Toxicology in Pain Management

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KEYWORDS

• Pain management • Pain medicine • Toxicology • Drug testing

KEY POINTS

- Urine toxicology testing can prove very useful for drug assessment, prescribing and monitoring approaches in pain management.
- Drug testing provides an objective measure of assessing risk stratification in conjunction with the patient's medical, psychiatric and compliance history.
- Understanding drug metabolism, biological fluid matrices as well as the differences and limitations of presumptive (screen) versus definitive (confirmatory) testing methods are critical to effective and appropriate patient management.

INTRODUCTION

Toxicology monitoring has become the standard of care in providing objective laboratory data toward managing chronic pain patients, whether cancer or chronic noncancer pain (CNCP). Recent guidelines issued by the Centers for Disease Control and Prevention (CDC) for prescribing opioids for chronic pain recommend urine drug testing before starting opioid therapy and periodically monitoring for prescribed medications as well as controlled prescription drugs and illicit drugs. The literature is extensive regarding the frequency and general methods of testing in the pain medicine journals,[1–3] by the American Pain Society (APS) and the American Academy of Pain Medicine[4] (AAPM), plus the more recently formed subspecialty board for interventional pain, established under the American Society of Interventional Pain Physicians[5] (ASIPP). The main difference among these societies is regarding the definition of chronic pain; APS and AAPM define chronic pain as persisting beyond the normal tissue healing time of 3 months,[4] whereas ASIPP originally defined it as 6 months[6,7] and then adjusted it to 3 months.[8] Regardless, the goal of this review is to present an

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overview on the indications for toxicology testing primarily in CNCP, including frequency based on risk stratification, select medications, or drugs and their metabolism, regulatory and legal oversight that impact testing approaches, differences, and limitations in screening versus confirmatory testing methodologies, as well as sample matrices, and some algorithms the clinician may apply to insure medical necessity and evidence-based standard of care.

General Approaches to Toxicology Monitoring in Pain Medicine

Drug testing is vastly misunderstood and underutilized in health care. In addition, the term "urine drug testing" has generically been used for all types of drug testing. Urine drug testing is somewhat of a catch-all term because there are various types of urine drug testing the physician can use to monitor pain management patients.[9,10] Urine drug testing is used to monitor compliance with prescription medication and to identify substances prescribed as well as those that are not expected to be present. There are hundreds of chemicals, both licit and illicit, used today, especially with the emergence of synthetic psychoactive drugs; thus, it is impossible to test each drug in every patient. The most prevalent abused classes of drugs are marijuana, opiates, opioids, cocaine, benzodiazepines, and other sedatives.

Drug testing is performed in diverse settings, such as employment, criminal justice, clinical diagnosis, and monitoring of addiction patients in treatment. Each of these settings is intended for distinct purposes. For example, the Department of Transportation and the Federal Employee Drug Testing systems use the Mandatory Guideline (CFR 49, Part 40), the gold standard in the employment setting.[11] It is a deterrent program and safeguards against potential false positives. The Federal Workplace Program mandates administrative cutoffs and any drug at or above that set cutoff is reported positive, and any drug below the established cutoff is reported negative. However, a negative result does not mean the patient has no drug in their system; it simply says the drug level is below the cutoff. It is important to note that a laboratory cutoff is established by standard controls that determine the range of concentration that is allowed to be reported to the clinician; these operational aspects are tightly regulated by governmental and accrediting bodies, and nonadherence to such can result in fines, penalties, and laboratory suspension or closure. Therefore, the Federal workplace protocol can been misleading in the clinical setting, where a negative result could be positive in the realm of a lower limit of detection cutoff. Furthermore, the pain management drug test must eliminate false positive and false negative results for patient care.

The Federal Program only tests for 6 classes of drugs: amphetamines, marijuana metabolite, cocaine metabolite, opiates (codeine, morphine (M), and heroin metabolites only), ecstasy, and phencyclidine. However, pain management testing is a clinical test which includes illicit drugs, opiates, opioids, benzodiazepines, sedatives, and muscle skeletal relaxants. Thus, clinical drug testing is mainly used in pain management, addiction treatment, and psychiatry. Physicians may prescribe opiates and/or opioids in a wide range of doses to treat a patient's pain. These prescribed drugs can also interact with illicit drugs, other psychoactive drugs, sedatives, and alcohol, which could be lethal in patients on chronic pain medications, where higher doses of opiates or opioids are often prescribed as tolerance builds. As a result, the physician needs to monitor these patients periodically for the presence of the prescribed medication as well as other nonprescribed opioid and/or sedatives in the patient's system. The detection time is longer when the drug cutoffs are lower in accordance with absorption, distribution, metabolism, and excretion and steady-state kinetics. For example, cocaine can be detected up to 5 days at a 25-ng/mL cutoff versus 2 days at a 300-ng/mL cutoff. Further, illicit drugs, benzodiazepines, and/or alcohol,