Alcohol and Other Drugs – Urinalysis resource

Urinalysis, also known as urine drug screening, refers to the process when a urine sample is assessed for illicit substances. It can also assess for prescription or over the counter medications which can be misused. This resource helps Permanency Support Program (PSP) service providers to understand and interpret urinalysis screening results. PSP service providers should refer to their own organisations policies and procedures to determine when or if urinalysis testing is appropriate.

Urinalysis may be used as part of a holistic assessment when a child is at risk of significant harm and you are unsure about whether a parent, carer or household member's alcohol or other drug (AOD) use is problematic. Problematic use is identified by a negative impact upon parenting and functioning. It is important to remember urinalysis:

- does not keep children or young people safe
- can only tell us about what the person may or may not be using around the time of testing
- cannot tell us about the impact of substance use
- cannot be used to confirm ongoing abstinence.

Testing

AOD testing should be consistent with the principles of the NSW Practice Framework, particularly upholding dignity and building respectful relationships with individuals and families. When testing for AOD, practitioners need to be clear about how urinalysis is assisting practice to create safety for children and young people (children).

All urinalysis testing is supervised – meaning that the collector stands outside the door of the cubicle when the sample is being provided. This is the least intrusive method of collection. There are several measures in place to ensure that it is difficult to tamper with a sample. The client will need to empty their pockets and leave all coats and bags outside of the collection area. The taps in the collection area are blocked off, and there is dye in the toilet, which means it is not possible to dilute the

sample after it has been provided. When the client hands the sample to the collector, they check the temperature of the sample immediately. Only if there are clear concerns about previous sample tampering or dilution can it be requested that the urinalysis is observed – meaning the collector will be in the room with the client and observes the flow of urine into the container.

All testing must be random. This means the parent cannot receive set appointment times but is informed up to 12 to 24 hours prior to the test. When there are concerns about problematic drug use, urinalysis should take place randomly three times per week in at least four weeks over an eight-week block. Testing must occur over eight weeks to meet the minimum time to obtain a baseline of possible use.

Chain of Custody

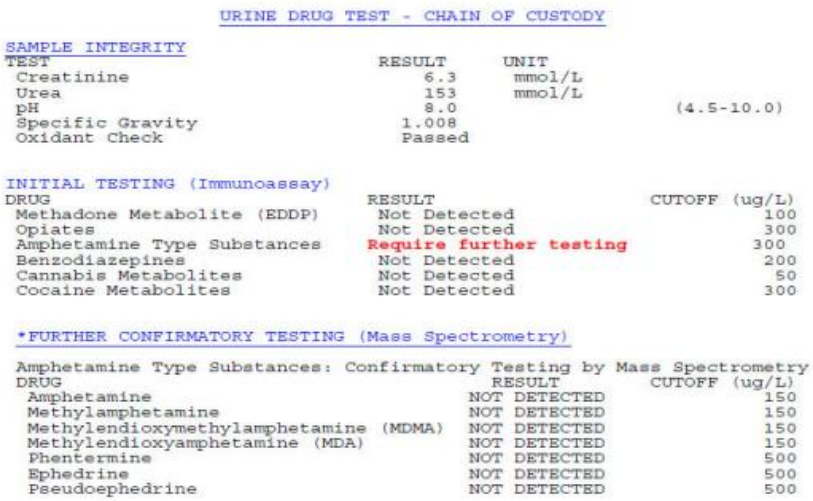
The chain of custody is the chronological documentation or paper trail, showing the collection, transfer, receipt, analysis, storage, and disposal of the sample. This ensures that any result reported relates beyond all reasonable doubt to a particular individual.

If the chain of custody is not followed, the results cannot be relied upon. Testing may need to take place again. Any breaches of the chain of custody will be noted on the results form. As a number of tests are usually conducted, minor breaches of the chain of custody protocol are unlikely to affect our overall understanding of a person's pattern of drug use.

Initial and confirmatory testing

Initial testing is conducted to test for a broad range of substances. If any are detected a further confirmatory test is conducted. There are some occasions when the initial test shows that a substance 'requires further testing', but the confirmatory test returns negative. A confirmatory result only confirms the recent use of a particular drug, this is because there is no fixed correlation between the actual amount used and the detection in the sample. Additionally, even if we did know how much of a drug someone used, it does not tell us anything about how that use impacted their functioning, behaviour, and parenting, or what the resulting experience for the child was.

There are a number of reasons why this may happen. The detection in the initial test



URINE DRUG TEST - CHAIN OF CUSTODY

SAMPLE INTEGRITY

TEST	RESULT	UNIT	
Creatinine	6.3	mmol/L	
Urea	153	mmol/L	
pH	8.0		(4.5-10.0)
Specific Gravity	1.008		
Oxidant Check	Passed		

INITIAL TESTING (Immunoassay)

DRUG	RESULT	CUTOFF (ug/L)
Methadone Metabolite (EDDP)	Not Detected	100
Opiates	Not Detected	300
Amphetamine Type Substances	Require further testing	300
Benzodiazepines	Not Detected	200
Cannabis Metabolites	Not Detected	50
Cocaine Metabolites	Not Detected	300

*FURTHER CONFIRMATORY TESTING (Mass Spectrometry)

Amphetamine Type Substances: Confirmatory Testing by Mass Spectrometry

DRUG	RESULT	CUTOFF (ug/L)
Amphetamine	NOT DETECTED	150
Methylamphetamine	NOT DETECTED	150
Methylendioxymethylamphetamine (MDMA)	NOT DETECTED	150
Methylendioxyamphetamine (MDA)	NOT DETECTED	150
Phentermine	NOT DETECTED	500
Ephedrine	NOT DETECTED	500
Pseudoephedrine	NOT DETECTED	500

was a false positive or the substance was present but not in a high enough concentration to meet the cut-off for the confirmatory test.

SAMPLE:

We cannot know the reason for certain. What is important is that for a test to be considered positive, (most) substances must be detected by both the initial and the confirmatory test. The few exceptions to this are:

- methadone
- buprenorphine
- synthetic cannabis
- synthetic amphetamines.

Not all drugs are tested for in a standard urinalysis, some need to be specifically requested. The table below details which drugs are included and which need to be requested.

A standard urinalysis test	**Drugs that will need to be specifically requested**

• Methadone • buprenorphine • opiates • amphetamine type substances • benzodiazepines • cannabis • cocaine.	• Synthetic cannabis • synthetic amphetamines. Under the option of 'other' you also can ask for the specific testing of: • Fentanyl (opiate) • tramadol (opiate) • oxycontin (opiate).

Detection period

The detection period is the time frame a drug can be detected in a urine sample. Below is the detection period for different drugs. Please note that these detection times are indicative only. There may be significant variations in these times in individuals, depending on their genetics, comorbidities, use of medications, co-ingestion of other drugs, hydration status, pH of urine and pattern of drug use.

Detection levels in a urinalysis result will be influenced by:

- the amount of time between drug use and providing the sample
- the frequency and duration of use
- the route of administration of the drug (e.g., did the person inject, snort, or swallow the drug?)
- the person's metabolism
- their body mass
- level of hydration
- the pH (acidity/alkalinity) of the urine.

Standard urinalysis

Drug	Detection period
Methadone	Up to 3 days.
Buprenorphine	Up to 4 days.
Opiates	Up to 4 days.

Codeine, morphine, and heroin	If morphine is detected it can be difficult to know if this due to use of heroin, morphine, or codeine. If there are any questions around this, please contact the pathology provider.
Amphetamine type substance Methylamphetamine ('ice' or 'speed') Methylenedioxymethamphetamine (MDMA) Methylenedioxyamphetamine (MDA) Phentermine Ephedrine Pseudoephedrine	Up to 4 days.
Cannabis	Up to 4 days for single use and up to 11 weeks for frequent use.
Cocaine	Up to 4 days.
Benzodiazepines Diazepam Nordiazepam Oxazepam Temazepam Alprazolam Clonazepam Flunitrazepam Nitrazepam	Up to 6 weeks.

Specifically requested in a urinalysis

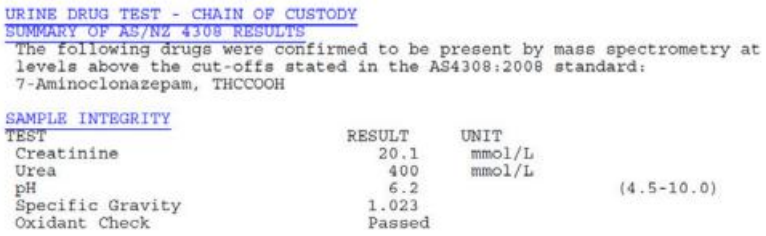
Drug	Detection period
Synthetic amphetamines	Up to 3 days.

Oxycontin (opiate)	Up to 3 days.
Fentanyl (opiate)	Up to 4 days.
Synthetic cannabis	Up to 5 days.
Tramadol (opiate)	Up to 7 days.

Some synthetic drugs mimic the effect of other substances. This is a rapidly changing market, and it is not recommended that people are routinely tested for these unless there is specific evidence or worries to support this concern. Regarding synthetic cannabis and synthetic amphetamines, unlike other drugs, only initial testing is needed, and these initial results can be relied upon.

Results

Step 1: Check the results have met the sample integrity at the top of the form. If the sample integrity has been met this will be noted by the clinician and the results can be relied on, as seen below.



URINE DRUG TEST - CHAIN OF CUSTODY

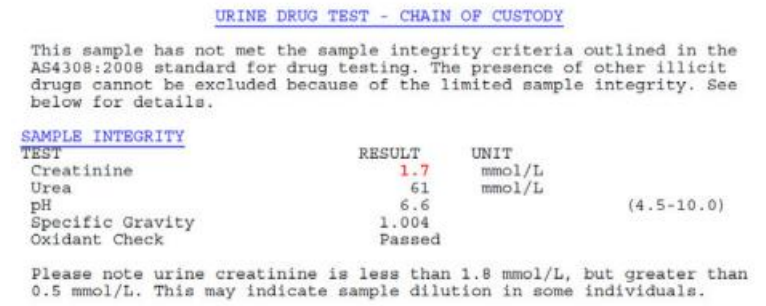
SUMMARY OF AS/NZ 4308 RESULTS

The following drugs were confirmed to be present by mass spectrometry at levels above the cut-offs stated in the AS4308:2008 standard:
7-Aminoclonazepam, THCCOOH

SAMPLE INTEGRITY

TEST	RESULT	UNIT	
Creatinine	20.1	mmol/L	
Urea	400	mmol/L	
pH	6.2		(4.5-10.0)
Specific Gravity	1.023		
Oxidant Check	Passed		

If the sample integrity has not been met this will be highlighted in red by the pathology provider and the results cannot be relied on, as seen below.



URINE DRUG TEST - CHAIN OF CUSTODY

This sample has not met the sample integrity criteria outlined in the AS4308:2008 standard for drug testing. The presence of other illicit drugs cannot be excluded because of the limited sample integrity. See below for details.

SAMPLE INTEGRITY

TEST	RESULT	UNIT	
Creatinine	1.7	mmol/L	
Urea	61	mmol/L	
pH	6.6		(4.5-10.0)
Specific Gravity	1.004		
Oxidant Check	Passed		

Please note urine creatinine is less than 1.8 mmol/L, but greater than 0.5 mmol/L. This may indicate sample dilution in some individuals.

Step 2: Look at the initial testing. If any substances have been detected these will be marked as 'require further testing', as seen below.

INITIAL TESTING (Immunoassay)

DRUG	RESULT	CUTOFF (ug/L)
Methadone Metabolite (EDDP)	Not Detected	100
Opiates	Not Detected	300
Amphetamine Type Substances	Require further testing	300
Benzodiazepines	Not Detected	200
Cannabis Metabolites	Not Detected	50
Cocaine Metabolites	Not Detected	300

The exception to this is Methadone or Buprenorphine and/or synthetic cannabis and synthetic amphetamines as these only require initial testing. If these substances show up in initial testing it means that there is confirmation that these drugs were present at the time of testing (confirmatory testing is not required).

Step 3: If any substances have been detected in the initial testing, then it will be important to look at what substances showed up in confirmatory testing. This can be found on the results page under the confirmatory testing heading, as seen below.

*FURTHER CONFIRMATORY TESTING (Mass Spectrometry)

Amphetamine Type Substances: Confirmatory Testing by Mass Spectrometry

DRUG	RESULT	CUTOFF (ug/L)
Amphetamine	326	150
Methylamphetamine	>1500	150
Methylendioxymethylamphetamine (MDMA)	NOT DETECTED	150
Methylendioxyamphetamine (MDA)	NOT DETECTED	150
Phentermine	NOT DETECTED	500
Ephedrine	NOT DETECTED	500
Pseudoephedrine	NOT DETECTED	500

The detection of a substance when confirmatory testing was conducted means the person has used this substance around the time they were tested.

Step 4: Read the explanation of the results, this is usually found towards the end of the report. An example of notes can be found below.

> *'Mass Spectrometry confirms the Amphetamine Type Substances finding and indicates a pattern consistent with the ingestion of methamphetamine.'*

Interpreting results

Sample Integrity was not met

Sample integrity tests include a range of tests designed to confirm the sample provided is human urine that has not been diluted or tampered with in any way. The clinician will make a comment when sample integrity is not met, such as:

> Please note: Appearance, lack of odour, creatinine and urea concentrations suggest that this is not a real urine, but a substituted synthetic sample. Recollection is recommended under an increased level of supervision, if indicated.

Low creatinine levels

There are several reasons why creatinine levels may be low (0.4-1.8mmol/L). A person may:

- have drunk a lot of liquid so they can provide a sample
- have over hydrated prior to the test
- have consumed excess fluids to dilute their urine due to their worries about what the results may show. This could include use of water, Ural, herbals teas or used diuretics (medications that increase fluid loss through the kidneys)
- be naturally low in creatinine. If this is the case, all their test results will have low levels of creatinine.

A low creatinine level does not mean that the person deliberately tried to dilute their sample. We recommend discussing the result as soon as possible with the tested person. The test may need to be repeated. When there is a low creatinine result, and any drugs are detected in the sample then these results are valid. However, when there is a low creatinine result and drugs are not detected it is possible that the high sample dilution has decreased the concentration of a drug present in the urine to below the detection limit and these results cannot be relied upon. If a urine creatinine result is less than 0.4 mmol/L the sample is not a valid urine specimen. Either water was added to urine, after or an alternative fluid has been submitted. This makes the result invalid.

Amphetamine and methylamphetamine

A confirmatory test for methylamphetamine will show the metabolites methylamphetamine with or without the presence of amphetamine. The body breaks down methamphetamine into amphetamine. If methylamphetamine is present, then the person has taken methylamphetamine (speed or ice).

There are some prescription drugs, usually used to treat ADHD or narcolepsy that will give a positive detection for amphetamine. Speed also metabolises to amphetamine.

If only amphetamine is detected it is not possible to tell whether this is because of using ‘ice’, ‘speed’, or prescription medication. Understanding more about the client’s use of illicit drugs and their medical history will help you make sense of these results. In the example below, both amphetamine and methylamphetamine have been detected. This indicates that the person has used methylamphetamine. Depending on how the methylamphetamine is prepared it may be sold as ‘ice’ or ‘speed’.

*FURTHER CONFIRMATORY TESTING (Mass Spectrometry)

Amphetamine Type Substances: Confirmatory Testing by Mass Spectrometry

DRUG	RESULT	CUTOFF (ug/L)
Amphetamine	580	150
Methylamphetamine	1486	150
Methylendioxymethylamphetamine (MDMA)	NOT DETECTED	150
Methylendioxyamphetamine (MDA)	NOT DETECTED	150
Phentermine	NOT DETECTED	500
Ephedrine	NOT DETECTED	500
Pseudoephedrine	NOT DETECTED	500

‘Mass Spectrometry confirms the Amphetamine Type Substances finding and indicates a pattern consistent with the ingestion of methamphetamine.’

Morphine and codeine

If someone took a codeine-based medication only, like panadeine forte, you would expect to see both codeine and morphine detected. Similarly, if someone were taking a morphine-based medication you would also see codeine and morphine detected. The clinician will comment on the results to say whether the result is consistent with taking codeine. When the morphine levels detected are low it is not possible for the clinician to indicate the original source. If this is the case, the clinician will provide a comment to explain this. If you have specific questions about the results, then these are best asked of the pathology provider and the client.

Cold and flu medication

If someone has tested positive for methylamphetamine this means they have taken ‘ice’, ‘speed’, or in extremely rare cases it might be a prescribed medication. If there are any questions around this, please contact the pathology provider. If they had only taken cold and flu medication, this would have come up in the results as Ephedrine or Pseudoephedrine

Cannabis

When reviewing confirmatory cannabis results, it is important to focus on the column headed “Ratio ug/mmol” on the far right of the results table. This takes into account the differing concentrations of the samples provided and allows you to look at a

series of results to get a sense of whether a person's cannabis use is ongoing, increasing or decreasing. If someone was a regular user of cannabis and they cease use it can take up to 11 weeks for all traces of cannabis metabolite to leave their system. The following example below shows the ratio decreasing suggesting no further use since the sample provided on the 25/07/2018. If the person were to not use any more cannabis this ratio would continue to drop until it was not detected. Please note that the table needs to be read from the bottom up, that is, in date order.

Cannabis Metabolite: Confirmatory Testing by Mass Spectrometry

DRUG	RESULT	CUTOFF (ug/L)
THCCOOH (Total)	423	15

Date	Lab No	d9-THCCOOH ug/L	U.Creat mmol/L	Ratio ug/mmol
02/08/2018	14472110	423	18.2	23
01/08/2018	14472040	363	11.7	31
27/07/2018	13890403	1270	28.3	45
25/07/2018	13890327	1887	16.0	118

Alcohol

Urine alcohol testing is not recommended for assessing alcohol use as alcohol is metabolised very quickly following use, i.e. it is not present in someone's urine for exceedingly long. If there are concerns about longer term problematic alcohol use, then a one-off blood test that includes a Carbohydrate Deficient Transferrin (CDT) and Liver Function Test (LFT) can be requested. CDT can be used as a test for regular heavy drinking (i.e. typically an average of six or more standard drinks most days of the week for two weeks or more in a row). Please be aware that a normal level of CDT does not mean that the person's use of alcohol is not problematic or impacting on a child. If someone were binge drinking, but not every day, they could have a CDT level within the normal range. Also, there may be underlying medical conditions which lead to raised levels of liver enzymes. If you need help in understanding the CDT and LFT results, please contact your Pathology provider or a GP.