community supervision, which in most jurisdictions entails regular testing to ensure compliance with monitoring conditions.

Alcohol and drug monitoring conditions may look very different across jurisdictions. Community supervision agencies must establish the following:

- **When alcohol and drug monitoring is appropriate:** Individuals are ordered for alcohol and drug monitoring as part of community supervision by the court or by parole or probation officers. In some cases, alcohol and drug monitoring is mandated by statute. For instance, most states have laws requiring all those charged with or convicted of driving under the influence (DUI) or driving while intoxicated (DWI),⁵ including those charged or convicted for the first time, to install an ignition interlock device (IID) if convicted of driving under the influence of alcohol.⁶
- **Testing strategies for alcohol and drug monitoring:** The frequency of testing, as well as the testing method, often varies depending on the person's risk to reoffend. Risk assessments consider factors like current charge(s), criminal history, and substance use history. A person on community supervision for nondrug or alcohol-related charges and with no history of substance use may undergo drug testing at the beginning of supervision and never undergo another test. A person on community supervision for DUI or DWI, however, may need more specialized types of alcohol monitoring to prevent them from starting their vehicle (i.e., IID) after consuming alcohol.
- **Technologies and approaches to monitoring alcohol and drug use:** A variety of approaches and enabling technologies exist for both alcohol and drug monitoring. Unpacking the various approaches and enabling technologies and products is the focus of this report.

This report aims to serve as a resource for community supervision agencies that are considering the adoption of alcohol and drug monitoring technologies and solutions. Although this report does not directly touch on the policy implications of substance use monitoring, the authors acknowledge policy is an important component of the monitoring process. Different jurisdictions may have different policies on what constitutes substance use monitoring. This document does not aim to provide guidance on when to and when not to monitor, but rather provides objective research on the benefits and limitations of different technologies and approaches after the determination to monitor is made.



Although COVID-19 has further complicated alcohol and drug monitoring, it has driven the adoption of innovative technologies and approaches.

Before the pandemic, agencies and persons on community supervision already faced challenges related to alcohol and drug monitoring (Figure 2). The significant increase in the use of pretrial release and community corrections to promote social distancing during the COVID-19 pandemic, further strained the caseloads of supervision officers. Furthermore, social distancing requirements presented additional logistical challenges for alcohol and drug monitoring, which typically requires observed collections. Because of these challenges, agencies sought innovative solutions that could enable remote monitoring. The viability of remote monitoring solutions varies between alcohol and drug monitoring.

Reliable technologies exist to enable remote alcohol monitoring, but implementation challenges must still be considered. Although these technologies predate COVID-19, the adoption of these technologies increased during the pandemic. For alcohol monitoring, some agencies opted for remote alcohol monitoring technologies, such as portable or transdermal devices. The increased adoption highlighted the possibilities of using remote alcohol monitoring technologies for other use cases, such as when the person on community supervision lives far away from a testing center.

Technological and operational barriers prevent comprehensive, effective remote drug monitoring. Agencies were forced to search for and pilot alternative methods in place of on-site supervised specimen collection to limit contact between staff and persons on community supervision; remotely supervised specimen collection of oral fluid samples encountered significant technological and operational barriers, including chain-of-custody issues, technological limitations, and concerns about whether the drug test will stand in the court of law. On-site sample collection remains the most widely used and reliable approach.

Challenges That Community Supervision Agencies Face

- High-volume caseloads make it challenging for agencies to handle the staffing needed to monitor alcohol and drug use. For instance, urinalysis requires same-gender, witnessed sample collection. Some agencies may not have enough staff to efficiently conduct same-gender, witnessed sample collections, which have necessitated long wait times or the use of alternative specimens, such as oral fluid, which do not require same-gender collection.
- Alcohol and drug monitoring consumes a large portion of a supervision officer's time. One survey found that three-quarters of respondents indicated 10% to 40% of their officers' time was spent administering drug tests.⁷
- The number of drugs and the constantly emerging drug threats are overwhelming, further complicating and inhibiting the development of standardized and accepted test methods for agency use. For example, the ever-changing compounds that make up novel psychoactive substances (i.e., synthetic drugs) have made detection more challenging for standard drug tests.⁸
- Supervision agencies operate with a lack of updated guidance on alcohol and drug monitoring. The American Probation and Parole Association last released drug testing guidelines in 1992.⁷

Challenges that Individuals on Community Supervision Face

- Regular alcohol and drug monitoring can be disruptive, making it challenging to fulfill obligations that can help the person succeed, such as maintaining employment and family support.⁹
- The financial burden of paying for alcohol and drug monitoring potentially creates a barrier to success by imposing an economic burden on those least able to afford it.⁹

Figure 2: Alcohol and drug monitoring presents challenges to both community supervision agencies and those on community supervision.



Alcohol Monitoring

Requiring persons to abstain from alcohol or excessive alcohol use is common for persons on community supervision. This is particularly true for persons involved in alcohol-related offenses, such as those charged with or convicted of DUI or DWI. DWI arrests accounted for over 1 million arrests in 2019.^{10,11} With an estimated 25% recidivism rate among drivers arrested for DWI, promising evidence suggests that alcohol monitoring is an effective component in treating those charged with or convicted of DWI and reducing recidivism rates.¹² Both on-site and remote methods for alcohol monitoring exist (Figure 3).

The accuracy and reliability of alcohol monitoring solutions and their admissibility in probation violation hearings depend on the underlying technology. Solutions that use **electrochemical fuel cell technology** (e.g., preliminary breath tests, kiosks, IIDs, portable alcohol monitoring devices, and transdermal alcohol monitoring devices) are widely admissible in probation violation hearings. **Semiconductor sensors**, on the other hand, are less accurate and cheaper than fuel cell sensors, raising concerns about admissibility in probation violation hearings. There are some consumer models of breathalyzers on the market that use semiconductor sensors. Before purchasing alcohol monitoring solutions, community supervision agencies should verify with vendors the specific type of technology utilized in their devices.

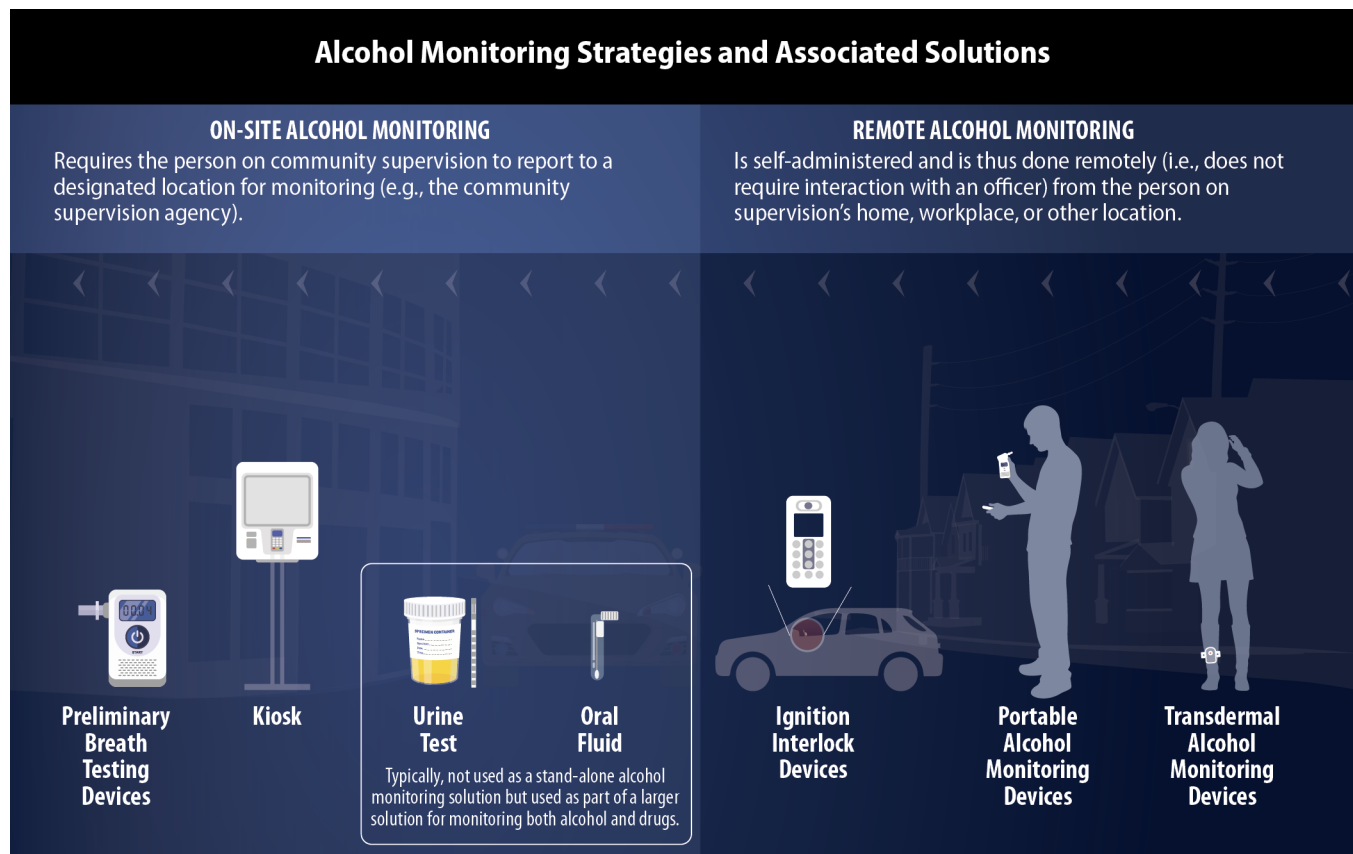


Figure 3: Alcohol monitoring can be done on-site whereby the person on community supervision reports to a designated location for monitoring or can be done remotely whereby a person can self-administer monitoring from their home, work, or other location.




On-Site Alcohol Monitoring

On-site alcohol monitoring requires the person on community supervision to report to a designated location for monitoring (e.g., community supervision agency, testing center). Breath tests are a commonly used method for on-site alcohol monitoring.¹³


Preliminary Breath Test (PBT) Devices

PBT devices are handheld testing instruments used to determine the presence of alcohol in breath. The frequency with which a person on community supervision needs to report for a breath test varies depending on the individual's condition of supervision and risk level. Several states have 24/7 sobriety programs that require individuals to report twice daily to a designated location, approximately 12 hours apart, for testing using a PBT device. Although some research has documented the success of these programs,¹⁴ they have also come under scrutiny by advocacy organizations. Frequent on-site testing can be burdensome on the person on community supervision, which may disrupt employment and other obligations. One 24/7 sobriety program in Wyoming was subject to a recent lawsuit that argued the program amounted to unreasonable searches and seizures, among other things.¹⁵

	Advantages	Disadvantages	Factors to Consider
	<ul style="list-style-type: none"> • Provide accurate and timely results that can be used in parole and probation violation hearings. 	<ul style="list-style-type: none"> • May lead to oversupervision concerns for using twice-daily breath testing for minimal-risk individuals. 	<ul style="list-style-type: none"> • Cost of a PBT device can range from a couple hundred to a few thousand dollars. • Sometimes supervision agencies charge a small fee (\$1–\$3) for breath tests to offset the costs of testing.¹⁶ • In-person breathalyzer monitoring may place a burden on individuals who must take time out of their day for testing.¹⁷

Kiosks

Some supervision agencies have explored ways to reduce the burden of daily scheduled breath tests with kiosks. Recently, kiosks have emerged as a tool for community supervision agencies to help with check-ins. A kiosk is a device, typically a computer or an ATM-like machine, used to facilitate check-ins between a supervision officer and an individual on community supervision instead of having face-to-face meetings.¹⁸ Some kiosks have the added ability to monitor alcohol use and are equipped to conduct PBTs. Each person on supervision inserts a disposable straw mouthpiece into the kiosk and uses it to provide a breath sample. Kiosks grew in popularity during the COVID-19 pandemic because they help limit face-to-face interactions. Kiosk systems use biometric authentication to verify an individual's identity and capture still and video images during the testing process. After an individual provides a breath sample, the kiosk automatically uploads the results to the individual's file, which the supervision agency can then access. Kiosks have the potential to offer testing 24/7 (depending on location), increasing accessibility to testing by allowing persons on community supervision to test outside of normal business hours.

	Advantages	Disadvantages	Factors to Consider
	<ul style="list-style-type: none"> • Free up staff time by eliminating the need for face-to-face interactions and automating recordkeeping. • Provide flexibility in scheduling. • Ensure that the right person is taking the test because it uses biometric capabilities. 	<ul style="list-style-type: none"> • Have high up-front cost for installation. • Create concerns about less frequent interaction with persons on supervision. • Have potential for technology challenges, including hardware failure. 	<ul style="list-style-type: none"> • Kiosk rental is over \$1,000 per month,¹⁹ and testing supplies vary depending on the amount of supplies needed. Agencies using kiosks typically charge a fee for each test. • The person on supervision must report to a designated location for testing, which may place a burden on individuals who must take time out of their day for testing.



Remote Alcohol Monitoring

Technological advancements have made it possible to conduct alcohol testing remotely (i.e., the person on community supervision and the supervision officer do not have to be in the same place). Devices that enable remote alcohol monitoring typically:

- Provide testing notification (if testing is periodic rather than continuous).
- Verify that the person taking the test is the correct individual.
- Detect or measure alcohol use.
- Have security features.
- Report and communicate results to supervision officers.²⁰

Remote alcohol monitoring provides benefits to both the supervision agency and the person on supervision.


Remote alcohol monitoring enables persons on community supervision to maintain family obligations and employment with limited disruption, while also helping supervision officers managing their caseloads so that they can devote their attention to persons on supervision posing the highest risk and requiring the greatest supervision.

Remote alcohol monitoring can be periodic or continuous and varies by risk level. Periodic remote monitoring may be suitable for lower-risk persons on supervision, while continuous remote monitoring or required on-site testing may be required in higher-risk cases.

Ignition Interlock Devices

An IID is a breath-test device connected to a vehicle's ignition that uses fuel cell technology to measure the presence of alcohol on the driver's breath and prevents the vehicle from starting if it detects alcohol in an amount that is over a preset level. These devices may be installed in the motor vehicle of a person on community supervision as imposed by a judge following a conviction of drunk driving. Laws on the provision of IIDs vary by state, as shown in **Figure 4.**⁶ Typically, states require the person on community supervision to pay for the installation, monitoring, and removal of an IID unless the person on supervision is indigent. In this case, states give them the device at a reduced rate.²¹

These devices typically require a rolling retest, which requires users to provide another breath sample after they begin driving. If a positive sample is collected, the results are sent to the supervision agency. Increasingly, states are requiring IIDs to include cameras to help authenticate that the intended person is blowing into the device. Recently, the advancement of cellular technology has prompted some companies to add real-time reporting capabilities to their IIDs, enabling the instant reporting of positive tests instead of waiting until the vehicle is brought in for calibration.²²

	Advantages	Disadvantages	Factors to Consider
	<ul style="list-style-type: none"> • Are effective in reducing DWI recidivism.²³ • Are admissible in parole and probation violation hearings.²⁴ 	<ul style="list-style-type: none"> • Have potential for circumvention (driving another vehicle not equipped with the device or someone else blowing into the device). • Use of rolling retests susceptible to distracted driving.²⁵ • Are susceptible to false positives.²⁵ 	<ul style="list-style-type: none"> • Installation fee is a onetime fee that varies depending on the product but typically is approximately \$100.^{26,27} Monitoring fees are recurring fees that are on the order of a few dollars per day.²⁶ Ignition interlock companies also typically charge a removal fee, typically ranging from \$50 to \$100. • Typically, IIDs are entirely paid for by the person on community supervision. • Each state requires regular calibration for IIDs. Depending on the state, persons will need to have their devices calibrated every 30 to 180 days.²⁸ • Traditionally, IIDs store the results of breath tests, which the ignition interlock service provider downloads when the driver brings the vehicle in for monthly service and calibration, causing delays in sanctions. • Although tampering with IIDs is possible (i.e., have another person provide breath sample to unlock car following undetected alcohol), the requirement to retest using the IID makes this type of tampering less effective. Also, cameras can capture signs of impairment due to the use of another substance that can have additional consequences for the individual placed with an IID.



Ignition Interlock Laws by State

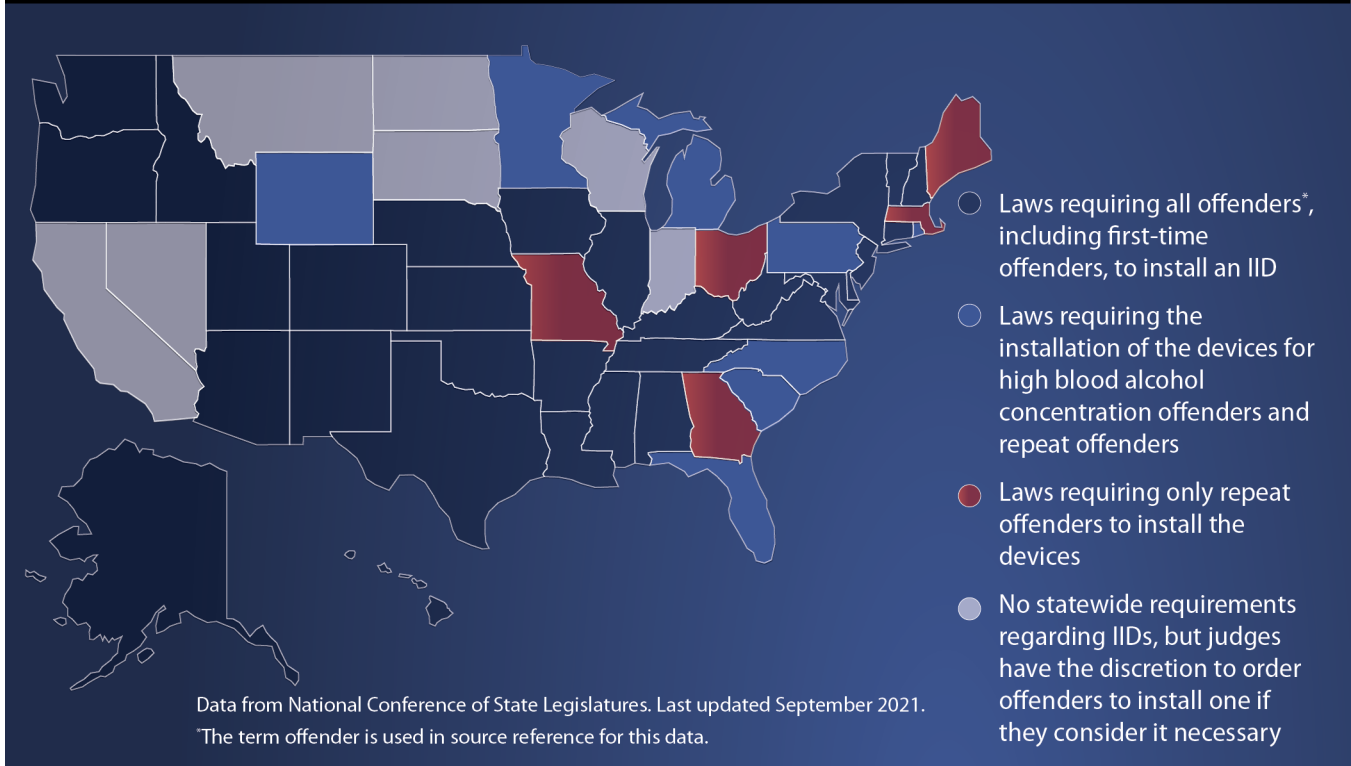


Figure 4: Most states have laws requiring all those charged or convicted of drunk driving to install an IID.

The Infrastructure Investment and Job Acts requires installation of alcohol detection technology in all new vehicles by 2026.

The Infrastructure Investment and Jobs Act,²⁹ signed into law in November 2021, dedicates an entire section to advancing impaired driving technology. The bill mandates that by 2026 automobile manufacturers incorporate technology that detects whether a driver is impaired by alcohol and prevents them from operating the vehicle. This Act will drive development of technologies to prevent driving under the influence of alcohol in all new vehicles.

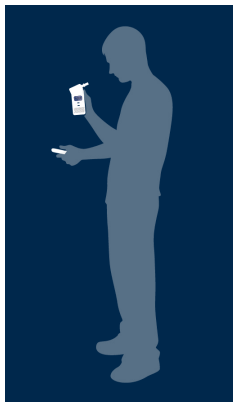


Portable Alcohol Monitoring (PAM) Devices

PAM devices are handheld, personal breath testing devices with biometric authentication features, enabling an individual to self-monitor their breath alcohol content remotely in low-risk environments. Most of these devices are equipped with built-in cameras and wireless capabilities, two critical features that are essential to authenticating sample collection and reducing instances of tampering. Typically, the individual on community supervision uses a smartphone app to capture their photo while simultaneously blowing into the PAM. These devices typically use fuel cell technology, which employs a process that oxidizes the alcohol in a breath sample, and produce results that are admissible in probation violation proceedings.^{30,31} After a breath test is captured, data are uploaded to a secure server. If a person on community supervision skips a test or the breath test comes back positive, PAMs notify the supervision agency.



Example: The RELIANT EMU by Alcohol Countermeasure Systems connects with a mobile device to capture an image of the subject during the collection of a breath sample and uses facial recognition for subject identification.



Advantages

- Provide a convenient and portable method for monitoring, enabling testing anytime and anywhere.
- Provide timely results.
- Verify identity using camera, helping to reduce instances of tampering.
- Are admissible in probation violation hearings.³⁰
- Are equipped with tamper detection features to identify if an individual used an alternative air source to submit tests or modified the device.
- Enable agencies to tailor testing schedule based on risk level.

Disadvantages

- Are susceptible to false positives.
- Raise privacy concerns about third-party vendors owning and having access to data.

Factors to Consider

- PAM devices typically have a hardware fee that varies by vendor and a monitoring fee that averages a few dollars per day. Typically, the person on community supervision pays these fees.
- PAMs typically require cellular service.

Transdermal Alcohol Monitoring (TAM) Devices

TAM devices capture transdermal alcohol readings from insensible perspiration (vaporous sweat) excreted through the skin to continuously monitor alcohol use.³² They have the added benefit of monitoring alcohol consumption continuously and are typically offered as part of a larger monitoring system. These systems include an ankle bracelet that measures the transdermal alcohol concentration and stores and uploads data to a modem that transfers the data to the vendor. Reports and alerts are created using the data and are sent to case management staff.³³ TAM devices typically have security features to detect instances of tampering. For instance, the SCRAM CAM bracelet is equipped with a temperature sensor that monitors both the ambient temperature around the bracelet and the temperature of the wearer to verify that the individual has not removed the bracelet or attempted to modify their body temperature to prevent sweating. Additionally, the device has an infrared sensor to measure the reflective quality of the skin to verify that the device is in place and that nothing has been placed between the device and the skin to obstruct the alcohol testing.³⁴



Advantages

- Enable continuous and noninvasive monitoring.
- Have been shown to be associated with lower possibility of recidivism.³⁵
- Have limited issues with false positives.³⁶
- Admissible in probation violation hearing.
- Are equipped with security measures/ protections to identify tampering.

Disadvantages

- Are typically bulky and worn around the ankle, potentially stigmatizing.
- Have limited capability to detect low levels of drinking.³⁷
- Are susceptible to false negatives.³⁶

Factors to Consider

- These devices incur a onetime installation fee of approximately \$50 to \$100 and a monitoring fee of \$5 to \$12 per day.³³ Typically, the cost is paid by the person on community supervision,³³ which could be a barrier to use.
- Some TAM devices depend on landline telephones for uploading data.³³
- Staff should be aware that external sources of ethanol (e.g., mouth wash) can result in positive transdermal responses.³⁶

Future of Alcohol Monitoring

Driven by trends in technology miniaturization and wearables, as well as the desire for more discreet and efficient monitoring solutions, the use of TAM devices will increase.

The future of alcohol monitoring for community supervision will be shaped by the need and desire for more discreet and convenient wearable monitors in cases where alcohol consumption risks are established. Today, the ankle-worn bracelet from SCRAM Systems represents the current state of the art in a wearable alcohol monitoring device that is proven and accepted within the legal and community supervision communities. Tomorrow, further improvements are expected for wearable devices to build on the advances in consumer products (e.g., Apple Watch, Fitbit, Garmin) and provide more comfort, convenience, and discreet wearability. For instance, SmartStart, SOBRsafe, BACtrack, and Milo Sensors are all in the process of bringing to market wrist-worn alcohol monitoring solutions.^{38,39,40,41} Although these companies are primarily targeting the rehab/treatment and teenage driver markets, their products could conceivably be used within community supervision in the coming years. The world of wearable devices for health monitoring has exploded in recent years, and the development of wearable alcohol monitoring devices will continue to benefit from this greater industry trend in wearables for health monitoring.

Fingerprint testing is another form of TAM that will likely gain traction in community supervision in the future. Intelligent Fingerprinting and SOBRsafe are just two companies offering solutions that detect alcohol via fingerprint. SOBRsafe's SOBRcheck is an Internet of Things (IoT)-enabled alcohol detection platform. Users place two fingers on the device—one to detect the presence of alcohol and the other to biometrically verify identification. The company is marketing the SOBRcheck solution for fleet, workplace, and rehabilitation testing.



Example: The SOBRcheck platform offered by SOBRsafe is an IoT-enabled platform that detects the presence of alcohol.

Advancements in technology have enabled computerized neuropsychological and cognitive assessments that could have applications for community supervision as a screening tool.

Neuropsychological and cognitive assessments aim to detect possible impairment in areas of cortical functioning by determining decreased ability to perform cognitive skills, including pattern recognition and reaction time/decision-making. Over the years, neuropsychological and cognitive testing have been used as screening tools for various neurological conditions, including to identify cognitive impairment in patients with substance use disorders.⁴² For example, the standardized field sobriety test that law enforcement officers use to assess impairment during traffic stops can be considered a form of cognitive testing. Advancements in technology have catalyzed researchers, clinicians, and vendors to apply various technologies to improve the efficiency, reliability, and cost-effectiveness of neuropsychological and cognitive assessments.⁴³ Technology has enabled “many assessment measures to be administered, scored, or interpreted without the direct interaction of a clinician” (p. 1).⁴⁴ The advent of this technology has increased the use of smartphone and tablet applications to assess neurocognitive impairment for neurological diseases like Parkinson's disease and addiction.^{45,46} Reconnect, a vendor that offers software and hardware for community supervision programs and participants, recently rolled out a new feature for its Reconnect Community app that uses cognitive skills testing to screen for alcohol impairment. Individuals take the test 20 times to establish a baseline score. The underlying technology has the capability to infer if someone other than the target user has taken the test. If an individual's score is “in the red,” supervision agencies can opt to bring the individual in for breath testing or urine testing for confirmation.



Drug Monitoring

Individuals sentenced to community supervision are often subject to drug testing to monitor drug use, with the goal of deterring use and reducing criminal reoffending.^{47,48} Random and frequent drug testing is an objective method for monitoring a person on supervision's recovery with their substance use disorder.⁴⁹

Community supervision agencies seeking to monitor drug use among persons on community supervision face several operational and technological challenges:

- **Supervised individuals often have higher rates of diagnosable substance use disorder.** Research has indicated that individuals involved with the criminal justice system have rates of substance use about 4 times higher than the general population,⁵⁰ and individuals on parole and probation have a diagnosable substance use disorder up to 9 times higher than the general population.⁵¹ A 2008 survey indicated that restrictions on possession and use of controlled substances was one of the most common conditions ordered on parolees.⁴
- **Agencies must select which drugs to monitor—and technology must keep up.** With an expansive and quickly changing drug landscape, covering a wide range of drugs can be expensive and impractical. In addition, testing and detection standards often lag behind for emerging (often synthetic) drugs.
- **Drug tests provide limited information.** A positive drug test informs agencies of drug use over a certain window of time but cannot provide information on how much of a drug the individual ingested or how often the individual used the drug. Many testing approaches are sensitive and specific, but false positives and negatives can occur.
- **Remote specimen collection faces chain-of-custody challenges.** Chain-of-custody challenges (e.g., the chronological sequence that records the custody, control, transfer, analysis and disposition of evidence, including biological specimens, as it is handled for testing) can create concerns about court admissibility.
- **The evidence on drug monitoring's effectiveness is inconclusive.** Some research has shown a relationship between substance use and criminal activity,⁵² but the body of research does not collectively show a clear link between drug monitoring and reduced recidivism or changed behavioral outcomes.⁵³

A critical advancement in drug monitoring for community supervision would be a discreet, wearable device that provides real-time and continuous monitoring for drug use of any sort. The emergence of such a device, however, seems highly unlikely in the foreseeable future because of technological limitations.



The COVID-19 pandemic and associated social distancing requirements magnified challenges of drug testing, prompting supervision agencies to use alternative testing methods.

Some supervision agencies opted to switch from urine drug testing to comply with social distancing mandates and opted for oral fluid and sweat-based drug testing. Oral fluid is often collected using devices with absorbent sponges that are swabbed in a person's mouth. Certain devices have a color-changing line on the swab that indicates sufficient fluid for collection, as well as a sterile cap for sample storage. Sweat is often captured via patch. PharmChek, for example, is a patch applied for up to 10 days. These methods are often seen as less invasive sample collection methods and can be easily administered in a variety of settings, including at an individual's home. Video-based communications platforms, like Zoom, enabled agencies to supervise collection of oral fluid samples remotely. Agencies delivered test kits to a person's place of residence and later supervised via video the person on community supervision self-swabbing their mouth and placing the swab into a sealed container. The individual then placed the collected and sealed sample outside their place of residence for collection by the officer. Similarly, some supervision officers virtually observed the application of sweat patches. After the sweat sample was collected, under virtual observation, the officer would instruct the person on supervision to remove the sweat patch and place it into a sealed collection envelope. The individual on community supervision would leave the envelope outside their residence for the officer to collect in a non-contact manner.⁵⁴

New drug testing solutions emerged, primarily in the form of remote specimen collection. Some companies have developed a proctored virtual drug testing service. Although these solutions are primarily marketed for workplace and treatment drug testing, they have been trialed by community supervision agencies. Cordant Health Solutions, for example, offers a video-observed oral fluid testing solution, where a remote collection specialist or probation officer virtually supervises collection of an oral fluid swab. The observer watches the individual collect the sample, seal the kit, and fill out the chain-of-custody form. The person on community supervision mails the sample to the lab for testing.

Admissibility challenges limit adoption of remote specimen collection. Although a few remote solutions exist and have been trialed by community supervision agencies, widespread adoption of remote specimen collection is inhibited by chain-of-custody issues and concerns about whether the testing results will stand in a court of law. However, remote drug testing may eventually emerge as a viable screening tool. For community supervision agencies that are focused on treatment and rehabilitation (e.g., drug courts), remote solutions may be an innovative way to screen for drug use. In addition to remote specimen collection, point-of-care tests (POCTs), such as immunoassay-based oral fluid and sweat tests, may enable field collection by community supervision agencies.



Drug Monitoring Solutions

Technology solutions for drug monitoring must consider the type of **specimen collected** and the **type of testing technology**. Although the technology behind collection and testing drug samples has largely remained the same, drug testing strategies—from the specimens used and approaches to engaging with the person on community supervision—can vary significantly across agencies, as seen in **Figure 5**.

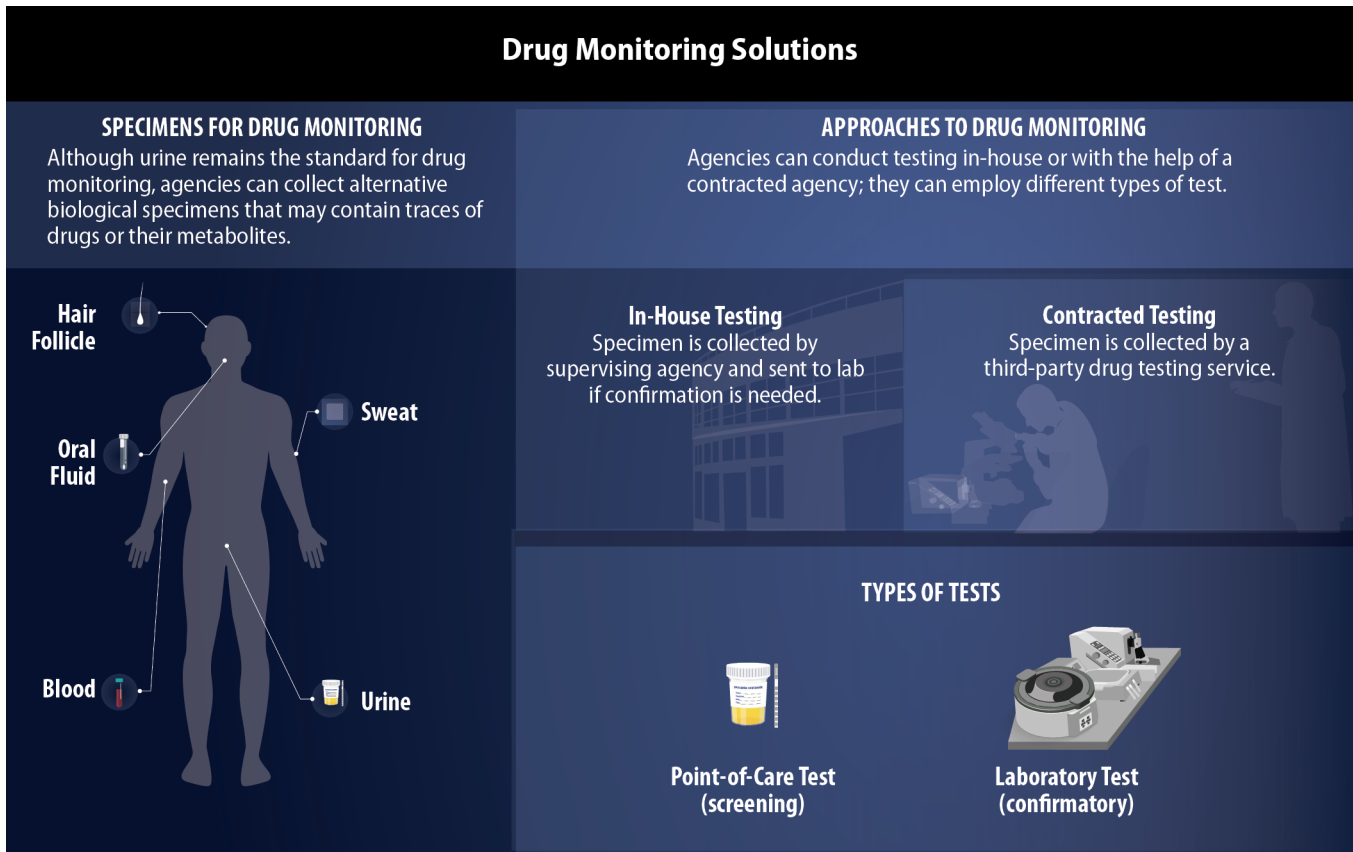


Figure 5: Community supervision agencies employ a variety of strategies for testing for controlled substances.

Specimens for Drug Testing

Advancements in drug testing technology have resulted in the development of reliable and accurate testing strategies using a variety of specimens, which are used to differing extents in community supervision. Although most agencies test for drug use via urine, these agencies are starting to test matrices such as oral fluid, hair, and sweat. One study, which surveyed a sample of Illinois probation department directors, found that 95% of the respondents used urine samples for drug testing, 45% used saliva tests, 8% used sweat patches, 3% used blood, and 3% used hair follicles.^{7,55} Each specimen type offers benefits and limitations for drug monitoring in a community supervision setting, as shown in **Figure 6**.



Advantages and Disadvantages of Specimens for Drug Testing

Specimen	Window of Detection* ⁵⁶	Advantages	Disadvantages
Urine	1-7 days	<ul style="list-style-type: none"> • Can be collected in large volumes. • Can be accommodated by most laboratories because urine testing is an established collection method. • Provides detection for both recent and past use. • Can be used in both laboratory-based tests and POCTs. 	<ul style="list-style-type: none"> • Can be susceptible to tampering via dilution or adulteration.⁵⁷ • Requires invasive, witnessed, same-gender collection.⁵⁸ • May be difficult to collect sample due to instances of “shy bladder” syndrome. • May require refrigerated storage or preservatives.
Oral Fluid (Saliva)	5–48 hours	<ul style="list-style-type: none"> • Is difficult to dilute or adulterate in a supervised collection, though there may be risk of oral cavity contamination.⁵⁹ • Can be used in both laboratory-based tests and POCTs. • Has a window of detection that includes recent drug use. • Does not require same-gender collection (noninvasive). 	<ul style="list-style-type: none"> • Has a short detection window (only detects recent drug use). • Typically captures a very small specimen volume. • May be difficult to collect if the individual has a dry mouth. • Is susceptible to false positives and interferences if buccal cavity not properly cleansed. • Can have long test times because the individual must be supervised 10–30 minutes before sampling.⁶⁰
Sweat (Patch)	10–14 days	<ul style="list-style-type: none"> • Offers reduced risk of adulteration if patch is not accidentally or deliberately removed.⁶¹ • Provides the ability to monitor users over extended periods.⁵⁸ • Does not require same-gender collection (noninvasive). 	<ul style="list-style-type: none"> • Does not detect prior drug exposure (i.e., before the patch is put on). • Is difficult to use on individuals with large abrasions or tattoos or those who have a lower sweat output (may have limited specimen volumes).⁶² • Is susceptible to environmental contamination.^{63,64} • Requires two appointments (one to apply patch and one to remove patch). • Does not have a patch-based POCT (i.e., samples must be sent to laboratory).
Hair	Up to 90 days	<ul style="list-style-type: none"> • Has the most extended detection period. • Offers reduced risk of tampering because hair follicles are collected directly from the individual at the time of testing. • Does not require same-gender collection (noninvasive). 	<ul style="list-style-type: none"> • Is associated with concerns about hair-color bias. • Does not have an available POCT. • Has limited capability to detect recent (5–7 days) use.⁶⁵ • Requires more training to collect than other specimens. • Is difficult for some individuals to provide a hair sample (e.g., individuals with alopecia).
Blood	1–48 hours	<ul style="list-style-type: none"> • Has established collection method. • Has significantly less risk of tampering (i.e., cannot dilute or adulterate the sample). • Has a short detection window (can detect recent drug use). 	<ul style="list-style-type: none"> • Involves invasive sample collection. • Can be painful and challenging for individuals with poor venous access.⁵⁹ • Requires significantly more training to collect than other specimens. • Does not have an available POCT.

Figure 6: Advantages and disadvantages of different drug testing strategies for use in supervision monitoring.

*Window of detection varies across drug types; this is a general range across multiple drug categories.



Urine is the standard for drug testing applications.

Urine is commonly used because agencies can collect large volumes for testing, and parent drug and metabolites are present in high concentrations.⁶⁶ Urine presents significant benefits for community supervision agencies because multiple urine testing options are available, supervised collection requires less training than collection of blood, and costs per test are low. As such, statutes predominantly require urine-based testing for community supervision.⁵⁴ Blood has historically been used to test for drugs in other criminal justice applications (such as cases of driving under the influence of alcohol), but use is not common in community supervision.

Collecting and testing biological specimens other than urine (e.g., oral fluid, sweat, and hair) can facilitate collection or enable detection over a longer time window.

These specimens may provide value over urine testing in the following ways:

- Collection of these samples does not require special circumstances like supervision by a same-gender officer or designated collection facilities. Agencies may be able to reduce wait times or enable more scheduling flexibility for persons offering these samples. These collection mechanisms may enable on-site or remote collection.
- Easier collection mechanisms (e.g., swabbing for oral fluid or applying a patch) may encourage compliance because they are less invasive and easier to provide.
- With supervised collection, these specimens cannot be adulterated, diluted, or substituted as easily as urine.
- Compared to urine, specimens such as sweat and hair offer a longer detection windows (i.e., how long it takes a particular drug to appear in the sample of interest after ingestion and how long it remains detectable). These specimens, therefore, may be able to provide information on potential substance use over a longer amount of time.⁶⁷

Drug monitoring, regardless of specimen used, provides limited information to supervision agencies.


Samples provide limited information about drug use during a certain time period. Biological samples cannot provide the supervision agency with additional information such as how often someone used the drug or how much of the drug they used. Even in specimens with short windows of detection (e.g., oral fluid), the presence of a drug does not directly correlate with an individual's level of impairment. Depending on the cutoff concentration of the drug test used and the frequency of testing, an individual may not use enough of a drug to be detected by the test. Like urine, these tests can be susceptible to false positives and negatives. The drug landscape is constantly evolving; new drugs (such as synthetic cannabinoids) may not show up on a traditional drug screen, and these tests cannot entirely test for all potential drugs that an individual may have used.



Types of Tests

Laboratory tests provide community supervision agencies with objective quantitative results that can be used in court.

Laboratory tests are drug tests whereby laboratories screen, confirm, and validate tests using devices that are operated by trained technical personnel. Laboratory testing is highly accurate and provides quantitative information on what drugs or metabolites were detected.⁶⁰ Typically, laboratories use high-volume immunoassay tests to screen out negative specimens from those that require confirmatory testing. For confirmatory testing, laboratories use either liquid chromatography or gas chromatography in combination with mass spectrometry. Some supervision agencies may have in-house laboratory capabilities, while others may contract with a testing provider to conduct the entire testing process or just the confirmatory testing of specimens collected on-site. For example, the Court Services and Offender Supervision Agency, which oversees probation, parole, and pretrial in Washington, DC, has an in-house laboratory, which is certified by the U.S. Department of Health and Human Services and staffed with trained technical personnel.⁶⁸


	Advantages	Disadvantages	Factors to Consider
	<ul style="list-style-type: none"> • Can provide quantitative information on what drugs and metabolites were detected. • Are performed by trained laboratory analysts in certified/accredited laboratories. • Enable the detection of a wider range of drugs in confirmatory tests. • Offer improved sensitivity and specificity (i.e., fewer false positives and negatives). • Process collection and testing with a chain-of-custody for evidentiary reliability. 	<ul style="list-style-type: none"> • Have long turnaround times compared with POCTs; results are not “instant.” • May cost more per test than POCTs. 	<ul style="list-style-type: none"> • Most laboratories can accommodate urine testing, but fewer laboratories perform oral fluid, sweat, and hair testing. • The U.S. Department of Transportation has recently proposed a rule that permits use of oral fluid samples as an alternative to urine for drug tests; this will likely increase the number of laboratories that accommodate oral fluid testing.⁶⁹

POCTs are an effective screening tool for community supervision agencies because they offer timely results and are relatively inexpensive.

POCTs are drug tests that are conducted where the specimen is collected,⁶⁰ such as a community supervision agency. Today, agencies can choose from a variety of urine, oral fluid, and sweat preliminary screening tools. Generally, POCTs leverage immunoassay technologies to detect the presence of drugs. Different types of POCTs exist, including cards or cassettes, dipsticks, and combination collection/test cups where the device doubles as a collection and testing device. Some tools consist of consumable test kits and readers to interpret and store test results (e.g., Abbott’s SoToxa oral fluid instrument and Intelligent Fingerprint sweat test); others are disposable, easy-to-read tests (e.g., DrugWipe’s sweat and oral fluid tests) that could be virtually proctored or easily administered by agency staff. These tools typically provide preliminary results in less than 15 minutes. Many community supervision agencies use a POCT for screening purposes. If the POCT reveals a positive result and the person on community supervision does not admit to using drugs, then the specimen is sent to the lab for confirmatory testing.



Example: Premier Biotech’s OralTox is an example of a rapid oral fluid POCT.

	Advantages	Disadvantages	Factors to Consider
	<ul style="list-style-type: none"> • Offer timely results (in minutes). • Have lower cost per test than that of laboratory testing. • Require minimal training by the supervision agency to use the test. 	<ul style="list-style-type: none"> • Offer qualitative not quantitative results (provide a positive or negative result). • Have lower specificity and sensitivity of POCTs than confirmatory tests. • Require manual recording of results generally at the time the test is conducted, leaving room for human errors. 	<ul style="list-style-type: none"> • There are currently no POCT devices for hair or blood. • POCTs require a laboratory confirmatory test to be used in court. • POCTs may have different cutoff concentrations for drugs.



Future of Drug Monitoring

Drug monitoring is a daunting challenge. The number and types of different drugs are overwhelming from the standpoint of developing standardized and accepted test methods for each of them together. These challenges are compounded for the development of new drug monitoring technologies because perhaps 10 or more different chemicals, rather than one chemical (ethanol) as in alcohol monitoring, must be detected in a timely, accurate, and reliable manner. The constantly evolving landscape of new drugs entering the market also further complicates the development of new monitoring technologies.

Although tetrahydrocannabinol (THC)-based breathalyzers are an active area of development, multidrug breathalyzers will likely not be available soon.

Companies such as Cannabix and Hound Labs are developing and validating devices that measure the amount of THC in an individual's breath. Alcohol detection via breath is relatively straightforward because of ethanol's volatility; many drugs of abuse are not volatile and are difficult to detect in a breath sample. Cannabix, for example, uses technologies such as high-field asymmetric waveform ion mobility spectrometry to ionize, filter, and detect THC in a breath sample in their desktop THC Breathalyzer System; they have also developed a field-portable THC Breathalyzer System that uses microfluidic channels and gas sensors with machine learning algorithms to recognize the "smell-print" of THC. The devices may provide value in community corrections as a noninvasive, efficient way of identifying whether an individual has ingested marijuana. There has been little development of breath-based detection of additional drugs, although some research has suggested that methadone and amphetamines are detectable in breath.^{70,71}

A wearable device that tests for drugs through sweat would be effective for community supervision agencies but seems unlikely in the near future.

The significant research activity directed at developing wearable devices for health monitoring is suggestive of what the future of drug monitoring might become. For example, recent research depicts a smartwatch integrated with electrochemical sensors that can detect the levels of acetaminophen in the body's sweat.⁷² The drug concentration readings of this device mirror the accuracy of sweat and blood tests.⁷² Other research depicts transdermal electrochemical devices integrated with sensors to detect drugs using gloves, rings, transdermal patches, and glasses.⁷³ Another example is an implantable continuous drug monitoring device that uses aptamer-based biosensors,⁷⁴ although, of course, such a device would be considered quite invasive for practical use in community supervision. These three examples of the significant research on drug detection/monitoring devices point to how far such research might evolve in the future to produce commercially available and accepted methods and devices for use in community supervision.

A critical advancement for drug monitoring for community supervision would be a discreet, wearable device that provides real-time and continuous monitoring for drug use of any sort. The emergence of such a device, however, seems highly unlikely in the foreseeable future because of technological limitations. The number and types of different drugs are constantly evolving, making developing standardized and accepted test methods difficult. Moreover, unlike alcohol monitoring technologies that need to detect only one chemical (ethanol), drug monitoring technologies need to detect many different chemicals in a timely, accurate, and reliable manner to be useful for community supervision.



Implementation Considerations for Alcohol and Drug Monitoring

Agencies implementing an alcohol and drug monitoring program must think about practical considerations, which include agency priorities balanced with risk level; technical considerations, which include both technology realities and legal precedents; and ethical considerations, which take into account the risks of monitoring for the person on community supervision.

Practical Considerations

Purpose: Before implementing alcohol and drug monitoring solutions, agencies should be clear about the specific purpose the solution is attempting to address. Purposes may include general public safety, accountability or enforcement of condition of supervision, the facilitation of behavior change, improved workload management of supervision officers, and compliance with legal or legislative mandates. Agencies may seek to address multiple purposes. A needs assessment can help agencies better identify and articulate the problem(s) they are trying to solve, the available resources, and how the technology will help achieve the desired outcome. Ultimately, alcohol and drug monitoring solutions should be used in a way that is consistent with the agency's mission, vision, and values.

Goals: Once a purpose has been defined, agencies should identify the goals they are trying to achieve, as well as a relative timeline, milestones, and specific measures of success. These data are critical in evaluating success and understanding where modifications and improvements may be needed.

Resources: Alcohol and drug monitoring is time consuming and expensive. Sufficient funding is needed to maintain an alcohol and drug monitoring program. Moreover, staffing resources are needed for many of the solutions. For instance, urine testing requires same-gender, witnessed collection.

Risk level: Alcohol and drug monitoring solutions have different use cases, depending in large part on an individual's risk level. Before deciding on which solution to use, agencies need to assess and determine the risk level for each individual. Individuals who are high risk for DUI may be better served by continuous monitoring, which lends itself to TAM devices, as opposed to periodic monitoring with PAM devices or IIDs. Risk level is the most critical piece in determining an appropriate monitoring strategy.

Technical Considerations

Reliability and accuracy: It is critical that tests to detect the presence of alcohol and drugs are as accurate and reliable as possible. These tests are often measured by their sensitivity (percentage of individuals who have ingested alcohol/drugs who produce a positive test—true positive) and specificity (percentage of individuals who have not ingested alcohol/drugs who produce a negative test—true negative).⁷⁵ Confirmatory tests conducted by a laboratory (using techniques such as liquid chromatography-mass spectrometry and evidentiary breath tests) are often more specific and sensitive than screening or POCTs. These tests detect the presence of alcohol/drugs at a specific cutoff concentration (i.e., the threshold amount in which the result is administratively considered positive). Federal guidelines have been established for cutoff concentrations for workplace drug testing, but local policies and procedures may dictate this for community supervision. Although no drug test can screen for every single drug, laboratory confirmatory panels may be more comprehensive than POCTs and may provide a more accurate indication of the drug the individual has used.⁶⁰

Timeliness of results: A key value driver of POCTs is their ability to conduct a rapid test. These tests can provide information in minutes, whereas testing via a laboratory may take days. Shorter tests may help agencies reduce wait times and reduce the logistical burden of sending collected samples to another location.



Admissibility: Agencies employing alcohol and drug tests must balance responsiveness of tests with their reliability. Ultimately, these technologies need to meet admissibility standards for parole, probation, and pretrial violation hearings. These standards may differ across jurisdictions. Drug test results have been challenged in the judicial system, but they have played an important role. For example, PharmChek has noted over 60 instances in state, local, or federal law where results of their sweat patch were challenged.⁷⁶ Acceptance of hair⁷⁷ and oral fluid⁷⁸ as a drug testing method into the Department of Health and Human Services' Mandatory Guidelines for Federal Workplace Drug Testing Programs⁷⁹ is a positive signal toward greater acceptability of these specimens in federal court cases. POCTs may not offer sensitivity and specificity deemed acceptable enough for legal admissibility, and confirmatory testing may be required. Before adopting new alcohol or drug testing technology, agencies may consider consulting legal experts to understand potential legal challenges of the technology. Agencies should also note that admissibility of drug testing results does not solely depend on the type of technology employed for testing; it also includes following policies and procedures on when and how to test.⁸⁰

Ethical and Equity Considerations

Cost burden: Many supervision programs require the person on community supervision to pay a fee for monitoring. For some of the remote alcohol monitoring technologies, vendors charge an installation fee and a per-day/per-month fee for monitoring services. There is growing recognition that these fees may be counterproductive and a barrier to successful reentry. Some jurisdictions have shifted away from requiring individuals on community supervision to shoulder this burden and are opting to absorb the costs directly. This issue is particularly poignant for individuals on pretrial status because they have yet to be convicted of a crime.

Time burden: On-site testing can be demanding and disruptive for persons on community supervision.

Accessibility: Traditional methods for alcohol and drug monitoring can cause issues of accessibility for individuals who may have to travel hours for testing and for those without reliable transportation. Traditional alcohol and drug testing requires transportation, and in rural areas, people may have to drive over an hour to reach the nearest probation and parole office.⁸¹ When adopting and implementing an alcohol and drug monitoring solution, decision-makers should consider the location of the person on community supervision in relation to the testing center. Remote monitoring solutions may be a better solution.

Net widening: Net widening refers to the growing number of people controlled or surveilled by the criminal justice system as a result of administrative changes. Because there is limited conclusive evidence that drug testing alone "reduces recidivism or improves behavioral health outcomes for justice involved individuals,"⁵³ some argue that alcohol and drug monitoring is ineffective at supporting behavior change and addressing criminogenic needs. In fact, one in four (nearly 25%) state prison admissions are associated with technical violations, such as failing a drug test.⁸² Agencies may consider reserving alcohol and drug monitoring for high-needs individuals (e.g., individuals with repeat DUIs), prioritizing substance use treatment, and using positive tests only as an indicator for treatment needs, rather than as a punitive measure.

Invasiveness/intrusion of privacy: Certain monitoring/testing solutions may be more invasive than others. For instance, urine drug tests, which require witnessed sample collection, can be considered an intrusion of privacy. One best practice to consider for programs that require observed urine tests is to ask the person on community supervision which gender observer they prefer.



On-site testing programs can be demanding and disruptive for persons on community supervision.

An in-depth examination of Teton County's 24/7 Sobriety Program by Wyoming Truth, a nonpartisan news nonprofit, uncovered significant time investments needed to participate.⁸³ Program participants are required to submit twice-daily breath tests—one between 6:00 and 7:00 a.m. and one between 9:00 and 10:00 p.m. Program participants can be arrested if they show up more than 30 minutes late for a daily test, if they are tardy (30 minutes or less) 3 times for a test, or if they fail a test. Moreover, program participants are responsible for a \$30 enrollment fee, along with \$10 per drug test and \$2 per breathalyzer test. In March 2022, the American Civil Liberties Union (ACLU) announced a lawsuit against the 24/7 Program in Teton County. In the lawsuit, the ACLU argued that the program violates:

- The Fourth Amendment for potentially unreasonable searches and seizures.
- The Eighth Amendment for potentially depriving participants of reasonable bail and bail conditions.
- The Fourteenth Amendment for depriving participants of liberty through sometimes repeated pretrial arrests potentially without due process of law.¹⁵

Considerations Questions to Ask

Practical

- What is the purpose of alcohol and drug monitoring?
- What is the goal of alcohol and drug monitoring?
- What is the person on community supervision's risk level—low, medium, high?
- Is this individual on community supervision for a first-time offense?
- Do they have a history of substance use disorder?
- Is face-to-face interaction necessary (depending on risk level)?
- What resources (funding, staff, infrastructure) do you have access to?
- Are the alcohol and drug monitoring requirements setting the person on community supervision up for success?
- Are you attuned to the regulatory issues associated with alcohol and drug testing technologies (e.g., laboratory certifications, equipment calibration), particularly if used for evidentiary purposes?

Technical

- How often does this person on supervision need to be monitored?
- Who will be doing the testing and are they qualified (i.e., laboratory accreditation and analyst certification) if this is a state or agency requirement?
- What drugs will this test cover?
- How timely are the results?
- Does the person on community supervision have any medical conditions that may inhibit certain strategies?
- Where are you trying to drug test—on-site or in the field?
- What specimen type will be tested?
- What training and supplies are needed for testing?
- Is the testing reliable and accurate?
- What are the false-positive and false-negative rates of a test?

Ethical and Equity

- How invasive is the solution?
- How may the solution affect daily life for the person on community supervision?
- Can the person on community supervision afford the alcohol/drug monitoring?
- How accessible is the monitoring (e.g., physical distance, cost)?
- Who is paying for the tests? If the person on community supervision, can they afford it?
- Do you have an agency-wide policy for drug testing individuals in the LGBTQ+ community?
- Do you have the staff to do same-gender collection?



Endnotes

1. Different entities use different words to describe and define individuals on community supervision (e.g., offenders, clients). For consistency, this document uses the terms *person(s) on community supervision* or *individuals on community supervision* to align with the Centers for Disease Control and Prevention's guidance on [Preferred Terms for Select Population Groups & Communities](#).
2. Department of Justice, National Institute of Justice, Office of Justice Programs. (2021, September). *Role of human services during community supervision*. Retrieved from <https://nij.ojp.gov/topics/articles/role-human-services-during-community-supervision#the-structure-of-community-supervision>
3. Armstrong, J. D., Bauman, A., Moroney, K. J., & Clark, C. B. (2021, April). Assessment and treatment of addictions in community corrections. In W. Meil, & J. A. Mills (Eds.), *Addictions: Diagnosis and treatment*. IntechOpen. Retrieved from <https://www.intechopen.com/chapters/76404>
4. Travis, L., & Stacey, J. (2010). A half century of parole rules: Conditions of parole in the United States, 2008. *Journal of Criminal Justice*, 38(4), 604–608. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0047235210000875>
5. Federal law does not distinguish between DUI and DWI because there is no nationwide definition of either of these violations. It is up to individual states to define these terms. Some states define and punish these violations differently, while some states define them the same. For the purposes of this document, both DUI and DWI mean driving over the legal blood alcohol concentration limit.
6. National Conference of State Legislatures. (2021). *State ignition interlock laws*. Retrieved from <https://www.ncsl.org/research/transportation/state-ignition-interlock-laws.aspx>
7. Reichert, J., Weisner, L., & Otto, H. D. (2020). *A study of drug testing practices in probation*. Illinois Criminal Justice Information Authority. Retrieved from <https://icjia.illinois.gov/researchhub/articles/a-study-of-drug-testing-practices-in-probation>
8. Hermann, P. (2015, July). Difficulties testing synthetic drugs are slowing criminal prosecutions. *Washington Post*. Retrieved from https://www.washingtonpost.com/local/crime/difficulties-testing-synthetic-drugs-are-slowing-criminal-prosecutions/2015/07/10/5b5e7da6-272d-11e5-b72c-2b7d516e1e0e_story.html
9. The Pew Charitable Trusts. (2020, April). Policy reforms can strengthen community supervision. Retrieved from https://www.pewtrusts.org/-/media/assets/2020/04/policyreform_communitysupervision_report_final.pdf
10. U.S. Department of Justice, Federal Bureau of Investigation. (2019). *2019 crime in the U.S.* Retrieved from <https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019>
11. SafeHome.org. (2022, December 21). With comprehensive statistics covering only through 2019, there is not yet conclusive evidence demonstrating how DUI behavior has changed during the pandemic. DUI statistics and trends: 2022 annual report. Retrieved from <https://www.safehome.org/resources/dui-statistics/>
12. Fell, J. C., & Scolese, J. (2021). The effectiveness of alcohol monitoring as a treatment for driving-while-intoxicated (DWI) offenders: A literature review and synthesis. *Traffic Injury Prevention*, 22(sup1), S1–S7. <https://doi.org/10.1080/15389588.2021.1980783>
13. Some supervision agencies use urine and oral fluid testing to monitor alcohol, but typically these tests are only used when the person on supervision is being monitored for drug use (including alcohol). Breath-based tests are well accepted and accurate and produce quick results.
14. Kilmer, B. (2020, May). *Frequent alcohol testing lowers the likelihood offenders will be rearrested or have probation revoked*. RAND. Retrieved from <https://www.rand.org/news/press/2020/05/05.html>
15. Farley, J. (2022, March). *We're suing Wyoming to challenge the 24/7 program in in Teton County*. ACLU Wyoming. Retrieved from <https://www.aclu-wy.org/en/news/were-suing-wyoming-challenge-247-program-teton-county>
16. Ward County, North Dakota. (n.d.). *24/7 program*. Retrieved from <https://www.co.ward.nd.us/393/247-Program>
17. Cowley, S., & Silver-Greenberg, J. (2019). These machines can put you in jail. Don't trust them. *New York Times*. Retrieved from <https://www.nytimes.com/2019/11/03/business/drunk-driving-breathalyzer.html>
18. Bauer, E. L., Hagen, C. A., Greene, A. D., Crosse, S., Harmon, M. A., & Claus, R. E. (2006, August). *Kiosk supervision: A guidebook for community corrections professionals*. U.S. Department of Justice. Retrieved from <https://www.ojp.gov/pdffiles1/nij/grants/250174.pdf>
19. Lawrence County, South Dakota. (n.d.). *AB Kiosk: Automated monitoring solution*. Retrieved from <https://www.lawrence.sd.us/AgendaCenter/ViewFile/Item/394?fileID=5361>
20. American Probation and Parole Association. (2009). *Offender supervision with electronic technology: Community corrections resource* (2nd ed.). Retrieved from https://www.appa-net.org/eweb/docs/appa/pubs/OSET_2.pdf
21. Mothers Against Drunk Driving. (n.d.). *Sober to Start*. Retrieved from <https://madd.org/ignition-interlocks/>
22. Taylor, E., Voas, R., Marques, P, McKnight, S., & Atkins, R. (2017, August). *Interlock data utilization* (Report No. DOT HS 812 445). National Highway Traffic Safety Administration. Retrieved from <https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812445-interlock-data-utilization.pdf>
23. Willis, C., Lybrand, S., & Bellamy, N. (2009). *Alcohol ignition interlock programmes for reducing drink driving recidivism (review)*. Retrieved from <https://www.ojp.gov/ncjrs/virtual-library/abstracts/alcohol-ignition-interlock-programmes-reducing-drink-driving>
24. Picker, M., Hora, P., Wallace, D., & Mackenzie, B. (2017, October). *The admissibility of alcohol test results from the Smart Start SMART Mobile Device in probation violation hearings*. Justice Speakers Institute. Retrieved from <https://justicespeakersinstitute.com/wp-content/uploads/2017/10/Smart-Start-Final.pdf>
25. Cowley, S. & Silver-Greenberg, J. (2019). The unforeseen dangers of a device that curbs drunken driving. *New York Times*. Retrieved from <https://www.nytimes.com/2019/12/23/business/drunk-driving-interlock-crash.html>
26. Mayer, R. (2019, November). *Ignition interlocks – A toolkit for program administrators, policymakers, and stakeholders* (2nd ed.). (Report No. DOT HS 811 883). National Highway Traffic Safety Administration. Retrieved from https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/ignitioninterlocks_811883_112619.pdf
27. Maryland Department of Transportation. (2021). *Maryland's ignition interlock program*. Retrieved from <https://mva.maryland.gov/Documents/Interlock-Program-Status-Report.pdf>
28. Intoxalock. (2018). *All about ignition interlock device calibration*. Retrieved from <https://www.intoxalock.com/blog/post/calibrating-your-intoxalock-device/>
29. H.R.3684 - 117th Congress (2021-2022): Infrastructure Investment and Jobs Act. (2021, November 15). Retrieved from <https://www.congress.gov/bills/117th-congress/house-bill/3684/text>
30. Hora, P., Wallace, D., & Mackenzie, B. (2018). *The admissibility of alcohol test results from the Soberlink device in family law cases*. Justice Speakers Institute. Retrieved from <http://justicespeakersinstitute.com/wp-content/uploads/2018/12/Soberlink-Final.pdf>
31. Some PAMs that are aimed at consumers use semiconductor technology.
32. Robertson, R., Vanlaar, W., & Simpson, H. (2008). *Continuous transdermal alcohol monitoring: An agency administrator's guide*. Traffic Injury Research Foundation. Retrieved from <https://www.scramsystems.com/wp-content/uploads/2020/06/TIRF-agency-administrators-guide.pdf>
33. McKnight, A. S., Fell, J. C., & Auld-Owens, A. (2012). *Transdermal alcohol monitoring: Case studies*. (Report No. DOT HS 811 603). National Highway Traffic Safety Administration.
34. SCRAM Systems. (n.d.). *SCRAM Continuous Alcohol Monitoring: Frequently asked questions*. Retrieved from <https://www.scramsystems.com/wp-content/uploads/2021/02/scr-am-media-kit-cam-faqs.pdf>
35. Flango, V., & Cheesman, F. (2009). *Effectiveness of the SCRAM alcohol monitoring device: A preliminary test*. Office of Justice Programs, U.S. Department of Justice. Retrieved from <https://www.ojp.gov/ncjrs/virtual-library/abstracts/effectiveness-scr-am-alcohol-monitoring-device-preliminary-test>
36. Marques, P., & McKnight, S. (2007, November). *Evaluating transdermal alcohol measuring devices: Final report*. National Highway Traffic Safety Administration. Retrieved from <https://www.nhtsa.gov/sites/nhtsa.gov/files/810875.pdf>



Endnotes (continued)

37. Barnett, N. P., Meade, E. B., & Glynn, T. R. (2014). Predictors of detection of alcohol use episodes using a transdermal alcohol sensor. *Experimental and Clinical Psychopharmacology*, 22(1), 86–96. <https://doi.org/10.1037/a0034821>
38. Smart Start. (2021). *Smart Start revolutionizes transdermal alcohol and electronic monitoring with a single solution*. Retrieved from https://www.smartstartinc.com/wp-content/uploads/2021/01/27JAN2021_Transdermal_PR_with_photo.pdf?x12911
39. Wentlin, N. (2022). Denver tech company enters rehab market with wearable alcohol detection band. *Denver Business Journal*. Retrieved from <https://www.bizjournals.com/denver/news/2022/07/26/denver-company-releases-wearable-alcohol-detection.html>
40. BACtrack. (n.d.). BACtrack Skyn. Retrieved from <https://skyn.bactrack.com/>
41. Mitchell, I. (2020). *Innovation from a CNSI Technology Incubator alumnus*. UC Santa Barbara. Retrieved from <https://innovation.ucsb.edu/blog/news/milo-sensors-launches-wearable-device-monitor-alcohol-consumption>
42. Copersino, M. L., Fals-Stewart, W., Fitzmaurice, G., Schretlen, D. J., Sokoloff, J., & Weiss, R. D. (2009). Rapid cognitive screening of patients with substance use disorders. *Experimental and Clinical Psychopharmacology*, 17(5), 337–344. <https://doi.org/10.1037/a0017260>
43. Richman, J. E., & May, S. (n.d.). An investigation of the Druid smartphone/tablet app as a rapid screening assessment for cognitive and psychomotor impairment associated with alcohol intoxication. *Vision Development & Rehabilitation*, 5(1). Retrieved from https://cdn.ymaws.com/www.covd.org/resource/resmgr/vdr/ydr_5_1/ydr5-1_article_richman_doi.pdf
44. Parsey, C. M., & Schmitter-Edgecombe, M. (2013). Applications of technology in neuropsychological assessment. *The Clinical Neuropsychologist*, 27(8), 1328–1361. <https://doi.org/10.1080/13854066.2013.834971>
45. Printy, B. P., Renken, L. M., Herrmann, J. P., Lee, I., Johnson, B., Knight, E., Varga, G., & Whitmer, D. (2014). Smartphone application for classification of motor impairment severity in Parkinson's disease. *Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual International Conference, 2014*, 2686–2689. <https://doi.org/10.1109/EMBC.2014.6944176>
46. Miceli, L., Bednarova, R., Rizzardo, A., Samogin, V., & Della Rocca, G. (2015). Development of a test for recording both visual and auditory reaction times, potentially useful for future studies in patients on opioids therapy. *Drug Design, Development and Therapy*, 9, 817–822. <https://doi.org/10.2147/DDDT.S77978>
47. In some literature, alcohol is categorized as a drug. For the purposes of this document, we considered alcohol separately because of the technological differences between detecting alcohol (i.e., ethanol) and detecting drugs. Thus, this section is specific to drugs other than alcohol even though some of these techniques may also be employed for alcohol.
48. Robina Institute of Criminal Law and Criminal Justice. (n.d.). *Drug testing as condition of supervision*. Retrieved from https://robinainstitute.umn.edu/sites/robinainstitute.umn.edu/files/2022-02/drug_testing.pdf
49. Zilius, C., Dahlgren, J., Carey, S., Herrera-Allen, T., Johnson, A., & Aborn, J. (2020, December). *Treatment courts and COVID-19: Adapting operations*. Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice. Retrieved from <https://www.nadcp.org/wp-content/uploads/2021/04/Impact-of-Covid-on-Treatment-Court-Report-2020.pdf>
50. National Institutes of Health. (2010). *Addiction and the criminal justice system*. Retrieved from <https://www.hazelden.org/store/doc/AddictionCJSystemNIH.pdf>
51. Feucht, T., & Groerer, J. (2011). *Mental and substance use disorders among adult men on probation or parole: Some success against persistent challenge*. Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.ojp.gov/pdffiles1/nij/235637.pdf>
52. Duke, A. A., Smith, K. M. Z., Oberleitner, L. M. S., Westphal, A., & McKee, S. A. (2018). Alcohol, drugs, and violence: A meta-meta-analysis. *Psychology of Violence*, 8(2), 238–249. Retrieved from <https://psycnet.apa.org/buy/2017-15654-001>
53. Reichert, J. (2020, January). *Drug testing in community corrections: A review of the literature*. Illinois Criminal Justice Information Authority. Retrieved from <https://icjia.illinois.gov/researchhub/articles/drug-testing-in-community-corrections-a-review-of-the-literature>
54. Mangione, C., & Cohen, T. (2021, June). The impact of COVID-19 on treatment and testing. *Federal Probation*, 85(1), 58–61. Retrieved from https://www.uscourts.gov/sites/default/files/85_1_9_0.pdf
55. This study includes alcohol as a drug; thus, SCRAM is included in the breakdown.
56. Verstraete, A. G. (2004). Detection times of drugs of abuse in blood, urine, and oral fluid. *Therapeutic Drug Monitoring*, 28(2), 200–205.
57. A diluted urine drug test is one that has a higher percentage of water than usual, making it difficult to detect traces of drugs. Adulteration refers to the practice of manipulating a urine sample with chemical adulterants to produce a false-negative result.
58. Leukefeld, C., Gullotta, T., & Gregrich, J. (Eds.) (2011). *Handbook of evidence-based substance abuse treatment in criminal justice settings*. Springer New York, NY. <https://doi.org/10.1007/978-1-4419-9470-7>
59. Hadland, S. E., & Levy, S. (2016). Objective testing: Urine and other drug tests. *Child and Adolescent Psychiatric Clinics of North America*, 25(3), 549–565. <https://doi.org/10.1016/j.chc.2016.02.005>
60. Substance Abuse and Mental Health Services Administration. (2012). *Clinical drug testing in primary care*. Technical Assistance Publication (TAP) 32. (HHS Publication No. [SMA] 12-4668). Substance Abuse and Mental Health Services Administration.
61. Fazari, G. (n.d.). Testing the validity of pupilometer technology against traditional drug screening instruments. *Federal Probation*, 75(3). Retrieved from https://www.uscourts.gov/sites/default/files/75_3_6_0.pdf
62. PharmChek. (2020, August 3). *The truth about the PharmChek drugs of abuse sweat patch*. Retrieved from <https://www.pharmchek.com/resources/blog/the-truth-about-the-pharmchek-drugs-of-abuse-sweat-patch#:~:text=The%20sweat%20patch%20cannot%20be%20used%20on%20persons,removal%20of%20the%20patch%20have%20hampered%20its%20effectiveness.>
63. Kidwell, D. A., & Smith, F. P. (2001). Susceptibility of PharmChek™ drugs of abuse patch to environmental contamination. *Forensic Science International*, 116(2–3), 89–106. [https://doi.org/10.1016/s0379-0738\(00\)00353-4](https://doi.org/10.1016/s0379-0738(00)00353-4)
64. U.S. v. Alfonso, 284 F. Supp. 2d 193. Retrieved from <https://casetext.com/case/us-v-alfonso-2>
65. National Center on Substance Abuse and Child Welfare. (2011). *Drug testing practice guidelines*. Retrieved from https://ncsacw.acf.hhs.gov/files/IA_Drug_Testing_Bench_Card_508.pdf
66. Kapur, B., & Aleksa, K. (2020). What the lab can and cannot do: Clinical interpretation of drug testing results. *Critical Reviews in Clinical Laboratory Sciences*, 57(8), 548–585. <https://doi.org/10.1080/10408363.2020.1774493>
67. Detection windows also depend on the type(s) of drugs ingested and on individual metabolism. Drug-specific variables such as formulation type (e.g., short-acting), protein binding capacity, accumulation or excretion profiles, and molecular characteristics all affect a drug's detection window. Metabolism can vary based on body composition, age, sex, other biological characteristics, and genetic contributors, among other variables.
68. Pretrial Service Agency for the District of Columbia. (n.d.). *Drug testing and forensic services*. Retrieved from https://www.psa.gov/?q=programs/drug_forensics
69. Pappalardo, J. W. (2022). *DOT proposes oral fluid testing for controlled substances*. Gallagher Sharp LLC. Retrieved from <https://www.gallaghersharp.com/dot-proposes-oral-fluid-testing-for-controlled-substances>



Endnotes (continued)

70. Beck, O., Leine, K., Palmkog, G., & Franck, J. (2010). Amphetamines detected in exhaled breath from drug addicts: a new possible method for drugs-of-abuse testing. *Journal of Analytical Toxicology*, 34, 233–237.
71. Beck, O., Sandqvist, S., Eriksen, P., Franck, J., & Palmkog, G. (2010). Method for determination of methadone in exhaled 1 breath collected from subjects undergoing methadone maintenance treatment. *Journal of Chromatography B*, 878, 2255–2259.
72. Armitage, H. (2020). *How a smartwatch can detect drug levels in the body*. Scope. Retrieved from <https://scopeblog.stanford.edu/2020/08/21/how-a-smartwatch-can-detect-drug-levels-in-the-body/>
73. Teymourian, H., Parrilla, M., Sempionatto, J., Montiel, N.F., Barfidokht, A., Van Echelpoel, R., De Wael, K., & Wang, J. (2020). Wearable electrochemical sensor for the monitoring and screening of drugs. *ACS Sensors*, 5(9), 2679–2700. Retrieved from <https://pubs.acs.org/doi/full/10.1021/acssensors.0c01318>
74. Bian, S., Zhu, B., Rong, G., & Sawan, M. (2021). Towards wearable and implantable continuous drug monitoring: A review. *Journal of Pharmaceutical Analysis*, 11(1), 1–14. Retrieved from <https://www.sciencedirect.com/science/article/pii/S2095177920310418>
75. Bertholf, R. L., Sharma, R., & Reisfield, G. M. (2016). Predictive value of positive drug screening results in an urban outpatient population. *Journal of Analytical Toxicology*, 40(9), 726–731. <https://doi.org/10.1093/jat/bkw088>
76. PharmChek. (n.d.). *PharmChek® sweat patch court case*. Retrieved from <https://www.pharmchek.com/resources/court-cases>
77. Federal Register. (2020, November 9). *Mandatory guidelines for federal workplace drug testing programs*. 85 FR 56108. Retrieved from <https://www.federalregister.gov/documents/2020/09/10/2020-16432/mandatory-guidelines-for-federal-workplace-drug-testing-programs>
78. Federal Register. (2022, March 30). *Procedures for transportation workplace drug and alcohol testing programs: Addition of oral fluid specimen testing for drugs*. 87 FR 11156. Retrieved from <https://www.federalregister.gov/documents/2022/02/28/2022-02364/procedures-for-transportation-workplace-drug-and-alcohol-testing-programs-addition-of-oral-fluid>
79. U.S. Department of Health and Human Services. (2017, January 23). *Mandatory guidelines for federal workplace drug testing program: Final rule, federal register*, 82 FR 7920–2017. Retrieved from <https://www.hhs.gov/guidance/document/mandatory-guidelines-urine-testing>
80. American Probation and Parole Association. (1991). *American Probation and Parole Association's drug testing guidelines and practices for adult probation and parole agencies*. Retrieved from <https://www.appa-net.org/eweb/docs/appa/pubs/DTGPAPPA.pdf>
81. Beck, A. (2022, March). *Parole requirements stack the odds against indigenous people*. Talk Poverty. Retrieved from <https://talkpoverty.org/2022/03/03/technical-violations-parole-indigenous/>
82. Council of State Governments. (2019). *Confined and costly: How supervision violations are filling prisons and burdening budgets*. Retrieved from <https://csgjusticecenter.org/confinedandcostly/>
83. Garcia-Lopez, A., Gemp, S., Soles, C., & Thulin, M. (2021, August). *Sobriety program intended to help has in some cases caused harm*. Wyoming Truth. Retrieved from <https://wyomingtruth.org/blog-criminal-justice/sobrietyprogram>

Published: August 2023

More Information

Steven Schuetz

Senior Science Advisor/Physical Scientist
National Institute of Justice
U.S. Department of Justice
Steven.Schuetz@usdoj.gov
Tel +1-202-514-7663

Jeri D. Roper-Miller, PhD, F-ABFT

Project Director, CJTEC
Principal Scientist
RTI International
jerimiller@rti.org
Tel +1-919-485-5685

Meghan Camello

Innovation Analyst
RTI International
mcamello@rti.org
Tel +1-919-485-5456

Suggested Citation

Camello, M., Shute, R., & Roper-Miller, J. D. (2023). *Alcohol and drug monitoring for community supervision*. Research Triangle Park, NC: RTI International.

CJTEC would like to thank Todd Craig, Intercept Technologies and Security Consultants, LLC and Jason Mereness, Ramsey County Community Corrections for serving as external reviewers for this document. CJTEC would also like to thank Michael Planty, Matthew DeMichele, Sam Scaggs, Maria Ashbaugh, Sharon Barrell, and Kristina Cooley, RTI International, for their expertise and insights in developing this document.

This publication was made possible by Award Number 2018-75-CX-K003, awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect those of the Department of Justice.

<https://cjtec.org/>