



DRUG & ALCOHOL MONITORING

PRESENTED BY
MICHELLE JOHNSON
ACCOUNTS AND PROGRAMS DIRECTOR
MINNESOTA MONITORING INC.
(763)253-5401
MJOHNSON@MNMONITORING.COM

METHODS FOR DETECTION OF DRUG OR ALCOHOL USE

- 1) HAIR
- 2) URINE
- 3) SWEAT
- 4) BREATH (Alcohol)

Key words:
Detection window
Detection level

NEGATIVE RESULTS

The word "NEGATIVE" in the drug testing industry can have different meanings

Negative: no drug detected

Negative: drug detected but lower than the cut off level

Negative: drug used is not one that can be detected by the test

OPIATE/OPIOID PANELS

Standard Opiate Panel

Heroin
Codeine
Morphine

6-AcetylMorphine is the main metabolite of heroin, and codeine is an impurity in the process of generating heroin from opium. Opium contains both morphine and codeine.

METHADONE, SUBOXONE (BUPRENORPHINE)

Not detected on opiate panels.

Separate tests are needed to detect.

Will not cause an opiate positive.

Extended Opiate

Hydrocodone

Hydromorphone (Palladone, Dilaudid, and numerous others, or metabolite of Hydrocodone)

Oxycodone

Oxymorphone (Opana, or metabolite of Oxycodone)

Fentanyl

This is in the opioid class but is not typically detected by screening test.

Because it is dosed at very low doses; Fentanyl is a separate, lab based test.

DOES POPPY SEED CONTAIN MORPHINE?

YES, poppy seed may contain morphine and a donor may test positive for morphine. Poppy seeds do contain morphine, therefore real morphine is in the urine. It has been an acceptable explanation that is why the NLCP (National Laboratory Certification Program) increased the cut off level to 2,000 ng. Even there, it is not prevented as there are documented cases even higher.

It is difficult to know how much poppy one needs to eat as it depends on the particular lot of poppy seeds as the morphine content varies between lots. However, one poppy seed Costco muffin has produced around 1,000 ng of morphine in some subjects. (The morphine concentration is extremely low in poppy seed products compared to that of medications containing morphine. Technically you could get "high" but the amount you'd have to consume would be pretty extreme.)

METHAMPHETAMINE

-There are a few medications that can be detected and reported as a confirmed positive for Methamphetamine. Adderall/Vyvanse, etc. will only test positive for amphetamine not methamphetamine.

-Desoxyn and Methedrine are two names for prescribed meth. Didrex is a trade name for benzphetamine which may also show up as meth. There may be other trade names that are not listed in the Physician's Desk Reference. The MRO can verify prescriptions

-Nasal inhalers containing levmetamfetamine will also report as Methamphetamine; although it is a L-Methamphetamine and the illicit drug contains both D and L-Methamphetamine. Additional testing is required to determine which one it is.

-On an instant device if you have a client that is taking Sertraline(Zoloft) or Ranitidine(Zantac), it can cause a presumptive positive on the screen but will not confirm positive as Methamphetamine.

-Detection window in urine 2-4 days.

COCAINE

- Detection window in urine 2-3 days; 7-10 with chronic crack users
- Benzoylcegonine is the most commonly tested metabolite to detect prior use of cocaine and is a unique metabolite of cocaine
- No prescription medications can cause a confirmed positive. *Cocaine is a local anesthetic used in eye, sinus and nasal cavity surgery but would not cause a positive cocaine test.
- Cocaethylene is a metabolite detected in hair that is only formed when cocaine and alcohol are in a person system at the same time

THC MONITORING (UTILIZING URINE TESTING)

- THC is a fat soluble drug
- Detection window differs depending on use
- THC levels by itself are meaningless, need THC/Creatinine ratio
- THC/CR ratio takes into consideration the dilution of the sample and gives the "true adjusted level"
- Need at least two RANDOM tests, with the ratio, 2-10 days apart to determine if residual or continued use
- Medicinal marijuana and recreational marijuana are the same thing, there is no test available that can discriminate between the two.

THC DETECTION IN HAIR

In general, most infrequent marijuana users and a significant number of daily users will pass a hair test. This is primarily due to the weak incorporation rate of the acidic metabolite (negatively charged) used to identify marijuana usage, 9-carboxy-THC, into the hair matrix. Therefore, a quantitative value obtained for the THC metabolite in hair cannot be directly correlated the amount of drug used with any degree of scientific certainty.

The relatively low concentrations of cannabinoids detected in hair can be explained by the following:

1. THC is highly bound to protein in plasma, therefore, not a free drug
2. THC exhibits no melanin affinity so doesn't bind as well in hair (it is found that drugs that exhibit no melanin don't show in hair as well)
3. Negatively charged compounds like 9-carboxy-THC will be repelled by the hair matrix

**SYNTHETIC CANNABINOID
(MARIJUANA)**



AKA: Spice, K2, K3, K4, MOJO, JWH-018, JWH-073

31 components screened for.

Psychoactive chemicals, also known as synthetic cannabinoids were first synthesized by an American chemist John W Huffman (JWH) and sprayed on dried plant material. These chemicals mimic the effect of THC.

Results report as quantitative

Nothing published yet for detection window, can be anywhere from 6-96 hours, but there is good evidence that on a chronic level could have a metabolism pattern similar to THC

**BENZODIAZEPINE
GC/MS RESULTS**

Metabolite Identified

- 1)Lorazepam *
- 2)alpha-hydroxy-alprazolam *
- 3)7-Amino-clonazepam *
- 4)Nordiazepam
- 5)Temazepam
- 6)Nordiazepam, Temazepam
- 7)Oxazepam
- 8)Nordiazepam, Temazepam, Oxazepam
- 9)Nordiazepam, Oxazepam
- 10)Temazepam, oxazepam
- 11)Alpha-hydroxy-trizolam

(#S CORRELATE WITH EACH OTHER)

Possible Benz. Used

- 1)Ativan *
- 2)Xanax*
- 3)Klonopin (or Clonopin)*
- 4)Valium,Librium,Tranzen,Centrax
- 5)Valium, restoril
- 6)Valium
- 7)Valium, restoril, Librium, Tranzene, Centrax
- 8)Valium
- 9)Valium, librium, tranzene, Centrax
- 10)Valium, Restoril
- 11)Halcion

SPECIFIC TESTING NEEDED

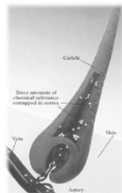
Xanax : This a newer generation of Benzodiazepine and the dosages are a fraction of what is required for some older ones like Valium. Since the dosage is lower, the concentration in urine is lower and can frequently fall below the cut off

Klonopin: It takes about 8-15 times higher concentration of clonazepam to give a positive screen compared to oxazepam

Ativan (lorazepam): It takes 5-8 times as much to give a positive screen compared to oxazepam.

THE CONFIRMATION ONLY(LOD) BENZODIAZEPINE TEST IS THE BEST TO DO IF LOOKING FOR THESE THREE MEDICATIONS AS THEY MAY NOT READILY BE DETECTED ON A STANDARD BENZODIAZEPINE TEST; THEY DON'T READILY REACT WITH THE SCREEN UNLESS HIGH DOSES ARE PRESENT

HAIR TESTING- WHAT IS DETECTED?



THC (concentrations of Carboxy-THC found in hair specimen is very poor)
Cocaine
Amphetamines (including mAmP & Ecstasy)(Adderall or Vyvance)
Morphine based Opiates: Morphine, Codeine, and Heroin
Extended Opiates can be requested for an additional cost and adds Oxycodone, Hydrocodone, and Hydromorphone
PCP

WHAT IS A HAIR TEST?

-The collector will cut a sample of approximately 120-180 strands of hair from the crown of the head. In the presence of the donor, the sample is then sealed in a collection envelope and then sealed again in a plastic security bag. The sample is then sent to our laboratory and results are generally rendered within 1-3 business days. Adulteration of the hair may be attempted; toxicology reports have stated that the adulterant may cause a slight decrease in the drug quantity; however, the drug metabolites within the hair remain unadulterated.

-Hair testing analyzes the hair sample for parent drugs and their metabolites. The metabolite is only produced by the body and cannot be an environmental contaminant.

-It takes approximately 7-10 days from the time of drug use for the hair containing the drug to grow above the scalp where it can be collected

HOW FAR BACK CAN A HAIR TEST DETECT DRUG USE?

For a head hair test it is best to have at least 1 ½ inches of growth; however, it can be done with just an inch. Keep in mind that an inch would only go back approximately 60 days and 1 ½ inches goes back approximately 90 days.

You can also shorten the detection time to 30 or 60 days or extend it out if the length allows it.

Collecting body hair is an option if no head hair is present. However, the total life cycle of body hair is difficult to determine making it difficult to establish an accurate time frame for use detection.

Cannot pinpoint when the use was within the detection window.

**PHARMCHEK®
DRUGS OF ABUSE PATCH**



**PHARMCHEK®
DRUGS OF ABUSE PATCH**

The sweat patch is a non-occlusive, hypoallergenic collection device. Insensible perspiration* is captured by the absorbent pad in the patch and is analyzed for the presence of drugs of abuse.

*(Perspiration that evaporates before it is perceived as moisture on the skin)

The transparent film portion of the patch is a semi-permeable membrane that allows oxygen, carbon dioxide and water vapor to pass through the patch leaving the skin underneath healthy and sterile.

Substances of large molecular weight are trapped in the absorbent pad portion of the patch. A positive result indicates drug use occurred during the time the patch was worn or 24-48 hours before the patch application. The metabolite must be present above the limit of detection (LOD) to report a positive result.

Dark tattoos hinder sweat

May not adhere as well to clients with a lot of body hair

**WHAT DRUGS DOES THE PATCH
DETECT?**

*Marijuana

Cocaine

Opiates (Morphine, Codeine, Heroin)

Can add extended opiate for and additional cost

Amphetamine/Methamphetamine, Ecstasy

PCP

*One thing to remember, and this is only in the case of THC, they only look for the parent drug of THC and not the metabolite. The reason for this is that the THC metabolites aren't water soluble and of course sweat is made up mostly of water. The parent drug of THC is easier to detect in sweat than the metabolite for that reason. Therefore, some occasional users of THC may go undetected.



URINALISYS DRUG AND ALCOHOL MONITORING

URINE DRUG SCREEN



Effective urine drug testing MUST be random

- Can be adulterated
- The instant screen is a “tool” designed to separate negative results from results that are “presumptively” positive
- A confirmation test is necessary on “presumptive positives” and is a follow-up procedure designed to validate positive screen results and alleviate cross reactivity
- The analytical technique used is GC/MS or LC/MS/MS, this is sensitive, specific, and legally defensible

ADULTERATION/MASKING PRODUCTS



Oxidizing agents such as Klear, Urine Luck, Stealth, Etc. cause false negative results by directly destroying the THC metabolites (THC-COOH) in the GC/MS stage of testing, these adulterants interfere with confirmations of the THC-COOH and the internal standard, as well as, interference of THC, codeine and morphine during the extraction phase.

These products are either added directly to the specimen or ingested prior to the test.

What can you do?



Random/unannounced/unexpected testing to help deter use of adulterants

Observed collections to avoid products being added to specimen or the use of synthetic urine

DILUTE SPECIMEN

How much liquid does a person have to consume to get a creatinine under 20?

A rough rule of thumb is that it takes a minimum of 2 liters of water, 45 to 60 minutes prior to collection, to get a creatinine below 20. The amount is also dependent on body size. A 300 pound linebacker is going to require more fluid than a 120 pound cheer leader.

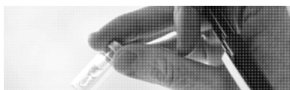
The lower the creatinine level, the more fluid is required.

**Patients who are on dialysis present a problem in regards to drug testing. Many of these patients do not produce urine and if they do it is usually very dilute. The dialysate is also too dilute for drug testing.

TESTING FOR ALCOHOL CONSUMPTION



URINE ETHYL GLUCURONIDE (EtG) & ETHYLSULFATE (EtS) TESTING FOR THE DETECTION OF ALCOHOL CONSUMPTION



Ethylglucuronide (EtG) and Ethylsulfate (EtS) are direct metabolites of ethanol. They are used as a long-term biomarker in alcohol monitoring/abstinence and other programs

WHAT IS EtG/EtS?

- Can detect use approximately 3-4 days back, however, it does not pinpoint when the use was within the detection window or how much was consumed
- Does not establish the source of the ethanol containing product and the possibility of "incidental exposure" (about 2% appear to be from inadvertent exposure)
- There is no way to tell how much a person drank or whether they were impaired at the time the urine was collected. EtG's do not correlate with either BrAC or legal blood alcohols
- A positive EtG result with no reportable EtS may be caused by post collection formation of EtG, and may not be consistent with consumption of ethanol (alcohol).

MEMS 3000 - IN HOME ALCOHOL MONITOR



- Cellular or Land Line options available
- Reliable identity confirmation using color picture verification
- Fast, accurate test results
- Immediate notification on high or missed tests

SOBER LINK SL2 SMALL PORTABLE ALCOHOL MONITOR



- An automated text message notifying the client of the next scheduled test is sent to his or her personal mobile phone.
- Tests must be taken within 45 minutes of receiving the text message and up to two reminder texts will be sent during the testing window. A client photo is taken while the breath sample is collected.
- A test report is compiled and sent to the monitoring computer approximately 60 seconds after the test is completed. This includes the picture of the participant, the result of the test, and a GPS of where the test was taken.
- If the test registers a positive result (.010 or higher), up to six more tests will be administered every 15 minutes or until a negative test result is blown.
