



Drugs of Abuse urine drug screen is changing – here is what you need to know.

Historically Urine Drugs of Abuse Screen in the Toxicology laboratory has been a two-step approach. First a 'screen' for amphetamines, benzodiazepines, cocaine, opiates, cannabis, EDDP and buprenorphine and second confirmations/differentiation screen positive samples. However, this is going to change.

The Toxicology Laboratory now has a new machine that will analyse a small panel of specific drugs in each drugs class as the only analysis. The new Urine Drugs of Abuse test set will now look like this when viewed in Welsh Clinical Portal:

	Sample Integrity Check (Authorised [A])		
	Creatinine [Urine]	2.00	mmol/L
Urine Drugs of Abuse (Authorised [A])			
	Morphine		Positive
	Codeine		Positive
	6MAM		Negative
	Dihydrocodeine		Positive
	Oxycodone		Positive
	Tramadol		Negative
	Cocaine metabolite (benzoylecgonine)		Positive
	Amphetamine		Positive
	Methamphetamine		Negative
	MDMA		Positive
	Alprazolam		Negative
	Diazepam		Positive
	Nordiazepam		Positive
	Oxazepam		Negative
	Temazepam		Negative
	Fentanyl		Positive
	Cannabis metabolite (THCCOOH)		Positive
	EDDP		Negative
	Buprenorphine		Negative
	Nor-buprenorphine		Negative
	Ketamine		Positive
Urine drug confirmatory cut off concentrations applied according to European Workplace Drug Testing Society guidelines V2.0 (exceptions: Ketamine, Fentanyl, Norbuprenorphine and Buprenorphine). Amphetamines 200 ng/mL, Benzodiazepines, Ketamine and Cocaine metabolite (Benzoylecgonine) 100 ng/mL, Opioids (except 6MAM and Fentanyl) 300 ng/mL, 6MAM and Fentanyl 10 ng/mL, Cannabis 15 ng/mL, EDDP (methadone metabolite) 75 ng/mL, Norbuprenorphine and Buprenorphine 5 ng/mL			

The turnaround time will be slightly longer from receipt in the laboratory (from 72hrs) than the original 'screen' but overall will be shorter than those samples requiring confirmation testing.

Specimen Integrity Check:

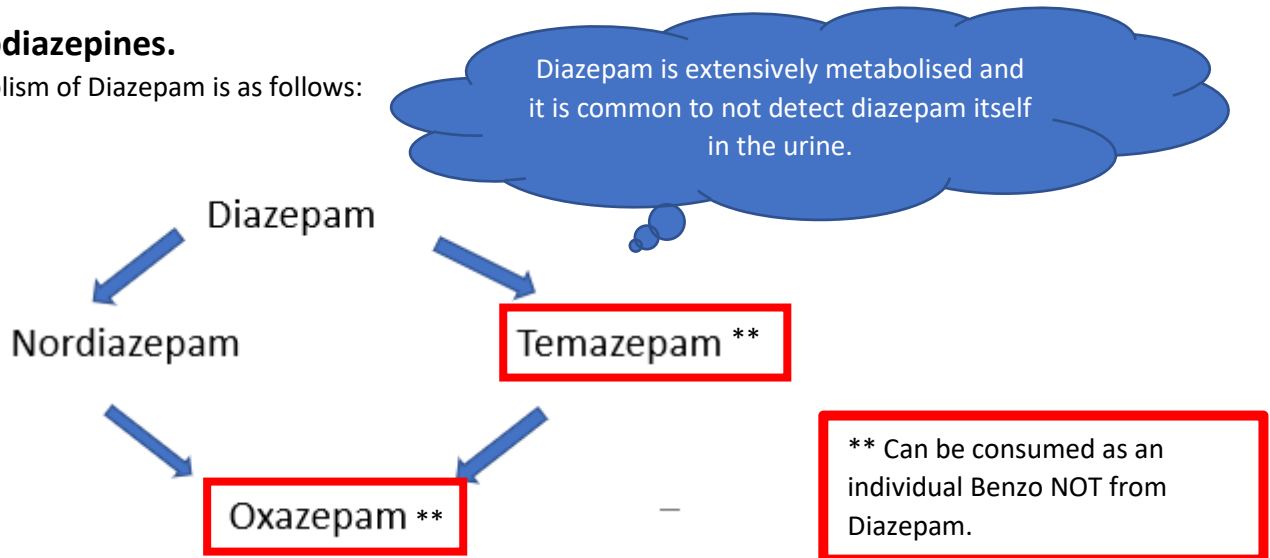
We will no longer analyse urine pH. Only urine creatinine will be analysed to assess the integrity of the urine sample.

Interpretation:

Additional specification about drugs within a drug class can help interpretation. For example:

Benzodiazepines.

Metabolism of Diazepam is as follows:

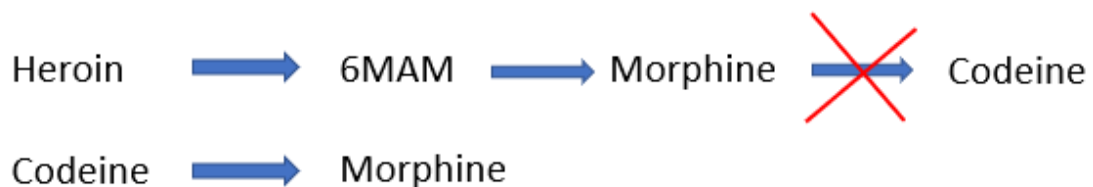


Note

Please note: other drugs (specifically Chlordiazepoxide and Chlorazepate in the literature) have been reported to be metabolised to Nordiazepam then oxazepam. This may help aid interpretation when not all 3 metabolites are detected (i.e. nordiazepam, temazepam and oxazepam).

Opiates

Below is a simplistic explanation of opiate metabolism:



Please note 6MAM is definitive for recent heroin use, but its absence does not rule-out heroin use. 6MAM is only detected in the urine within 24hrs of heroin use.

Detection of morphine alone is not evidence of heroin use as morphine can be detected from morphine, heroin or codeine exposure.

Codeine is metabolised to morphine and generally both are present when codeine has been consumed.

Codeine can also be detected in urine as a contaminant when other sources of opiates have been consumed. This is most likely if the source of opiate is an extracted from opium i.e. heroin and poppy seeds. The codeine contaminant is consumed and metabolised but is not the predominant opiate. To indicate this we will append the following comment:

“This result suggests codeine was not taken within the last 24 hours. Codeine detected but at lower or similar concentrations to morphine suggesting codeine is from other sources of opiates.”

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Nordiazepam	Positive
Oxazepam	Negative
Temazepam	Negative
Fentanyl	Positive
Cannabis metabolite (THCCOOH)	Positive
EDDP	Negative
Buprenorphine	Positive
Nor-buprenorphine	Positive
Ketamine	Positive

This result suggests codeine was not taken within the last 24 hours. Codeine detected but at lower or similar concentrations to morphine suggesting codeine is from other sources of opiates.

Urine drug confirmatory cut off concentrations applied according to European Workplace Drug Testing Society guidelines V2.0 (exceptions: Ketamine, Fentanyl, Norbuprenorphine and Buprenorphine). Amphetamines 200 ng/mL, Benzodiazepines, Ketamine and Cocaine metabolite (Benzoylecgonine) 100 ng/mL, Opioids (except 6MAM and Fentanyl) 300 ng/mL, 6MAM and Fentanyl 10 ng/mL, Cannabis 15 ng/mL, EDDP (methadone metabolite) 75 ng/mL, Norbuprenorphine and Buprenorphine 5 ng/mL

Please find below a table for drug detection times taken from www.toxbase.org

DRUG DETECTION TABLE

(from Drug Misuse and Dependence - Guidelines on Clinical Management, UK Departments of Health, 1999)

Approximate duration of detectability of selected drugs in urine	
SUBSTANCE	DURATION OF DETECTABILITY
Amphetamines	48 hours
Methamphetamine	48 hours
Barbiturates -short acting	24 hours
-intermediate-acting	48-72 hours
-long-acting	7 days or more
Benzodiazepines - ultra-short-acting (half-life 2 hours) (eg Midazolam)	3 days (therapeutic dose) 12 hours
- short-acting (half-life 2-6 hours) (eg Triazolam)	24 hours
-intermediate-acting (half-life 6-24 hours) (eg Temazepam/Chlordiazepoxide)	40-80 hours
- long-acting (half-life 24 hours) (eg Diazepam/Nitrazepam)	7 days
Cocaine metabolites	2-3 days
Methadone (maintenance dosing)	7-9 days (approximate)
Codeine/Morphine/Propoxyphene (Heroin is detected in the urine as the metabolite morphine)	48 hours
Norpropoxyphene	6-48 hours
Cannabinoids (Marijuana) - single use	3 days
- moderate use (4 times per week)	4 days
- heavy use (daily)	10 days
- chronic heavy use	21-27 day
Methaqualone	7 days or more
Phencyclidine (PCP)	8 days (approximate)

Requesting the new test set

This test will be available on both ETR and GPTR and is easy to request as a single test "CAV Drug screen". In both cases, once the request is made, print the request form and attach the barcoded sticker to a plain urine container.

If you require support accessing or using these systems please contact the Implementation Officers Michael Bowers (ETR/WCP) or Robert Hughes (GPTR).

Questions ?

If there are any further questions about the interpretation of the new drugs of abuse test please e-mail: Joanne.Rogers@wales.nhs.uk or phone the laboratory on 02921 826894.

Jo Rogers, Consultant Clinical Scientist.