The Art and Science of Urine Drug Testing

Urine Drug Testing (UDT) is an often-misunderstood clinical tool that can assist clinicians in avoiding potentially harmful drug-drug interactions, identify overdose in unresponsive patients in emergency settings, and determine adherence with treatment plans for patients in treatment for chronic pain, addiction, and a myriad of other conditions that involve use of potentially dangerous substances.

While learning how to interpret drug tests can sometimes be a daunting task, there are some simple rules that can make the task easier. First, when considering what test to order there are three questions you must ask yourself: 1) What do I test, 2) What do I test for, and 3) How do I test? With respect to the first question, in most clinical settings, urine will be the matrix (the tissue or body fluid) that will be used for the test because it is non-invasive to obtain, it is inexpensive to test, and it offers testing for the greatest amount of substances. Exceptions to this will be anuric patients on dialysis in whom the most appropriate matrix will be salivary swabs, and testing for volatile compounds such as methanol, alcohol, and ethylene glycol for which blood is the most appropriate matrix.

With respect to the substances to be tested, the general rule of thumb in clinical practice is to test for the most commonly prescribed, administered, or abused substances in your community. At the present time in Wisconsin, such drug testing should include amphetamines (including methamphetamine), barbiturates, benzodiazepines, cannabinoids, cocaine, opioids, methadone, oxycodone, and in specific situations perhaps fentanyl and buprenorphine. It is important to remember that the “opioid” immunoassay test will only be positive for derivatives of opium such as codeine, morphine, heroin, and sometimes hydrocodone. All synthetic opioids such as fentanyl, oxycodone, buprenorphine, methadone, and tramadol do NOT trigger a positive opioid immunoassay because none of these substances are metabolized by the body to morphine, which is what the opioid immunoassay is testing for.

It is also important to remember that drug testing immunoassay tests are SCREENING tests which means they generally have a high sensitivity with a low specificity (elevated false positive rate and very low false negative rate). As such, negative tests can be reliably trusted to be negative while positive tests generally require confirmation with a more sensitive assay, hence confirmation tests with GC-MS or LC-MS. Finally, it is important to remember that we are clinicians, not detectives or lawyers, such that we perform clinical drug tests, not forensic level drug tests. Physicians are not expected to create testing procedures that require monitoring of the urine collection or chain of custody.

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Now that you have collected the sample and the results are in, it is important to remember some simple clinical pearls with respect to interpretation of the results:

1) An Unexpected Positive Test result on a urine drug test DOES NOT diagnose substance use disorders or addiction.
2) A Negative Test Result DOES NOT guarantee that a patient does not suffer from a substance use disorder or addiction.
3) Always ask the patient what you can expect to find in the urine prior to testing because a good patient history remains the most important aspect of patient care.
4) In Pain Management and Addiction Treatment, ALL positive Urine Immunoassay Tests should be sent for confirmation testing via GC-MS or LC-MS.
   a. It is not necessary to send a sample for confirmation when the patient’s history of substance use matches the urine drug test results (e.g. patient tells you he used cocaine and the sample is positive for cocaine).
   b. You may need to request additional confirmation testing for substances that would not normally be detected in a standard urine immunoassay (e.g. fentanyl, tramadol, buprenorphine).
5) Generally, negative urine immunoassay tests do NOT need to be sent for confirmatory testing; a few exceptions apply.
6) It is important to develop a protocol regarding the process of notifying patients of drug test results and a policy regarding unexpected abnormalities.
   a. What to do about unexpected positive or negative results
   b. Develop protocols for referral to addiction treatment services when necessary

For assistance with patient-specific test results or questions that are not answered by the guidelines associated with the included links (page 4), consult a clinician knowledgeable in UDT interpretation e.g. pain management or addiction medicine specialist or a colleague managing higher risk pain patients. The Pain Council leadership team can offer support and assist you with available resources.

For those clinicians interested in learning more about the art and science of drug testing, a FREE, one-hour CME webinar, Drug Testing in Clinical Practice, is now available via InReach. This webinar is approved by the Wisconsin Medical Examining Board to fulfill one of the two credit hours that are required as part of the Opioid CME MEB requirement before the end of 2019.

Registration tip sheet.
It is expected to obtain a UDT prior to initiating chronic opioid therapy and at minimum once yearly; more frequent UDT is recommended for higher risk patients.

As with any medical test, it is vital that clinicians understand the results and implications of a UDT before allowing the test to inform decision-making regarding chronic opioid therapy. For this reason, it is important to realize the nuances of urine drug testing. For example, the most common, yet basic, UDT is completed using the immunoassay method. This test often screens for five main drug classes including amphetamines, cocaine, marijuana, opioids, and phencyclidine (PCP). As it relates to opioids, immunoassay testing can be misleading since they often will not detect synthetic opioids such as tramadol, methadone, and fentanyl. Even semi-synthetic opioids such as hydrocodone, hydromorphone, oxycodone, and oxymorphone may not be detected by basic immunoassay UDT, though specific screening assays are often used for these frequently prescribed opioids.

In addition, immunoassay testing can lead to both false positive and false negative results based on a legitimate prescription of an unrelated medication (i.e. bupropion can cause false positive for amphetamine; certain antibiotics can cause false positive for opioids). It is always important to view the UDT result in the clinical context in which it was obtained. If you are prescribing chronic opioid therapy, but the patient indicates they haven’t used the opioid in 2-3 days it is entirely possible that the opioid will not be detected on immunoassay. Conversely, if a patient states they take morphine three times a day, every day, a negative immunoassay result would be concerning and would raise questions about potential diversion.

Below is a snapshot of one of the resources available on the Opioid Guideline Toolkit related to urine drug testing
AW Opioid Guideline Toolkit

Have you checked out the Opioid Guideline Toolkit lately? Highlighted this month are resources and tools related to urine drug testing.

Overview of Urine Drug Testing for Pain Management
Understanding Urine Drug Testing – Prescription Medications
Understanding Urine Drug Testing – Illicit Drugs

Education and CME Opportunities

- **Now available:** *Drug Testing in Clinical Practice: The Science and Art of Drug Monitoring*. This on-demand program is presented by David Galbis-Reig, Medical Director of Addition Services, Ascension All Saints Hospital. This program is approved for 1 AMA Category 1 Credit and is approved by the WI Medical Examining Board as meeting one of the two credit hour requirements for opioid education for license renewal. The course is free for Ascension WI providers. [Registration tip sheet](https://ascension.zoom.us/webinar/register/9129a6a31a5d3a1ec5b9141539e44ee6).

- The monthly AMG opioid webinar series will resume on Tuesday, February 12, 2019 at 0700. The topic has not been announced, pending approval of CME credit. You will be notified by email when program details are finalized. A registration link is provided to put a placeholder in your calendar. [https://ascension.zoom.us/webinar/register/9129a6a31a5d3a1ec5b9141539e44ee6](https://ascension.zoom.us/webinar/register/9129a6a31a5d3a1ec5b9141539e44ee6)

Pain Council Contacts

Do you have questions related to chronic opioid therapy or the opioid prescribing guidelines? Are there topics on pain management that you would like covered in upcoming newsletters? Submit your questions and ideas to any member of the Pain Council leadership team listed below.

- **David Galbis-Reig**, M.D., DFASAM, Medical Director of Addiction Services, Ascension All Saints Hospital
- **Peggy Lutz**, MSN, FNP, RN-BC, Service Line Director Pain Management
- **Robert Sedlacek**, M.D., Family Medicine, Ascension Medical Group Merrill
- **Oscar Wille**, M.D., Pain Management, Physical Medicine/Rehab, Ascension Columbia St. Mary’s Hospital Milwaukee