Interpretation Guide:
Immunoassay-based Urine Drug Screening

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The *Drugs of Abuse Testing* and *Target Drug Testing* offered by Dynacare use immunoassays to qualitatively screen for the presence of a specific drug and/or drug class.

Each immunoassay will have varying sensitivities and specificities for the tested drug or drug class. As such, it is important to note that **immunoassay-based urine drug screens only provide presumptive analytical test results** and are subject to the sensitivity and specificity of the assay itself. **Appropriate clinical consideration and professional judgment should be applied to all test results.** The tables below may be used as an interpretive resource for this testing.

A negative immunoassay-based urine drug screening result may not necessarily mean that the urine is drug free. Negative results can be obtained when the drug and/or drug class is present in the urine, but at a concentration that is below the positive/negative cut-off threshold.

False-negative results may also be obtained if the antibody used by the assay has poor cross-reactivity with the analyte of interest.

A positive immunoassay-based urine drug screening result indicates that the drug and/or drug class is present in the patient's urine at a minimum concentration above its defined screening threshold. A positive result does not indicate the drugs route of administration, ingested dose, concentration in the urine or the patient's level of intoxication.

False-positive results may be obtained if the antibody used by the assay cross-reacts with structurally-related and/or unrelated compounds. Known potential sources of false positive screening results and their literature references are provided in the tables below. A more specific alternate reference method should be used to obtain a confirmed positive test result. The Broad Spectrum Urine Toxicology Screen provided by Dynacare incorporates liquid chromatography and tandem mass spectrometry (LC-MS/MS) for the targeted identification of sixty-three (63) different drugs, drug metabolites and preparation ingredients. This LC-MS/MS based urine drug screen and may be considered for such secondary testing.

If you are concerned about a potential false positive or false negative test results please contact Dynacare. We also suggest that you review the Ontario Association of Medical Laboratories (OAML) guideline entitled "Guidelines for Ordering Urine Testing for Drugs-of-Abuse: Targeted and Screening Tests (CLP013)", found at www.OAML.com.

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Interpretation Guide: Urine Drugs of Abuse Testing

Drug/ Drug Class	Positive/ Negative Cut-off	Interpretative Notes
Amphetamines	1000 ng/mL	Labetalol has been reported to cause false-positive results with this test[1]. The concentration for which the assay can detect an amphetamine and/or amphetamine metabolite varies within the drug class. MDMA (e.g., Ecstasy) has moderate cross-reactivity with this assay. If you are interested in screening for methylphenidate please consider ordering at *Broad Spectrum Urine Toxicology* screen.
Barbiturates	300 ng/mL	The concentration for which the assay can detect a barbiturate and/or barbiturate metabolite varies within the drug class.
Benzodiazepines	300 ng/mL	This urine drug screen has a relatively high false-negative rate[2]. The concentration for which the assay can detect a benzodiazepine and/or benzodiazepine metabolite varies within the drug class. If you are interested in screening for benzodiazepines, we recommend ordering at *Broad Spectrum Urine Toxicology* screen.
Cannabinoids	50 ng/mL	This test cross-reacts with multiple cannabinoid metabolites.
Cocaine Metabolite	300 ng/mL	Unmetabolized cocaine has weak cross-reactivity with this assay.
Ethanol	4 mmol/L	Depending on the amount of ethanol consumed and the patient's rate of ethanol metabolism, urine tests for ethanol will usually be negative at 6 to 12 hours post-ingestion.
Ethyl Glucuronide	1000 ng/mL	Ethyl glucuronide is a direct metabolite of ethanol and is formed by the enzymatic conjugation of ethanol with glucuronic acid. Ethyl glucuronide can be detected in the urine several days after alcohol use and can be used as an alternative marker of alcohol consumption.
Methadone	300 ng/mL	Tapentadol and verapamil have been reported to cause false-positive results with this test[1].
Methadone Metabolite	100 ng/mL	A cannabinoid metabolite has a weak cross-reactivity with this assay.
Methaqualone	300 ng/mL	Not widely abused in Ontario.

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Interpretation Guide: Urine Target Drug Testing

Drug or Drug Class	Positive/ Negative Cut-off	Interpretative Notes
Opiates	300 ng/mL	Naloxone has been reported to cause false-positive results with this test[1]. The assay manufacturer cautions that high concentrations of rifampicin (Rifadin) may cause false-positive results. The assay manufacturer also states that a concentration of 100,000 µg/mL of floxin (Ofloxacin) may also cause a positive result. The concentration for which the assay can detect an opiate and/or opiate metabolite varies within the drug class. Semi-synthetic opiates (*e.g.*, buprenorphine, hydrocodone, hydromorphone and oxycodone) have weak cross-reactivity with this assay Synthetic opiates (*e.g.*, fentanyl and methadone) are not detected by this assay. If you are interested in screening for semi-synthetic or synthetic opiates please consider ordering at *Broad Spectrum Urine Toxicology* screen.
Oxycodone	100 ng/mL	Oxymorphone, an oxycodone metabolite, is also detected by this assay.
Phencyclidine	25 ng/mL	Tramadol has been reported to cause false-positive results with this test[1].
Propoxyphene	300 ng/mL	Not widely abused in Ontario.

References:

1. Saitman, A., Park, H.-D., Fitzgerald R.L. (2014) False-Positive Interferences of Common Urine Drug Screen Immunoassays: A Review. *Journal of Analytical Toxicology*, 38, 387-396.
2. Darragh, A., Snyder, M.L., Ptolemy, A.S., Melanson, S. (2014) KIMS, CEDIA and HS-CEDIA Immunoassays are Inadequately Sensitive for Detection of Benzodiazepines in Urine from Patients Treated for Chronic Pain. *Pain Physician*, 17, 359-366.