

# Toxicology in Addiction Medicine



Daniel A. Schwarz, MD<sup>a,\*</sup>, M.P. George, MS<sup>b</sup>, Martin H. Bluth, MD, PhD<sup>c,d</sup>

## KEYWORDS

• Pain • Addiction • Management • Drug • Testing • Toxicology

## KEY POINTS

- Toxicology testing in addiction medicine varies across the spectrum yet remains a powerful tool in monitoring addictive patients.
- There are many reference laboratories offering toxicology testing, and physicians should have some understanding of laboratory, methodology, testing portfolio, and customer support structure to aid them in selecting the best toxicology laboratory for their patients.
- The definitive drug testing by gas chromatography coupled with mass spectrometry and high-performance liquid chromatography coupled with tandem mass spectrometry are highly accurate if the tests are performed in a good laboratory with technical and toxicology expertise.
- Patients with substance disorders may need to be tested for a wider spectrum of drugs, with greater frequency, over a longer period of time to discourage and identify relapse. In certain instances utilizing oral fluid testing can minimize specimen adulteration-substitution concerns.
- Consultation with a clinical pathologist/toxicologist in conjunction with the consideration of monitoring large numbers of illicit and psychoactive drugs in the addictive patient may provide important clinical information for their treatment.

## INTRODUCTION

Toxicology testing is an important standard of care in monitoring the addictive patient. Toxicology tests offer reproducible, unbiased, and objective evidence of chronically relapsing disorder for clinical observation. Drug tests do not provide diagnostic information to identify substance use disorders or physical dependence.<sup>1-3</sup> It is a common observation that drug users minimize or deny drug use. In some instances, drug users provide a partial list of the drugs that they are abusing and hide the other drug use to

<sup>a</sup> The Center for Pain Recovery, 18444 West 10 Mile Road, Suite 102, Southfield, MI 48075, USA;

<sup>b</sup> Laboratory Operations, Alere Toxicology, 9417 Brodie Lane, Austin, TX 78748, USA;

<sup>c</sup> Department of Pathology, Wayne State University School of Medicine, 540 East Canfield, Detroit, MI 48201, USA; <sup>d</sup> Consolidated Laboratory Management Systems, 24555 Southfield Road, Southfield, MI 48075, USA

\* Corresponding author.

E-mail address: [dr@painrecoverymd.com](mailto:dr@painrecoverymd.com)

cause a “smoke-screen effect.”<sup>1</sup> Drug tests also can improve the communication between the health care provider and the patient. Although a positive drug test result often means that patient had taken a drug, a negative test result does not always mean that the patient did not abuse any drugs. Drug testing is also an important tool in monitoring patients for adherence to their prescribed medications. Urine and oral fluid drug concentration has some limited value but it does not often correlate to the blood concentration.<sup>4</sup> Blood is the only biological matrix that provides therapeutic and toxic concentrations of drugs. The overdose mortality and prescription drug addiction rates in the United States have been increasing due to diverted prescribed opiates, opioids, and benzodiazepines, and we are in the midst of a National Prescription Drug overdose and prescription drug addiction epidemic.<sup>5–8</sup> Often health care providers do not completely trust the drug test results due to the assumption that a drug test gives false-positive and false-negative results. Although there are certain cases in which interfering variables can affect laboratory toxicology results,<sup>9</sup> the clinical toxicology laboratory is capable of providing accurate results for the presence of drugs that are tested, using specific and/or conformational methodologies at the specified cutoff. It is important to note that all clinical laboratories are not the same and there are no set standards on the testing protocols used in clinical drug testing. Furthermore, more than 200 clinical toxicology laboratories appeared in the past 5 years as a result of the lucrative reimbursement system.<sup>10</sup> Thus, as in any profession, it is important to develop an understanding and trust with the laboratory with which a physician chooses to partner toward providing these ancillary services for patient care. In general, clinically relevant reasons for a negative result include the following:

1. The patient has not used that drug.
2. The test did not include that drug.
3. Drug concentration in the biological fluid (urine, oral fluid, or blood) is below the laboratory-established cutoffs.

There are also opportunities for adulteration of a sample, which can also yield a negative result (eg, dilution, oxidants); however, various modalities can be incorporated into a clinical setting to mitigate such possibilities (eg, specimen validity testing,<sup>11</sup> monitored collections). There are multiple technologies available for drug testing. Some of them are simple spot tests that can be performed in the physician’s office and they are called Clinical Laboratory Improvement Amendments (CLIA) Waived Point of Care Testing (POCT), an allocation afforded to low-complexity tests. Some of the drug tests are performed on highly sophisticated analytical technique, such as gas chromatography coupled with mass spectrometry (GC-MS) or high-performance liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS), which are considered high complexity and are therefore not usually available in a physician’s office. Each one of these technologies is useful in clinical testing and the physician needs to understand the limitations of these tests. The POCT and the instrumental drug tests are immunoassays; the tests are limited to fewer drugs and these tests also produce false-positive and false-negative results.<sup>12–14</sup> On the other hand, the GC-MS and LC-MS/MS are confirmatory tests and provide definitive presence of the drug and their metabolites at low concentration cutoffs. In addition, there are various kinds of toxicology testing, such as workplace, forensic, performance enhancement, and criminal justice testing.<sup>1,14</sup>

Due to the complexities of various drug tests and technologies, many experts have concluded that most physicians do not have the proficiency in ordering and interpretation of these tests.<sup>1,2,15</sup> The technology in toxicology testing has changed over the past few years and some of the highly difficult analysis of drugs and chemicals that

Download English Version:

<https://daneshyari.com/en/article/5678249>

Download Persian Version:

<https://daneshyari.com/article/5678249>

[Daneshyari.com](https://daneshyari.com)