

## Drug Testing: Addiction Medicine's MRI

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### Abstract

Since the development of the medical specialty of Addiction Medicine began in the 1950s, the field, and the practitioners, have searched for its place in the mainstream of the community of medicine. Addiction Medicine was thought to have been primarily talk therapy and 12 Step meetings. Thankfully, this has all changed.

Through the work of researchers and clinicians, it was established that Alcohol and Substance Use Disorders are primary medical diseases. In the mid 1980's the National Institute of Health (NIH) demonstrated that these primary medical conditions were, in fact, a brain disease. This finding has led to a better understanding of the problem and has allowed for the development of lifesaving medications.

Along the way, drug testing has emerged as an indisputable necessity to help diagnose and monitor the treatment plans of these patients. As other medical specialties have specific tools and medication that distinguish them, Addictive Medicine now has drug testing. Appropriate use of drug testing is emerging as a staple in the diagnosis and treatment of substance use disorders.

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Various medical specialties have specific diagnostic tools which set them apart from other medical specialties. Addiction Medicine also has a specialized tool for the diagnosing and monitoring of treatment plans for Substance Use Disorders (SUD). Neurologists and Pulmonologist use CAT scanning and MRIs to help make diagnostic decisions. Cardiologists use angiography and electrocardiography to diagnose cardiac problems, and it is time that practitioners who treat SUD become aware and use drug testing as its specialized diagnostic and monitoring tool that separates it from the other medical specialties.

It is very important that practitioners who treat SUD understand the proper use and selection of the various drug testing modalities that are available. The provider must know the purpose of testing, what question they are trying to answer, and which modality to select to reach a meaningful conclusion. Inappropriate or uneducated use of modality selection and lack of the ability to interpret the testing results renders drug testing ineffective as a diagnostic and monitoring tool. Therefore, it is important that practitioners learn the benefits and limitations of the various testing modalities that are currently available. Equally important is to be able to appropriately evaluate the testing results. Therefore, proper modality selection is the key to the successful use of drug testing.

### Drug testing modalities

While the specifics of each drug testing modality can be found in many articles, the intent here is to provide some basic considerations about the various drug tests, their capabilities and limitations. It is vitally important to know which substance(s) or which compound(s) that are being sought and that the testing panel is predetermined and developed. Limits of detections (LOD) and the windows of detection

time after use is also important and relative to the proper and effective use of drug testing in SUD diagnosing and monitoring of ongoing care.

### Blood testing

Blood testing is one of the best modalities to determine questions of “real time” impairment because it measures the presence or absence of a substance contemporaneously with the concern of current intoxication. The general window of detection is from 1 - 8 hours after use. It can detect the parent compound usually, does not do well with indentifying metabolites and it is particularly useful for detection of alcohol in terms of presence, absence, and concentration.

The drawbacks are that blood testing is invasive, carries some risk of blood borne contamination for the collector, and the donor, as well, and retesting the specimen is very difficult. Point of Collection Testing (POCT) is primarily used for cases to determine intoxication from alcohol after motor vehicle crashes and in inpatient treatment centers when alcohol intoxication is suspected.

### Breathe testing

Breathe testing is best for detecting alcohol impairment in real time and is less invasive than blood testing. The window of detection is approximately one hour after a single drink. Alcohol can be detected for longer periods of time if the drinking has occurred continued over some hours. Breathe testing results and levels correlates well with blood alcohol levels. It is useful in treatment settings, has low intrusiveness, and it is easily collected. It is highly resistant to tampering, although retesting is very difficult.

### Oral fluid testing

The window of detection varies from substance to substance. Oral Fluid testing detect generally the parent compound and does not do well detecting metabolites. The window of detection can vary from 2 hours up to 48 hours depending upon the substance being sought. The best use in a treatment setting is for short term detection of substance use. It is easily collected, has low intrusiveness, but it is difficult to retest.

### Urine testing

Urine drug testing has been called the “gold standard” of drug testing as it has been studied and improved upon for nearly 50 years. The window of detection is from 1.5 - 4 days depending on the substance, its accumulation in the body, and the length of time it has been used. In some instances, especially cannabis, detection can be made days and weeks after the last use. Urine testing can be done as a POCT in industry or any level of SUD treatment setting. It detects metabolites of substances and vary rarely detects parent compounds. Its best use is for short term detection in ongoing treatment and monitoring situations. The collection process is easily done, but is considered very intrusive in situations when a witnessed observation of the collection is required. Un-witnessed collections are highly susceptible to tampering, but retesting is possible.

### Sweat testing

Sweat testing can be continual, as long as testing patch is in place, for 1 - 4 weeks. There is no POCT modality for sweat testing. It detects parent compounds usually. Its best use is for medium-term prospective monitoring. It is easily collected, the level of intrusiveness is low, and the possibility of tampering is low. While retesting is possible, it depends upon which type of a patch is used.

### Hair testing

Hair testing is probably the most misused testing matrix and modality, because its capabilities and limitations are not fully understood. Hair testing has the longest window of detection of more than 30 days up to as long as the length of the hair that is tested. Hair testing can detect consistent drug use up to more than 1.5 years. It can detect parent compounds and is useful in long-term (3 months or more) in monitoring. It is resistant to tampering if untreated or colored, and it is considered relatively un-intrusive.

Hair testing, if segmented, can be easily retested. Hair testing is not appropriate for detection of real time impairment as, detection oftentimes requires near continuous use for typically 28 days before incorporating into the hair shaft [1-3].

### Summary and Conclusion

Drug testing has become addiction treatment's specialized tool for clarifying diagnoses of SUD and the effective monitoring of treatment plans. Appropriate selections of testing modalities can answer questions of impairment in real time situations and can be used to check on the efficacy of the treatment and serve to document ongoing wellness of the patient/client. The regular and consistent use of drug testing can improve treatment outcomes for those treating and suffering from SUD.

### Bibliography

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