

Urine drug screening: its use in determining patient progress

Urine drug screening (UDS) can be used as one source of information to assess how your patients with substance-use-related problems are faring. UDSs together with self-report and clinical observations build up a picture. The clinical observations of the dispensing pharmacists and other health professionals involved in the patient's care can be a valuable addition to your clinical observations regarding the patient's drug use and overall progress.

Regular testing should be discussed with the patient and incorporated into the initial contract made at commencement of treatment. Patients should be informed that testing is regularly done for everyone on the program (no one person is specifically singled out) and is for patient safety. Patients may view urine testing more positively if it is framed as providing objective proof of drug free status that will allow further entitlements to be considered (for example take-away doses) in accordance with Drugs of Dependence Unit policy.

Medicare allows for a maximum of 21 urine drug screen tests per patient in a 12-month period. In general, the number of tests needed will be significantly lower than this and will decrease (but not stop) the longer the patient has been in treatment. The clinical utility of the test depends on whether it will affect decision making. Early on in treatment, when ongoing drug use is assumed (and usually disclosed by the patient), then a positive urine drug screen does not add additional information. However, as treatment progresses, if the clinical situation appears to be improving, a positive UDS can be an important piece of information.

During initial assessment, urinary drug screens are helpful as they can clarify or confirm an unclear drug use history and can provide supportive evidence of opioid use that can otherwise be difficult to obtain. At commencement, the screen can corroborate patient history of substance use, establish recent opioid use and identify use of other drugs.

For ongoing monitoring, the urine analysis can be used to monitor compliance with the treatment, providing evidence that the patient is taking the prescribed methadone or buprenorphine. The urine analysis results can provide triangulated evidence about recent consumption of drugs (prescribed and illicit) enabling more open discussion about what is really going on in the person's life. The results can help in assessing the risks of treatment for the patient and can promote discussion with the patient about these risks.

Integrity of specimens

Measures can be put in place to reduce the chance of urine tampering. Urine tampering can include substitution with a 'clean' or synthetic urine specimen, dilution with water and other liquids and/or adulteration with other chemicals (Jaffee et al 2008)¹. Australian standards for collection of urine specimens relate to testing for medico-legal, workplace or court-directed purposes, so are not applicable to routine monitoring of management of opioid dependence².

When collecting the urine sample, let the patient know that a fresh sample is required and that all samples are always checked in a variety of ways. Check the integrity of specimen by conducting a visual inspection of the colour or lack thereof, and check the temperature by hand when packed in the pathology bag.

If there is any doubt, ask the patient to give another sample and send both to be tested. Creatinine levels are routinely tested in the urine sample and give an indication of dilution.

Paperwork - what to order

Immunoassay screen

The usual test request is an immunoassay (IA) screen for a 'screen of drugs of dependence or abuse'. Document on the request form the prescribed and over the counter medications the patient reports taking. You can also document specific concerns on the form. Information sharing between the clinician and laboratory makes the information derived from the tests more useful, so ring the laboratory when in doubt.

Confirmatory tests using GCMS/LCMS

If you have particular concerns about the validity of the standard IA drug screen, you can request confirmation by gas chromatography mass spectrometry (GCMS) or liquid chromatography mass spectrometry (LCMS). However, these tests are expensive for the laboratory so should not be requested unless specifically indicated for clinical decision making.

For example, with a patient being prescribed diazepam in a controlled dispensing manner as part of a plan to slowly dose taper, the doctor may be interested in whether the patient is accessing additional alprazolam. The GCMS/ICMS will detect distinctive metabolites that will determine whether the patient has been recently taking alprazolam. In this circumstance ask for 'GCMS confirmation benzodiazepines.

Interpretation

When interpreting results, remember the GIGO (garbage in - garbage out) principle. The more information you provide the laboratory, the more helpful the results will be.

When interpreting results, remember a negative test does not necessarily mean that the patient is not using a drug. It could mean:

- The patient did not use an opioid (or other drugs) within the period of time for which the test is sensitive.
- The test does not screen for the drug the patient is using. For example: standard IA screens do not currently detect fentanyl, tapentadol or tramadol and a standard screen panel may not include oxycodone so it is worthwhile requesting this separately and/or checking with the pathology provider to establish whether they do check for oxycodone on the initial screen.
- Adulterants have been used to dilute the drug metabolite levels to sub-threshold levels or to mask them. Be suspicious of this particularly if the urine creatinine suggests a dilute urine.

Detection times for selected drugs in urine

Drug	Time
Alcohol (dose dependent)	24 hours
Amphetamines	2-3 days
Benzodiazepines (dose/type dependent)	
Short acting	1-3 days
Long acting	1-4 weeks
Long acting (high level misuse)	Potentially up to 10 weeks
Buprenorphine (sub-lingual)	May not measure above threshold of 5 ng/mL
Buprenorphine (oral tablets)	3-7 days
Buprenorphine (depot)	Up to 6 months depending on formulation
Cannabis (tested to cut-off level of 50 ng/ml)	
> One time use	2 days
> Three times per week	2 weeks
> Daily use	2-4 weeks
> Very heavy use	4-6 weeks (may be up to 12 weeks)
Ecstasy (MDMA)	2-3 days
LSD (not detected in standard UDS)	2-3 days
Heroin and 6-MAM	12-24 hours
Morphine	2-4 days
Hydromorphone	1-2 days
Methadone/EDDP	3-7 days
Codeine	2-4 days
Cocaine	1-5 hours (metabolites 2-4 days)

With increased sensitivity of assays false positive results may occur due to cross reactivity with metabolites of illicit drugs/medications. Using current assays there are no known false positive results for the following:
Buprenorphine, Benzodiazepines, Cannabis, Amphetamine type substances and Opiates.

NOTE Regarding Opiate Screen

- naloxone-3 glucuronide, an inactive metabolite in suboxone does not cause a false positive for opiates
- 6-Monoacetylmorphine (6-MAM) is a specific metabolite of heroin and indicates use in previous 12-18 hours
- tramadol and tapentadol are not detected in the opiate screen
- fentanyl is not detected in the opiate screen

If you are concerned about the result and think that a GCMS/LCMS might shed light, consider requesting a further 'confirmation' by GCMS/LCMS (specimens are retained for one week at SA Pathology).

Summary

When reading a result, ensure the following:

- Routinely check that the creatinine level is greater than 1.8 mmol/L. If the level is lower it is likely to have been diluted.
- Check prescribed medications (ie buprenorphine or methadone) are present. If these are absent the patient is likely to not be taking their doses and may be diverting them, or the urine may be someone else's.
- Check what other drugs are present. Consider if:
 - these results fit with the self-report of the patient
 - there is a satisfactory post-hoc explanation
 - it may be a false positive.
- Talk with the patient about the test. Often constructive discussions can ensue if ongoing drug use is identified through testing. Circumstances around their use can be examined, triggers and stresses identified, and strategies for reducing use or reducing risk associated with use can be negotiated.

Remember many patients will continue to use drugs when taking methadone or buprenorphine, but at much reduced levels than previously. This still reduces risk of harm and represents progress.

There is little evidence to support the use of drug monitoring as a deterrent against unsanctioned drug use and thus drug-positive results should not be used punitively.

- Consider the pattern of urine results. A single positive urine result indicates recent drug use, while consecutive positive urine results indicate habitual drug use.
- Finally, consider whether the results alter the risk assessment of the patient's treatment and incorporate this into the management of your patient.

References:

1. Jaffee, W., et al., Focus on alcohol & drug abuse: ensuring validity in urine drug testing. *Psychiatric Services*, 2008. 59(2): p. 140-142.
2. Standards Australia (Organization) & Standards New Zealand & Standards Australia 2008, Procedures for specimen collection and the detection and quantitation of drugs of abuse in urine, 3rd ed, Standards Australia; Wellington [N.Z.]: Standards New Zealand, Sydney, NSW

For more information

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