SDRL Laboratory

TOXICOLOGY TIMES

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Drug Detection Periods: Urine and Plasma Half-Life

A drug's "window of detection" is the time after which a drug has been consumed by a patient that the drug and/or its metabolites will remain in the patient's system and be detected in a specimen produced by the patient. While a drug screen detects the presence of drugs in a patient (*what*) and a confirmation test reveals the specific drugs that are present and at what values (*which* and *how much*), knowing each drug's detection period is a very useful tool as it can help answer the question *when* – "When did the patient consume these drugs?"

The below chart shows the most common drugs of abuse and their detection times in both urine and blood samples. The Detection Period column reveals the detection times for each drug as screened in a urine sample. While the ranges can be both broad (up to 30 days) and very small (25 minutes or less), they can be used as a guideline to determine new, casual or chronic use patterns. The Plasma Half-Life is the time after consumption that it takes for the original drug concentration to decrease by half and is measured via a patient's blood sample. A shorter half-life means the drug is eliminated from the body faster. Referring to the chart, the plasma Hydrocodone concentration in a patient will decrease by half every four hours – a very fast rate. If Hydrocodone is confirmed in a patient's plasma sample, it is due to either recent use or a very large quantity of the drug was consumed.

It is important to note that detection periods vary; rates of metabolism and excretion are different for each drug and each user. The periods in the chart should be viewed as estimates only as cases can always be found to contradict these approximations.

DRUG	TYPE	DETECTION PERIOD	PLASMA HALF-LIFE
AMPHETAMINES	S		
Amphetamine		2-4 days	7-34 hours
Methamphetamine		2-4 days	6-15 hours
BARBITURATES	S-H		
Amobarbital		2-4 days	15-40 hours
Butalbital		2-4 days	35 hours
Pentobarbital		2-4 days	20-30 hours
Phenobarbital		up to 30 days	2-6 days
Secobarbital		2-4 days	22-29 hours
BENZODIAZEPINES	S-H		
Diazepam (Valium®)		up to 30 days	21-37 hours
Chlordiazepoxide (Librium®)		up to 30 days	6-27 hours
Alprazolam (Xanax®)		2-4 days	10-15 hours
Clonazepam (Klonopin®)		2-7 days	19-60 hours
BUPRENORPHINE	NA	2-4 days	2-4 hours
COCAINE	S		
Benzoylecgonine		12-72 hours	0.5-1.5 hours
CANNABINOIDS (THC)	E		
Casual use		2-7 days	20-57 hours
Chronic use		up to 30 days	

DRUG	TYPE	DETECTION PERIOD	PLASMA HALF-LIFE
ETHANOL	S-H	very short*	2-14 hours
METHADONE	NA	2-4 days	15-55 hours
METHAQUALONE (Quaalude ®)	S-H	2-4 days	20-60 hours
MDMA/MDA ECSTASY	E	2-4 days	6-9 hours
OPIATES	NA		
Codeine		2-4 days	1.9-3.9 hours
Hydrocodone		2-4 days	4 hours
Hydromorphone (Dilaudid®)		2-4 days	1.5-3.8 hours
Morphine		2-4 days	1.3-6.7 hours
Oxycodone (Oxycontin®)		2-4 days	4-6 hours
6-Acetylmorphine (6MAM)		6-25 minutes	6-12 hours
PHENCYCLIDINE (PCP)	H		
Casual use		2-7 days	7-46 hours
Chronic use		up to 30 days	
PROPOXYPHENE	NA		
Casual use		2-7 days	8-24 hours
Chronic use		up to 30 days	

KEY: E = Euphoriant H = Hallucinogen NA = Narcotic Analgesic S = Stimulant S-H = Sediative-Hypnotic

**Detection period depends on amount consumed. Alcohol is excreted at the rate of approximately 1 ounce / hour.*

??? Did You Know ???

People who inject drugs can significantly reduce their risk of HIV infection with the use of opiate substitution treatments such as methadone, according to a recent study conducted by a group of international researchers. The study's findings, published in the magazine *British Medical Journal,* stated that injection drug use is a major risk factor for the transmission of HIV and AIDS and it is estimated that approximately 5-10% of HIV infections worldwide are due to injection drug use. The researchers found that injection drug-users who received opiate substitution therapies were 54% less likely to become infected with the HIV virus relative to those that did not receive similar treatment. **(Source: www.bmj.com)**

Question of the Month

Question: *How soon after an Opiate is consumed orally can it be detected in the urine?*

Answer: Small amounts can be detected under a 300 cutoff starting 2 – 4 hours after ingestion. If a person empties their bladder and then consumes an Opiate (Morphine, Codeine, Hydrocodone, and/or Hydromorphone) orally, we have a good starting point. The medication is first absorbed from the stomach into the bloodstream, it travels through the body and is metabolized in the liver and partially eliminated when it passes through the kidney. The eliminated water and soluble components are stored in the bladder for urine disposal. If a person voids within one hour of ingesting medication, the amount processed through the kidney is very small. If a person voids two or more hours after consumption, the body has had time to process the medication and begins to void the medication each time thereafter until it is completely eliminated from the system. Total elimination from the body is dependent upon the half-life of the medication and how much medication was consumed. Typically, Opiates are detected for 2 – 4 days after ingestion.