A Review of Drug Detection for Court Professionals-How to Beat a Drug Test with Best Practices

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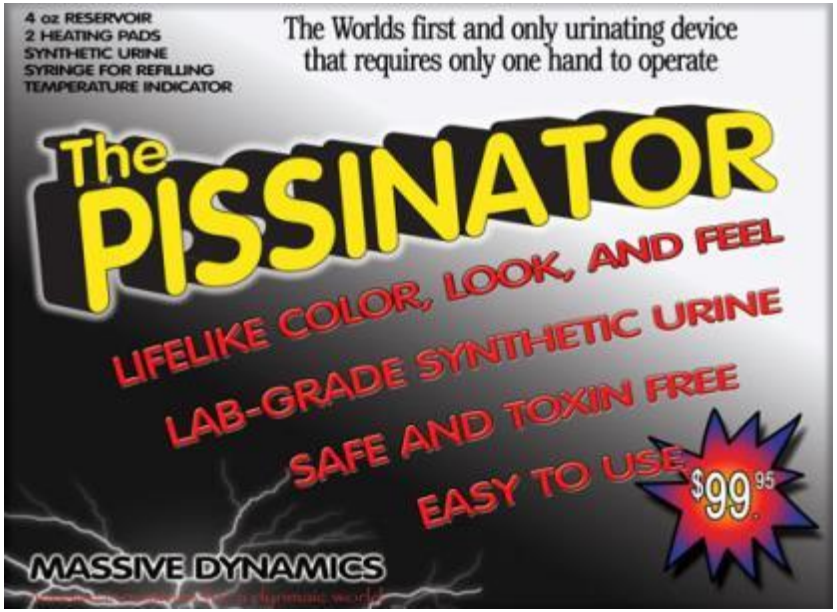
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DO I HAVE YOUR ATTENTION?

Learn the Best Practices and Follow Them.

Best Practices

- Frequent- 2 times per week
- Random- 7 day week, not 5. Nights, weekends, holidays
- Duration- throughout drug court stay-last thing removed
- Breadth-broad panel
- Witnessed collection- don’t blink!
- Valid Specimens -creatinine, and specimen validity
- Accurate and Reliable Testing Procedures -due process, chemistry
- Rapid Results -48 hour lab results
- Participant Contracts-write down the rules! SHARE!

Drug Testing Basics

Reasons for Drug Testing - WHY?

- act as a deterrent to future drug use
- identify participants who are maintaining abstinence
- identify participants who have relapsed
  - rapid intervention
  - efficient utilization of limited resources
- provides incentive, support and accountability for participants
- adjunct to treatment & frames sanction decisions

Drug Testing Specimens

- urine - current specimen of choice
  - generally readily available - large quantities
  - contains high concentrations of drugs
  - good analytical specimen
  - provides both recent and past usage
- alternative specimens
  - breath
  - hair
  - sweat - patch test
  - saliva - oral fluids

Keep ‘Em Guessing

- The schedule of drug and alcohol testing is random and unpredictable.
- effective drug testing must be **random**
  - equal chance of being tested on any given day - INCLUDING weekends and holidays
  - unexpected, unannounced, unanticipated
  - limit time between notification & testing
- urine - no longer than 8 hours following notification
- four hours for oral fluids

Drug Testing Reality Check

- When developing and administering your drug testing program assume that the participants you are testing know more about urine drug testing than you do!
- Sources:
  - Internet
  - High Times magazine
  - other court clients

Challenging Urine Collection Strategies

Random Testing

- if you schedule your drug testing, your clients will "schedule" their drug usage
- what is truly random?
- element of surprise as a therapeutic tool
- if participants know in advance when they will be tested, they can adjust the timing of their usage or take tampering countermeasures
- nights, weekends, holidays
- 7 day week, not 5 day week.

OBSERVED TESTING IS NOT AN OPTION

- Yes, it is icky.
- Yes, it is uncomfortable
- Yes, it presents unique challenges
- It is mandatory.
- Not mirrors, not privacy screens, DIRECT OBSERVATION

The “witnessed” collection (for urine)

- single most important aspect of effective drug testing program
- urine collections not witnessed are of little or no assessment value
- denial component of substance abuse requires “direct observation” collections of participants

Sample Collection:

- pre-collection preparation
  - site selection
    - minimize access to water sources
    - use an area with a scant floorplan
    - find privacy & security
  - gather supplies beforehand
  - obtain proper collection receptacle
- confirm ID
- removal of outer clothing

Sample Collection: (continued)

- wash hands prior to donation
- “witness” collection
  - additional clothing removal
  - body inspection
  - squat and cough
- label sample correctly

Sample Collection: (continued)

- accept sample & inspect
  - temperature (90-100˚ F)
  - color (no color ➔ diluted ?)
  - odor (bleach, sour apples, aromatics, vinegar, etc.)
  - solids or other unusual particulates
- store sample properly
- forensic sample - custody documents

How to conduct at test:

- Impersonal, like a doctor's office
- Impeccable chain of evidence in both appearance and fact
- Do it exactly the same way every time. You will need to testify from habit and custom.

Questions:
Same every time

- Have you used any drugs or alcohol since I last saw you?
- Is there anything I need to know before this test?
- Will this test be clean or not?

Get your stuff in order!

- Get all of your paperwork ready WITH the client. You sign, they sign, everything.
- CHECK Photo ID each time.
- If possible design a urine testing room that works better than a standard room.
- Removal of all outer clothing like coats.

Always the same process:

- Wash hands before (and after) donation
- Proper collection receptacle
- Witness collection process.

Actual testing:

- Drop your drawers…all of them, all persons
- Roll up sleeves
- *NO band-aids on hands*
- Turn around 360 degrees
- Women: squat and cough 3X
- Men *and* women: start, stop, start.

Squat and Cough….. Really?

"Tech Rawlinson instructed the defendant to squat to the ground with her knees and feet shoulder width apart, and to cough as hard as she could. Ms. Doe then squatted as instructed and coughed with her hand over her mouth. *Tech Rawlinson heard a loud thumping sound on the floor immediately after Ms. Doe coughed.* "

You don’t do it…
this is what gets past you.

Developing control strategies to prevent sample tampering is critical.

Once clients understand that they cannot beat the system, they are much more likely to engage in the therapeutic process toward recovery.

Drug Testing Methods
Understanding what is done

Two-Step Testing Approach

- screening test – designed to separate negative samples from samples that are “presumptively” positive
- confirmation test – follow-up procedure designed to validate positive test results
  - distinctly different analytical technique
  - more specific and more sensitive

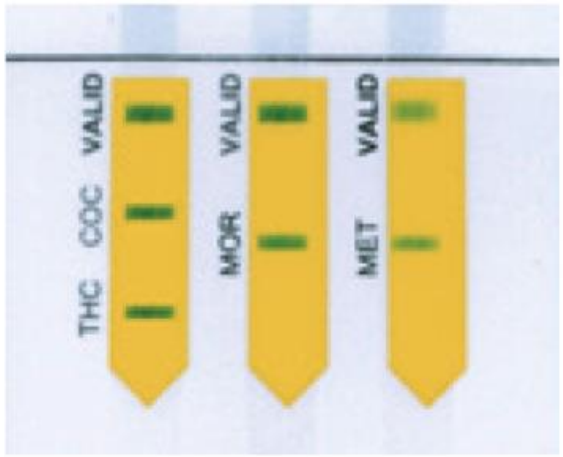
Step One – Screening

- often based on immunoassay technology
- more drug – more binding - more “color” produced – more instrument detector response
- numerous commercial manufacturers
- designed for high throughput instrumentation or on-site devices

On-site DOA screening

- often based on immunoassay technology
- concept of color “switch”
- “dynamic” versus “static” calibration
- hand-held cassettes or test-cup devices
- one test at a time - no batching
- available in DOA panels or single drugs
- numerous commercial manufacturers
  - differential sensitivity & selectivity

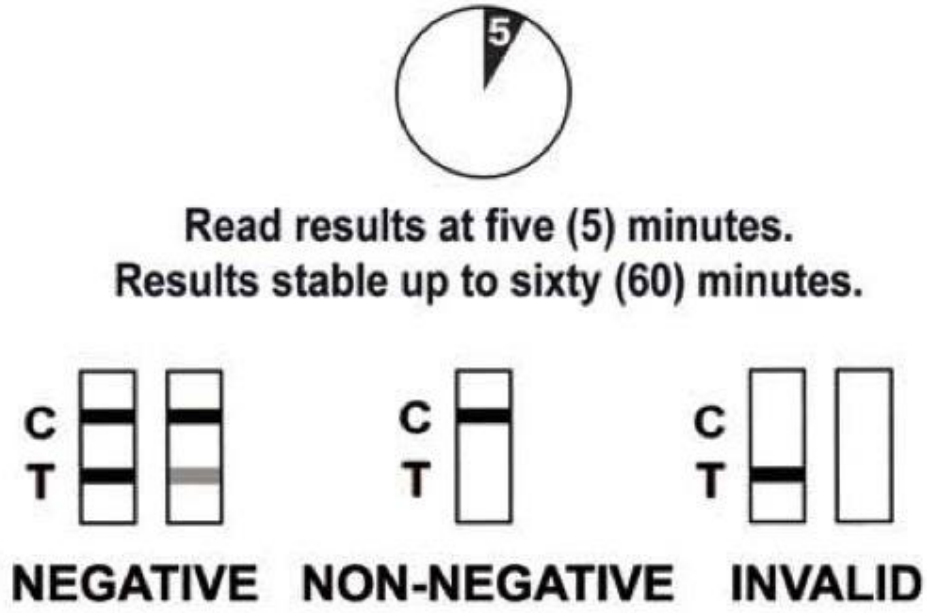
On-site Drug Detection:



Read the results. Any band, even if faint, partial, or broken, indicates a negative result. The absence of color is a presumptive positive result.

Follow package insert guidance exactly!

On-site Drug Detection:



Intensity of band is NOT quantitative!


C
1
2
3
C
1
2
3
C
1
2
C
1
2
C
T
C
T
1·mAMP
2·COC
3·THC
1·BZO
2·MTD
3·BAR
1·AMP
2·MOP
1·OXY
2·PPX
1·MDMA
1·BUP

Step Two - Confirmation

- gas chromatography-mass spectrometry GC/MS or LC/MS, or LC/MS/MS
  - drug molecules separated by physical characteristics
  - identified based on chemical “finger-print”
  - considered “gold standard”
- other chromatographic techniques

Why confirm ?

- Is it really necessary to confirm drugs that tested positive by initial screening tests?
- Why can’t the court adjudicate cases based on the screening test results?
- FALSE POSITIVES
- Becoming more and more crucial!

Drug tests & cross reactivity:

- screening tests can and do react to “non-target” compounds
  - amphetamines
  - benzodiazepines
- obtain list of interfering compounds from lab or on-site test vendor
- initial screening (“instant” tests) may only be 60-70% accurate
- confirm positive results

Drug tests & cross reactivity:

(300 ng/mL opiate cutoff test)

→ 150 ng/mL codeine

→ 1500 ng/mL oxycodone

Interpretation of Drug Test Results

Negative or None Detected Results

- indicates that no drugs or breakdown products (metabolites), tested for, were detected in the sample tested
- no such thing as “zero” tolerance or “drug free”
- negative does not mean NO drugs present

Negative/None Detected Interpretation

- client is not using a drug that can be detected by the test
- Other possible explanations
  - client not using enough drug
  - client's drug use is too infrequent
  - collection too long after drug use
  - urine is tampered
  - test being used not sensitive enough
  - client using drug not on testing list

Negative/None Detected Interpretation

- no need to second-guess every “negative” result
- not suggesting withholding positive reinforcement & rewards for positive behaviors
- drug testing is a monitoring tool
- assess none detected drug testing results in the context of your client’s overall program compliance (or non-compliance) and their life’s skills success (or lack thereof)

Positive Test Result Interpretation

- indicates that drug(s) or breakdown products (metabolites), tested for, were detected in the sample tested
- drug presence is above the “cutoff” level
- greatest confidence achieved with confirmation
- ALWAYS confirm positive results in original sample

Typical Cutoff Levels

	screening	confirmation
• amphetamines *	500 ng/mL	250 ng/mL
• benzodiazepines	300 ng/mL	variable
• cannabinoids *	20 & 50 ng/mL	15 ng/mL
• cocaine (crack)*	150 ng/mL	100 ng/mL
• opiates (heroin) *	300/2000 ng/mL	variable
• phencyclidine (PCP) *	25 ng/mL	25 ng/mL
• alcohol	20 mg/dL	10 mg/dL

- * SAMHSA (formerly NIDA) drugs

What is a “cutoff” level ?

- cutoffs are not designed to frustrate CJ professionals
- a drug concentration, ***administratively*** established for a drug test that allows the test to distinguish between negative and positive sample - “threshold”
- cutoffs provide important safeguards:
  - scientific purposes (detection accuracy)
  - legal protections (evidentiary admissibility)
- measured in ng/mL = ppb

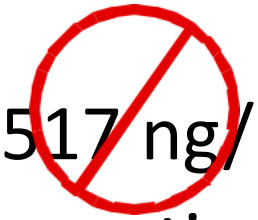
The Issue of Urine Drug Concentrations

Drug Tests are Qualitative

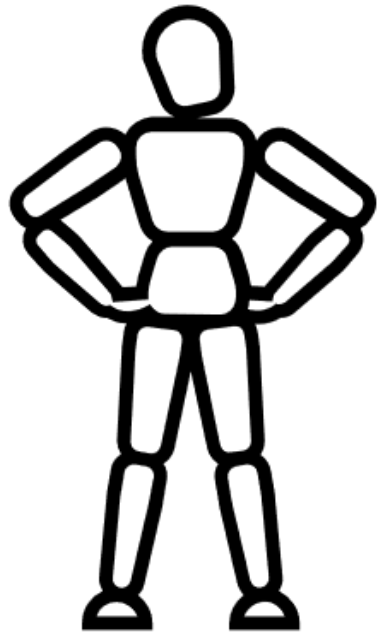
- screening/monitoring drug tests are designed to determine the presence or absence of drugs - NOT their concentration
- drug tests are NOT quantitative

Drug concentrations or levels associated with urine testing are, for the most part, USELESS !

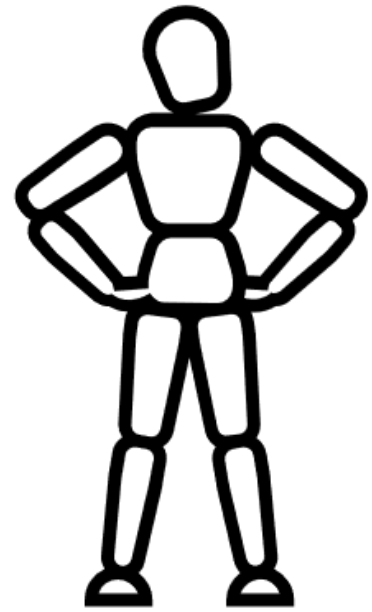
- cannabinoids 517 ng/mL
- opiates negative
- cocaine metabolite negative
- amphetamines negative



The Twins



A

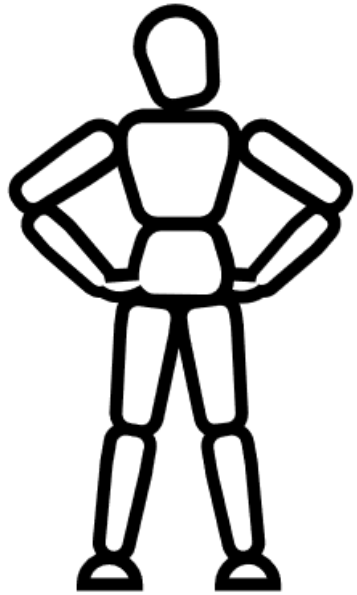


B

200 mg Wonderbarb
@ 8:00 AM

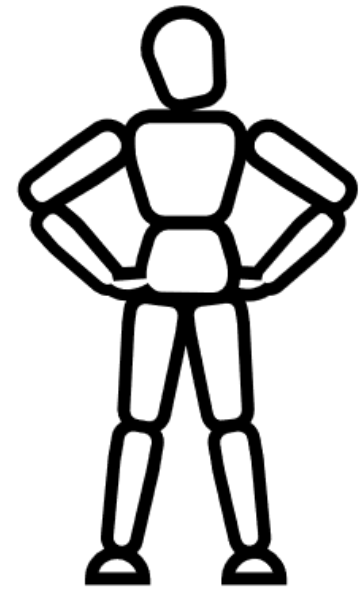
Collect urine 8:00 PM
12 hours later

The Twins - urine drug test results



A

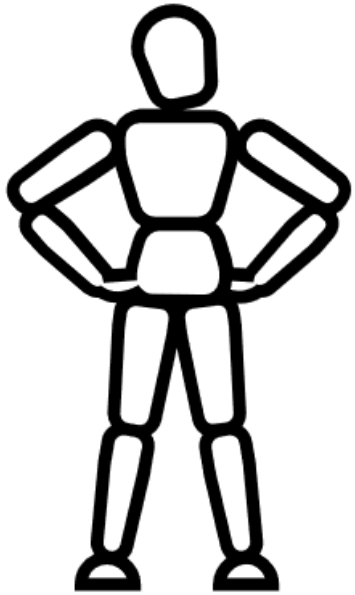
Wonderbarb = 638 ng/mL



B

Wonderbarb = 3172 ng/mL

The Twins - urine drug test results



A

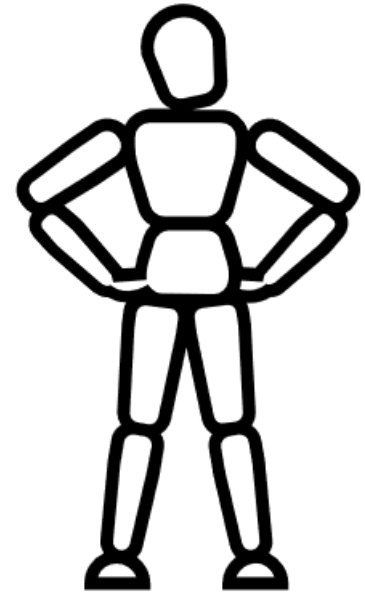
physiological make up

exact amount drug consumed

exact time of ingestion

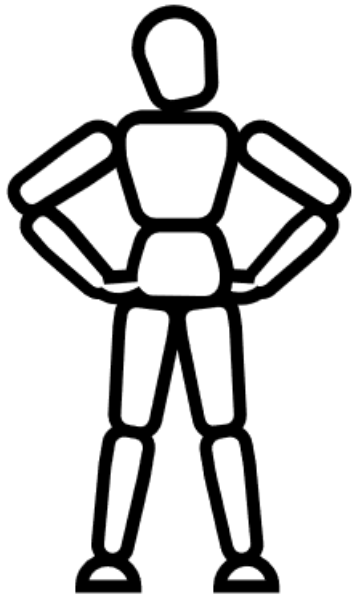
exact time between drug exposure and urine collection

AND YET . . . . .



B

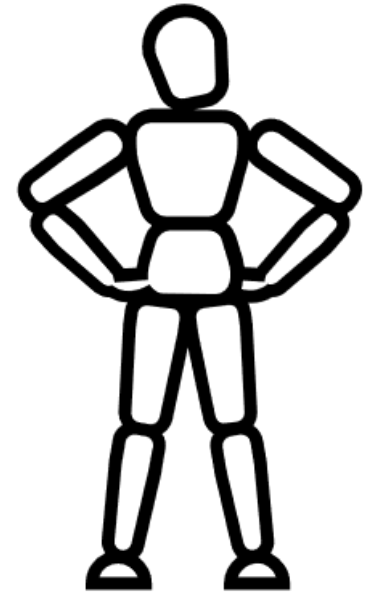
The Twins - urine drug test results



A

Wonderbarb = 638 ng/mL

Twin B's urine drug level is 5 times higher than Twin A



B

Wonderbarb = 3172 ng/mL

Are any of the following questions being asked in your court?

- How positive is he/she?
- Are his/her levels increasing or decreasing?
- Is that a high level?
- Is he/she almost negative?
- Is this level from new drug use or continued elimination from prior usage?
- What is his/her baseline THC level?
- Does that level indicate relapse?
- Why is his/her level not going down? (or up?)

THE ISSUE

Urine drug concentrations are of little or no interpretative value. The utilization of urine drug test levels by drug courts generally produces interpretations that are inappropriate, factually unsupportable and without a scientific foundation. Worst of all for the court system, these urine drug level interpretations have no forensic merit.

Drug Court Practitioner Fact Sheet

Urine Drug Concentrations: The Scientific Rationale for Eliminating the Use of Drug Test Levels in Drug Court Proceedings

By Paul L. Cary, M.S.

Preface

As the title implies, the objective of this fact sheet is to provide drug court professionals with a scientifically based justification for discontinuing the interpretation of urine drug levels in an effort to define client drug use behavior. As the premise of this document is not without some controversy, clarification of its intent seems warranted.

This fact sheet is intended for drug court practitioners who are routinely engaged in the interpretation and evaluation of urine drug testing results for the purpose of participant case adjudication, particularly client sanctioning. Given that most drug courts do not have routine access to biomedical or pharmacological expertise, this fact sheet recommends that the use of urine drug concentrations be eliminated from the court's decision-making process in order to protect client rights and ensure that evidentiary standards are maintained.

It is not the intention of this document to prohibit the interpretation of laboratory data by qualified scientists. Nor is it the objective of this fact sheet to assert that urine drug levels have no interpretative value. However, drug court practitioners are cautioned that the interpretation of urine drug levels is highly complex and even under the best of circumstances provides only limited information regarding a participant's drug use patterns. Further, such interpretations can be a matter of disagreement even between experts with the requisite knowledge and training to render such opinions.

It is for these stated reasons that the NDCI strongly encourages drug court programs to utilize the information contained herein to evaluate their drug testing result interpretation practices. This organization recognizes that the use of urine drug levels to assess client behavior may be widespread and longstanding. However, because courts rarely have the necessary toxicology expertise, the routine use of urine drug levels by court personnel in formulating drug court decisions is a practice that in most cases would not withstand scientific or judicial scrutiny. It is hoped that this fact sheet will serve as the foundation for those drug court programs routinely interpreting urine drug levels to transition to a strictly qualitative (positive or negative only) result format. Drug courts are also encouraged to seek expert toxicology advice when necessary and appropriate to assist in the interpretation of testing data associated with challenging cases.

NDCI National Drug Court Institute

Drug Court Practitioner Fact Sheet

December 2021

Delta-8 THC and Drug Testing in Treatment Courts

By Paul L. Cary, M.S.
Forensic Toxicologist

Paul L. Cary, M.S., retired as director of the Toxicology and Drug Monitoring Laboratory at the University of Missouri in Columbia, Missouri, in 2015. For forty years, Mr. Cary was actively involved in the management of a nationally recognized toxicology laboratory. He has authored numerous scientific publications, has served on a variety of clinical and technical advisory committees, has taught at the university, is involved in drug testing research, and serves as a consultant in toxicology-related matters. He has been certified as an expert and provided expert testimony in court (local, state, and federal) and in labor arbitration and is a member of the Society of Forensic Toxicology. Mr. Cary has been a resource to treatment court teams throughout the nation and overseas for the past two decades.

On the heels of the widely popular hemp-based product cannabidiol (CBD) now comes delta-8 tetrahydrocannabinol (THC). Delta-8 is currently all the rage among cannabis enthusiasts. Widely available, products infused with Delta-8 THC include preloaded vape cartridges, tinctures and oils (used in vaping), soft gels, gummies, cookies, brownies, candy, and other edibles. These products are commercially available over the internet and from a wide variety of retail outlets that specialize in cannabis merchandise.

Delta-8 THC products are likely attractive to treatment court participants for several reasons. First, the legality of delta-8 material is unsettled and in a state of flux. While delta-8 products have not been classified as illegal at the federal level, the actual manufacture of delta-8 probably violates federal law. Recently, numerous states have moved to ban retail products that contain delta-8. Second, treatment court clients may be drawn to delta-8 products because they are generally reported to have a less intense "high" than delta-9 THC, the primary psychoactive chemical in marijuana. Lastly, individuals participating in a treatment court program may be under the false impression that delta-8 use will not be detected by drug testing strategies designed to monitor client abstinence.

While delta-8 THC occurs naturally in the cannabis (marijuana) plant, it is present in only very small quantities. Most commercially available delta-8 products are produced in a laboratory by extracting and concentrating delta-8 from the hemp flower. Laboratory-based drugs of questionable legality don't carry labels stating the concentration or strength of their products, assuming they even know that information. As a result, delta-8 products contain wildly variable concentrations of the drug and may also contain other cannabinoid and noncannabinoid "impurities."

The Use of Urine Creatinine Concentrations for Abstinence Monitoring in Treatment Courts

NADCP National Association of Drug Court Professionals

By Paul L. Cary, M.S.
Forensic Toxicologist

Paul L. Cary, M.S., retired as director of the Toxicology and Drug Monitoring Laboratory at the University of Missouri in Columbia, Missouri, in 2015. For forty years, Mr. Cary was actively involved in the management of a nationally recognized toxicology laboratory. He has authored numerous scientific publications, has served on a variety of clinical and technical advisory committees, has taught at the university, is involved in drug testing research, and serves as a consultant in toxicology-related matters. He has been certified as an expert and provided expert testimony in court (local, state, and federal) and in labor arbitration and is a member of the Society of Forensic Toxicology. Mr. Cary has been a resource to treatment court teams throughout the nation and overseas for the past two decades.

Introduction

The fundamental goal of abstinence monitoring in a treatment court environment is to enable the court to evaluate a participant's compliance with program requirements—in other words, the participant's abstinence from prohibited substances. If the court is unable to reliably monitor abstinence, the ability to use rewards/incentives and sanctions as treatment intervention strategies is all but lost. If the court is unable to identify participant relapse or prohibited substance use, it is powerless to intervene therapeutically to change undesired behavior.

When urine is being used as the drug testing specimen, the monitoring of creatinine in each sample obtained is critical in establishing specimen validity. For example, if a urine specimen is determined to be dilute, the drug test may not be able to detect the presence of prohibited substances in the sample, because the concentrations of the drugs have been diluted until they are below the cutoff point of the assay. In this circumstance, test results would produce a false negative finding: prohibited substances were present, participant drug use occurred, but the testing was unable to detect the violation because the sample was more like water than urine. A dilute urine sample, regardless of whether it is intentional or not, prevents the court from evaluating a participant's abstinence.

Unlike testing for drugs, in which the analysis produces either a negative or positive result, the interpretation of urine creatinine concentrations is not always straightforward. Consequently, the therapeutic response to a urine sample that falls outside the acceptable creatinine criteria is often more complicated. This fact sheet addresses many of the issues associated with testing for urine creatinine concentrations in a treatment court context and provides guidance as to appropriate court responses to urine samples that fall outside the acceptable criteria.

Scientific Rationale

- Technical Issues
  - testing not linear
  - tests measure total drug concentrations
- Physiological
  - variability of urine output
  - differential elimination of drug components

432 indicates he going up, right?

THIS ?

is 22 above the cutoff?

does 219 mean new use?

307 – well she's almost negative, correct?

639 is really high for THC, isn't it?

I think 1200 is a new record, isn't it?

115 is down from yesterday, probably continued elimination?

515 is much higher than last week, right?

don't we need to consider relapse at 57?

OR THIS ?

Negative or Positive

MAT stuff and drug testing

- MAT drugs will not disturb confirmation tests
- MAT drugs can disturb “instant test” cups
- MAT drugs “may” disturb on site testing (insufficient research so far.
- Reminds us of the crucial importance of confirmation testing.

But CBD!

- CBD contains trace to minor amounts of THC and will test positive for THC.
- CBD is not FDA approved. It should not be used by persons in Accountability Courts due to the challenges of testing reliably.
- This is a medical decision, but approving only FDA approved MAT solves the problem legally.

Related issue: Opioids

Opioid testing and urine testing

- MAT does not interfere when the panel is complete…exception: fentanyl because of the rapidly changing analogs of fentanyl.
- Work with your lab to understand threshold values.
- Again, the value of confirmation cannot be overstated here.

The Drug Detection Window

About fentanyl….

- A casual touch is unlikely to cause an event.
- significant contact, insufflation, is very dangerous
- The timeline on urine testing “clean out” is a challenge.
- Note that there are several variations of fentanyl on the market, and some have inconsistent strengths even within batches.

How long does it take for fentanyl to "clear the body"

- First: know your threshold value/cutoff level
- Your lab will tell you. You do not want LOD. You want admissible in Court threshold values.
- The lower the cutoff, the longer the clean out.
- There is NO ZERO
- Second: know your metabolites! Lots of recipes, but the detectable metabolite is *norfentanyl*. It is stable, and present in urine.

Those test results:

- Results:
  1. fentanyl and nor fentanyl: use within the detection period.
  2. Positive norfentanyl, but NOT fentanyl: not positive
  3. None detected, either substance-you have a “clean out”.

But how long?

Sorry, no answer. Chronic fentanyl use is different than brief recent use. Both should present a challenge only at admission and the first phase or two. Renal cleanout differs based on use, the “recipe” and we need to be careful

Drug Detection Times - by Drug
(this is general guidance!)

- amphetamines: up to 4 days
- cocaine: up to 72 hours
- opiates: up to 5 days-exception fentanyl.
- PCP: up to 6 days
- barbiturates: up to a week
- benzodiazepines: up to a week
- then there's alcohol & cannabinoids & Fentanyl

Cannabinoid Detection in Urine

- Conventional wisdom has led to the common assumption that cannabinoids will remain detectable in urine for 30 days or longer following the use of marijuana.
- RESULT:
  - delay of therapeutic intervention
  - hindered timely use of judicial sanctioning
  - fostered denial of marijuana usage by clients

National Drug Court Institute
Karen Freeman-Wilson, Executive Director
April 2006 Vol. IV, No. 2

Drug Court Practitioner

Fact Sheet

The Marijuana Detection Window: Determining The Length of Time Cannabinoids Will Remain Detectable in Urine Following Smoking

A Critical Review of Relevant Research and Cannabinoid Detection Guidance for Drug Courts

By Paul L. Cary, M.S.

Preface

The duration of the urinary cannabinoid detection window is not settled science. The number of days, following the cessation of marijuana smoking, necessary for cannabinoids to become non-detectable using traditional drug testing methods is the subject of debate among forensic toxicologists and a matter of on-going scientific research. This article makes no pretense to limit this important discussion, but rather, seeks to enhance it. It is hoped that drug court practitioners will find that this information clarifies some of the complex issues associated with the elimination of marijuana from the human body.

Conventional wisdom has led to the common assumption that cannabinoids will remain detectable in urine for 30 days or longer following the use of marijuana. These prolonged cannabinoid elimination projections have likely resulted in the delay of therapeutic intervention, thwarted the timely use of judicial sanctioning, and fostered the denial of marijuana usage by drug court participants.

This review challenges some of the research upon which the 30-plus day elimination assumption is based. Careful scrutiny of these studies should not be interpreted as an effort to discredit the findings or the authors of this research. However, as our knowledge evolves, the relevancy of previously published scientific data should be evaluated anew. One fact is clear—more research is needed in the area cannabinoid elimination.

Cannabinoids - Recent/Relevant Research

- 30+ day detection window often exaggerates duration of detection window
- reasonable & pragmatic court guidance
- detection time: at 50 ng/mL cutoff
  - up to 3 days for single event/occasional use
  - up to 10 days for heavy chronic use
- detection time: at 20 ng/mL cutoff
  - up to 7 days for single event/occasional use
  - up to 21 days for heavy chronic use

Alcohol - Results Interpretation

- screening tests specific for ethanol, ethyl alcohol
- positive results indicate presence alcohol
- alcohol is rapidly cleared from the body
- negative results don’t necessarily document abstinence
- detection time = hours
- example - person intoxicated at 11:00 PM, collect second urine sample of next day (11:00 AM), most likely test negative for alcohol

EtG…EtS

- EtG and EtS should be standard on your panel
- Detects a metabolite of ethyl alcohol that remains in the system between two and five days.
- Requires different lab equipment and processes-detects use when standard tests do not.
- Highly sensitive, and very effective.
- Cut off: 500 –reveals use for 48 hour window 100 EtS
- SAMHSA Advisory
- EtS should come in at ¼ the EtG.

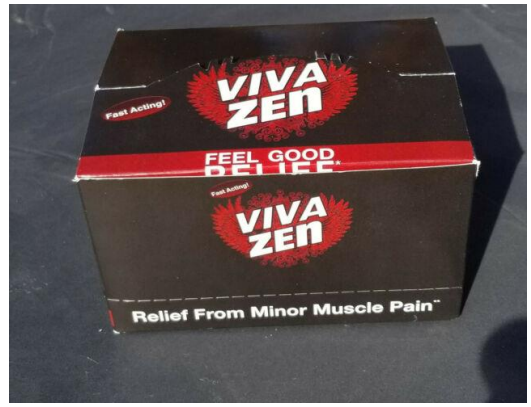
Another problem:

This is the ingredient list on “vaping” fluid.
Probably will not pass cut off, but be aware

Yet another problem, or two

Kombucha has alcohol! Some has LOTS.

Energy drinks! Some have kratom(mitragynine) & too much caffeine.



How to beat a drug test: *simple!*

Dilute Urine Samples: Court's Response to Low Creatinine Specimens

Creatinine testing is a specimen validity issue!

The most common form of specimen tampering is sample dilution.

Urine Creatinine & Dilute Samples

What is creatinine ?

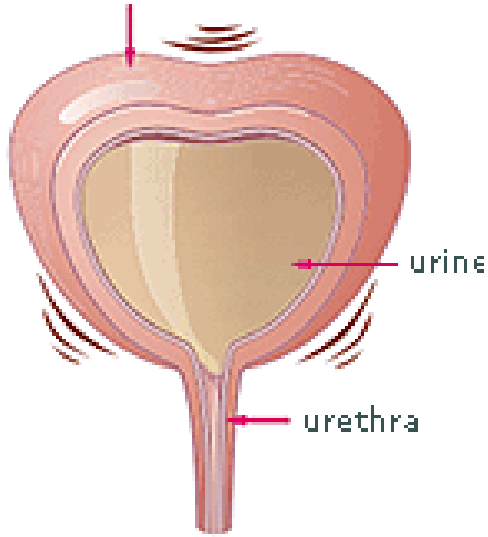
- creatinine is produced as a result of muscle metabolism
- creatinine is produced by the body at a relatively constant rate throughout the day
- creatinine is a compound that is unique to biological material (i.e. urine, other body fluids)
- creatinine measurements can:
  - determine the “strength” or concentration of a urine sample
  - ensure the sample being tested *IS* urine

EVERY urine sample used for drug detection should be tested for creatinine!

Pre-Collection Dilution

- high-volume ingestion of fluids (water loading, flushing, hydrating, etc.)
- may be in conjunction with products designed to “enhance” drug elimination or removal of drugs (Gold Seal, Clean ‘n Clear, Test-Free, Naturally Klean, etc.)
- no evidence these products have any additional effect on drug elimination

DILUTION GOAL



Client has a bladder full of urine with a drug concentration of greater than the cutoff level of the test - thus producing a positive result.

Urine in the bladder is diluted by the consumption of large amounts of non-drug containing fluid; which results in a drug concentration that is less than the cutoff level of the test - thus producing a negative result.

Water contains no drugs!

- easiest, cheapest, simplest
- urines with a creatinines of less than 20 mg/dL are considered “dilute” and rarely reflect an accurate picture of recent drug use
- dilute samples are more like water than like urine
- all drug court/criminal justice samples should be screened for creatinine

The "Normal" Creatinine

- normal urine creatinine: 2005 study "Urinary Creatinine Concentrations in the U.S. Population" determine the mean (based upon 22,245 participants) was 130 mg/dL
  - less than 1% below 20 mg/dL
  - **less than 1% greater than 400 mg/dL**
- incidence of low creatinines in a population undergoing random drug testing is significantly (up to 10 times) greater than a non-drug tested population

Creatinine Facts

- some diseases that produce low urinary creatinines
  - muscle wasting disease , Anorexia Nervosa
  - some kidney aliments - RARE
- low creatinines ARE NOT routinely associated with:
  - pregnancy
  - diabetes
  - obesity
  - hepatitis
  - exercise
  - high-blood pressure
  - being vegetarian

More Creatinine Issues

- rapid ingestion (90 minutes) of 2-4 quarts of fluid will almost always produce low creatinines & negative urine drug tests within one hour
- recovery time of urine creatinine and drug concentrations can take up to 10 hours
- next morning collection not helpful.

“Dilute” Result Interpretation:

- negative or none detected results should never be interpreted as indicating no drug use (abstinence), because if, in fact, drugs were present, they probably could not be detected by the test

- positive drug test results from a dilute sample however, are considered valid (donor was not able to dilute the sample sufficiently to deceive the test)

Helen's response/**opinion** NOT science

- First dilute, do some education, go over contract, and have a discussion about diet, etc. Their job is to give you a valid test.
- Second dilute, see a kidney doctor, write a paper, or do both.
- Third dilute, things get focused on behavior.

Specimen Tampering

Basics of Specimen Tampering - The Three Approaches

- dilution
- adulteration
- substitution

Urine Specimen Adulteration

- addition of foreign substances designed to "mask" drug presence
- post-collection tampering
- low-tech adulterants that cause "pH shift" (lime, vinegar, bleach, ammonia, lemon, drano)
- low-tech adulterants that disrupt testing chemistry (salt, methanol, detergent)
- "high-tech" adulterants

Urine Luck

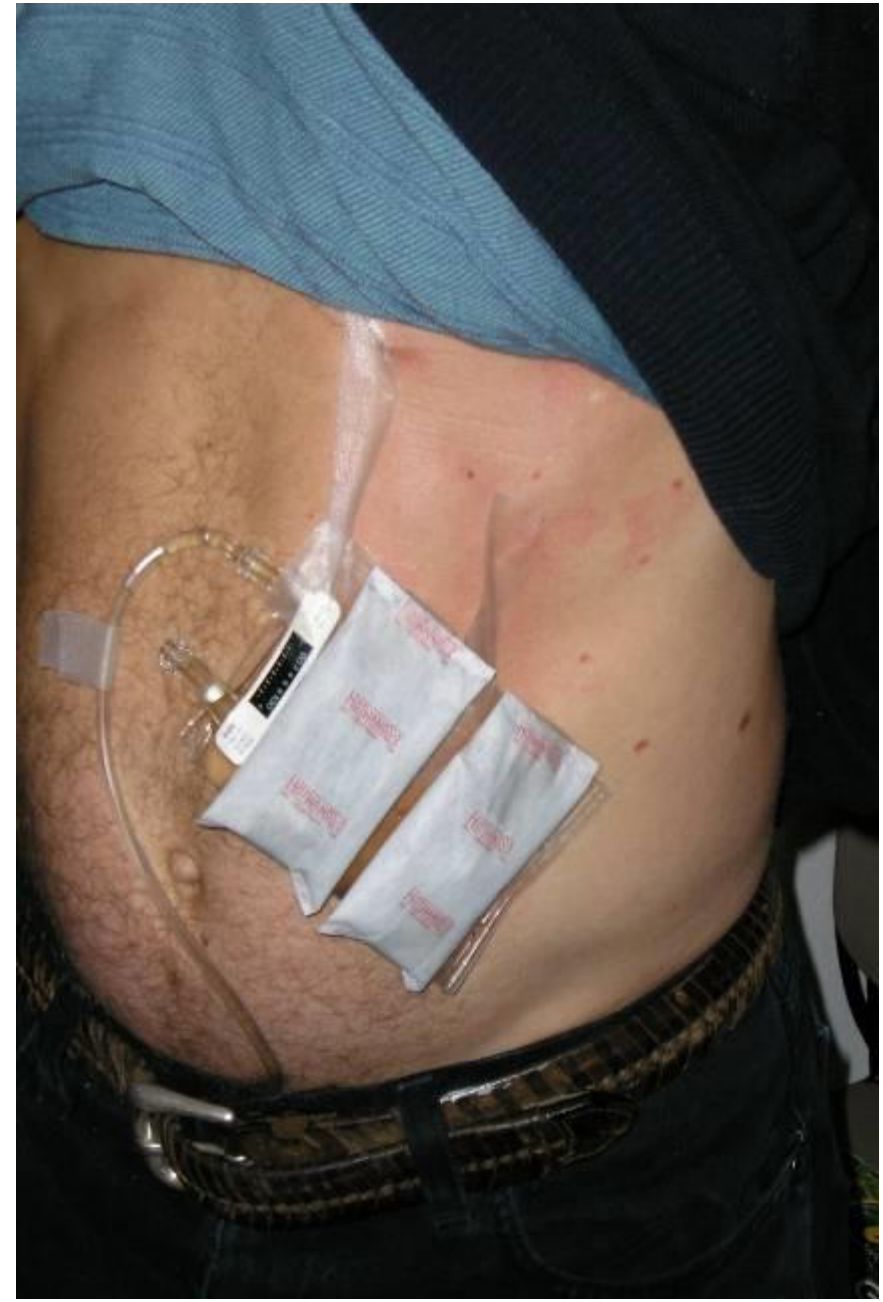
- pyridinium chlorochromate/dichromate
- oxidizing agent in organic synthesis
- compromises the confirmation (GC/MS) carboxy-THC and opiates
- can also effect screening tests
- oxidizes drug and standards
- can be identified by laboratories employing specimen validity tests (SVT)
- effects can not be reversed


URNEGATIVE
Detoxify
AQUA CLEAN
EFFERVESCENT CLEANSING SYSTEM
Clear Choice
of New York
ANTWAN'S WAND
WWW.UR-INNOVATOR.COM
LABORATORY MADE
Spectrum Labs
BAKE N SHAKE
DETOXIFYING BAG
DETOXIT.COM
FlushNOW
Products for passing urine drug testing
Drug Testing & Detoxification
www.clearchoiceofny.com
NuKlear
ATOMIC CLEANSER
The URINATOR
REVOLUTIONARY FORMULA
Only 10 Capsules! Less Water!
FAST FLUSH
CAPS
CLEANSING HERBAL SUPPLEMENT
CLEAR TEST
Detoxify
INSIDE
XXTRACT
THE ULTIMATE CLEANSING COMBINATION.
XXTRA CLEAN
LIQUID FORMULA
DOUBLE MONEY BACK GUARANTEE
QUICK FIX
200% Guarantee!
No Mixing
Pour & Go
Unisex Synthetic Urine
Pre-Mixed... Automatically warms to body temperature
Ready to pour
DR. JOHN'S
FAMOUS PEE PEE
Spectrum Labs
URINE LUCK
DETOXIFYING AGENT
DEVELOPED BY SPECTRUM LABORATORIES, INC.
200% MONEY BACK GUARANTEE
"Pass Any Drug Test"
1-800-803-6458
www.urineluck.com

Urine specimen substitution

- **Involves replacing donor urine with another drug free specimen**
  - **A biological substitution: someone else's clean urine**
  - **Non biological substitution: colored water, diet mountain dew, etc.**
  - **If testing is observed NEITHER of**
  - **these methods should work.**

Addiction makes folks do strange things….this, of course, is an example of an attempted urine substitution.



“As long as no one is following you into the stall and watches you pee, then get a condom and fill it with warm water + a little bit of yellow food coloring. Hide scissors on you somewhere, and when you go take the test, cut the top on the condom (where you tied it off) and pour it into the cup.
That's what I did when I was on probation and it worked.” (internet advice column”)

Controlling Specimen Tampering

- develop challenging collection strategy - ie. make the testing unannounced and RANDOM!
- directly observed collections is the most effective approach to preventing adulteration and substitution
- inspect sample - train collection staff
- keep abreast of tampering techniques
- take temperature measurements (90˚ - 100˚ F)
- use laboratory employs specimen validity tests & use with on-site devices

Unsupervised Drug Test

Instant Clean Add-It-Ive*
8 ml. $75 $50
99.9% Success Rate!

Spike Additive*
2 (TWO) 1.5 ML Vials $125
99.9% Success Rate!

Sub-Solution*(UniSex)
Synthetic Urine $75$55
100% Success Rate!

Oral Fluids?

- **Saliva Swab Drug Test**

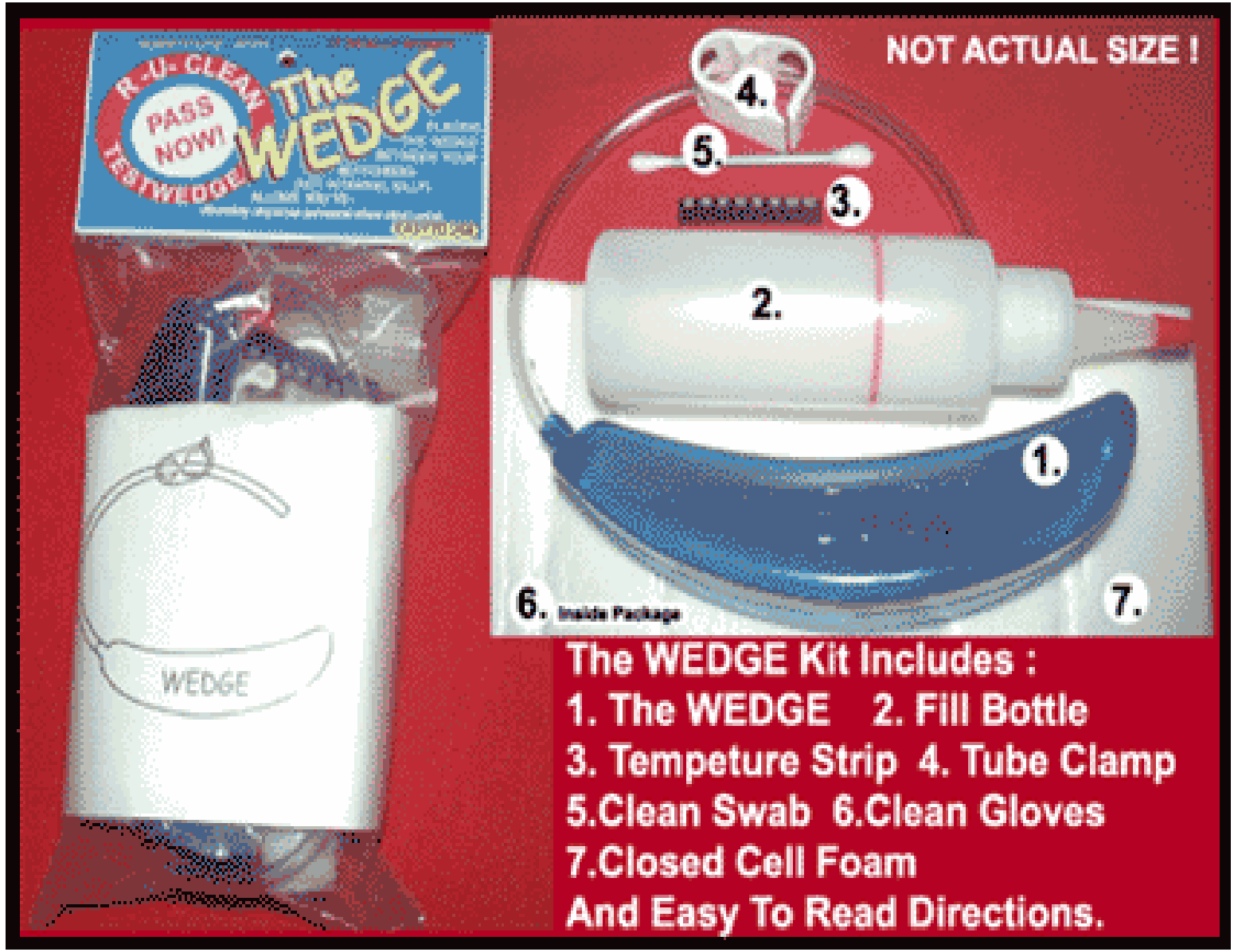
- **Oral Clear Gum (Saliva)****
  Neutralizing Gum $90
  99.9% Success Rate!

- **Mouthwash**

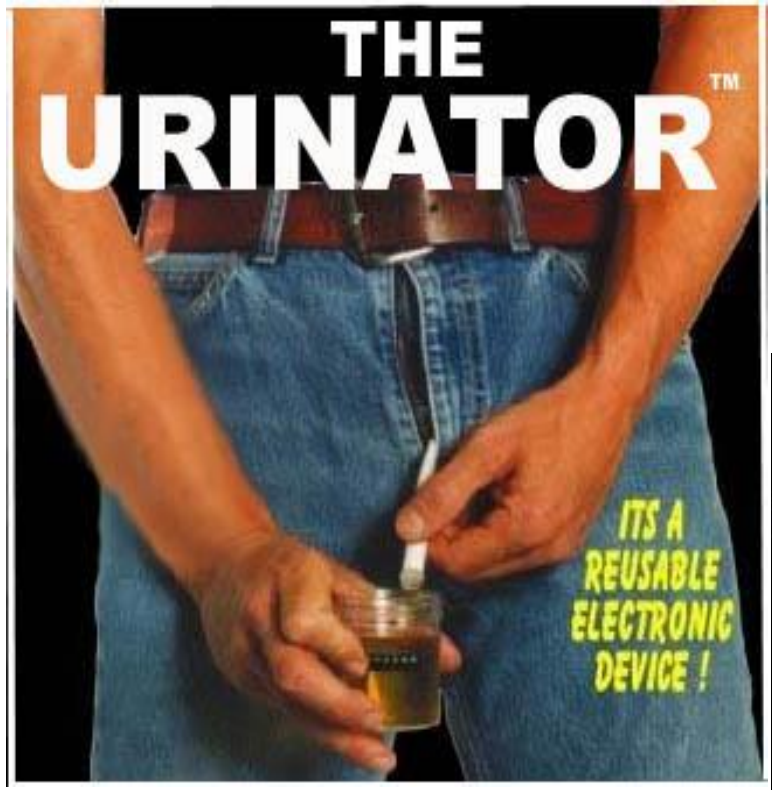
THERE ARE SOME FANCY DEVICES…

Some are gender neutral

Substitution



Substitution



“The urinator the ultimate urine testing device only $149.95. A digitally temperature controlled unit that is reusable, reliable and by far the most superior product on the market.”

Lil' Whizz Kit

New, from the makers of the legendary Whizzinator! A Non- refillable, use and dispose 3oz belt! Everything you need right out of the box. Works every time. Clean, Safe, Dependable, and Toxin Free Synthetic Urine.

SOME ARE NOT GENDER NEUTRAL.


HeWhizz
USA


HeWhizz
Replacement
Reservoir
FOR SINGLE USE
0
20
30
40
50
60ml
HeWhizz
Extension Hose
HeWhizz
Device

kit contents

So, assume this is happening

- Monitor testing carefully
- Watch for “to go” containers during community supervision

Remember:

- **This is not about “gotcha”**
- **It is about helping folks to resist cravings and work programs.**
- **It is about supporting recovery.**
- **It is about objectively measuring the presence of disease.**
- **Remember what your proximal and distal goals are and what the focus of our work is.**
- **Be patient, be kind, but NEVER underestimate the power of this disease.**

email address:

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Bonus Slides Regarding Myths and MAT Drugs Testing Positive.

Interpretation of Drug Testing Results in Medication Assisted Treatment

By: Paul L. Cary

Independent Forensic

Toxicology Consultant

NDCI

NATIONAL DRUG COURT INSTITUTE

American Academy of Addiction Psychiatry

Translating Science. Transforming Lives.

What Does This Result Mean?

Does the use of MAT drugs in an effort to promote recovery complicate the interpretation of drug testing results?

Two-Step Testing Approach

- screening test – designed to separate negative samples from samples that are “presumptively” positive
  - on-site screening devices
  - lab/court-based screening instrumentation
- confirmation test – lab-based follow-up procedure designed to validate positive test results
  - GC/MS
  - LC/MS/MS
- why can’t you adjudicate based on the screening test results?
- FALSE POSITIVES

Result Interpretation for MAT Drugs

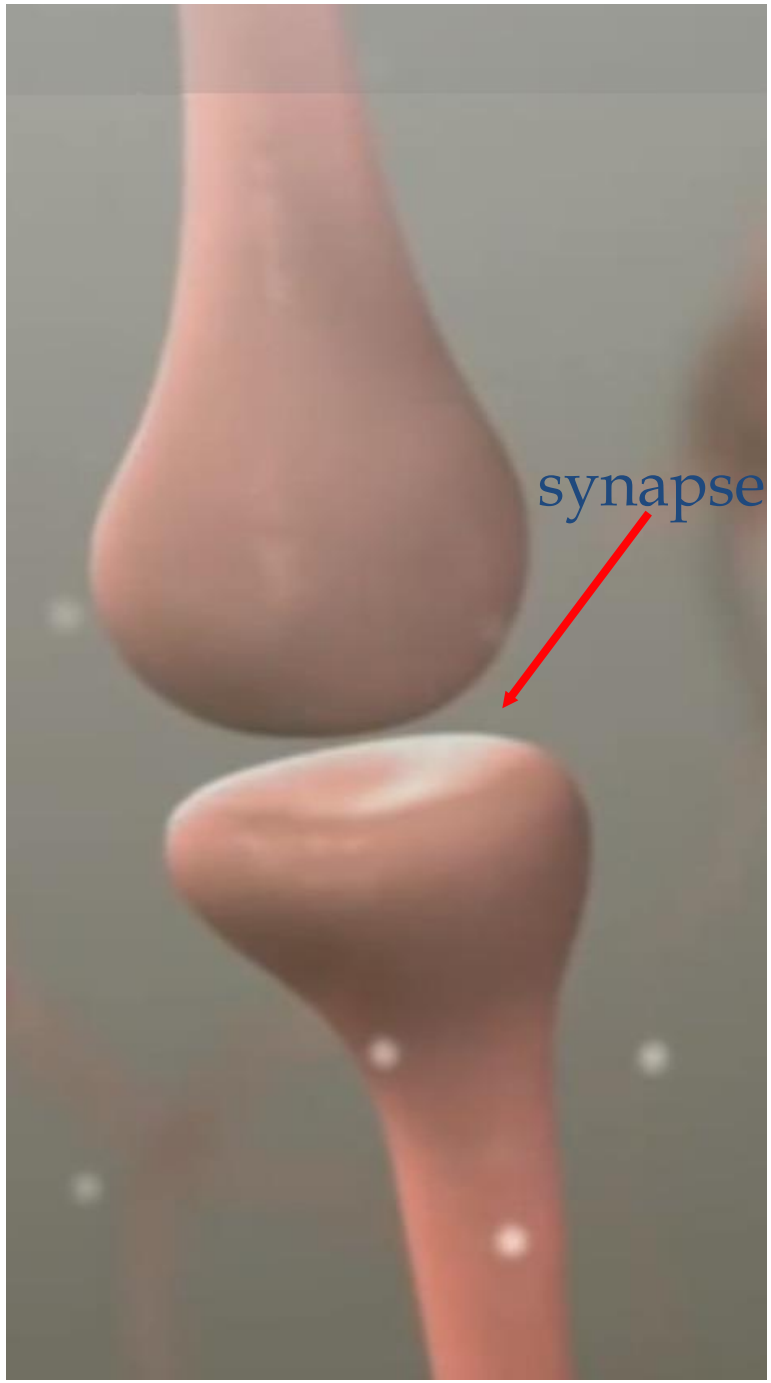
MAT Drugs

- Medications for Alcohol Dependence
  - Naltrexone: (ReVia®, Vivitrol®, Depade ®)
  - Disulfiram: (Antabuse®)
  - Acamprosate: (Campral®)
- Medications for Opioid Dependence
  - Methadone:
  - Buprenorphine: (Suboxone® and Subutex®)
  - Naltrexone: (ReVia®, Vivitrol®, Depade ®)

What is Naltrexone?

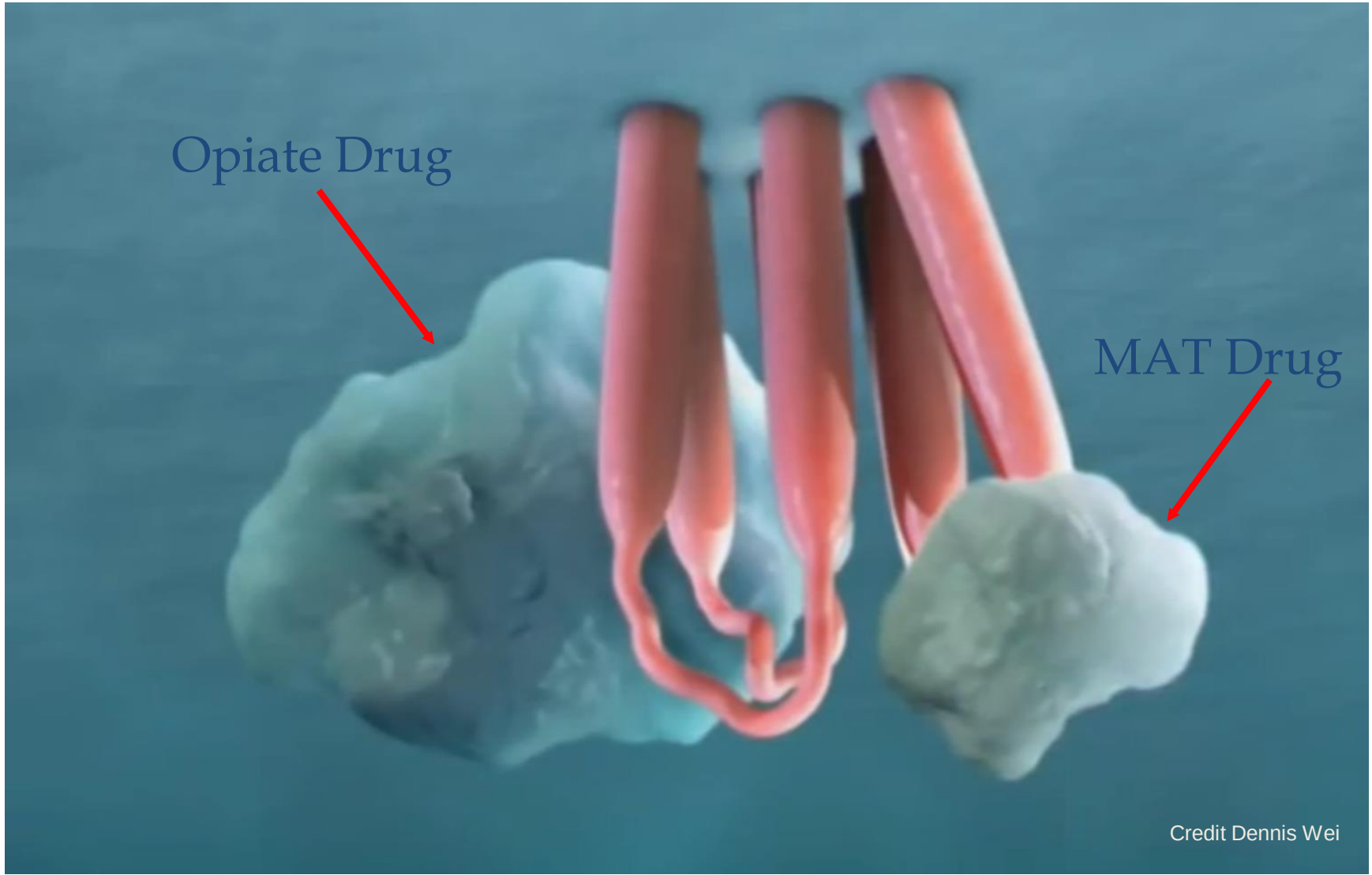
- belongs to a class of drugs known as opiate antagonists
- block the brain's neurotransmitters
- displaces opiates from their binding site
- diminishes physical effects of opiates
- will naltrexone test positive on an opiate drug test?

Neuron Transmission



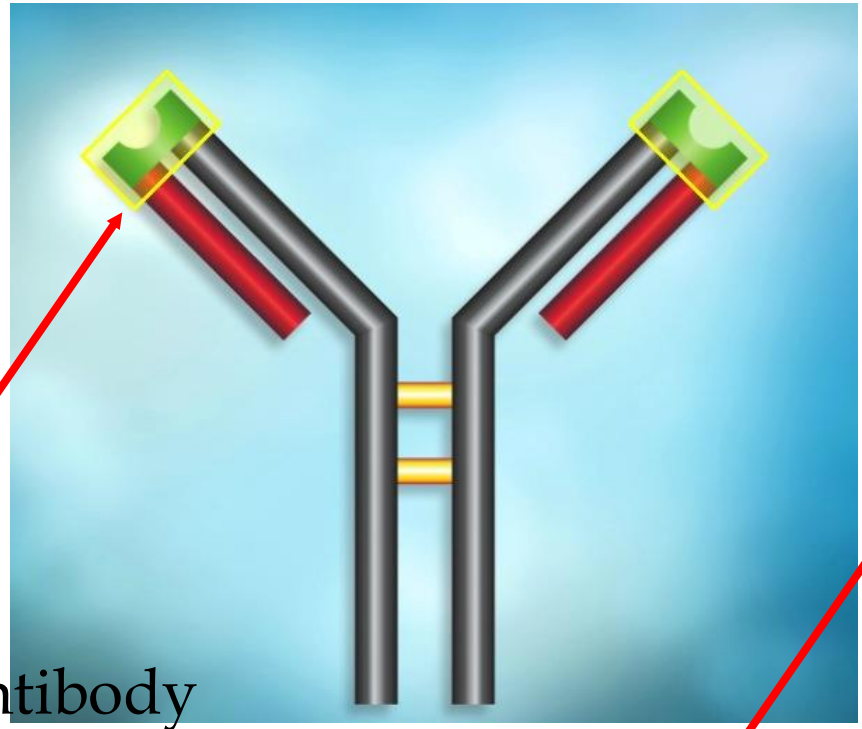
Neural Surface Membrane

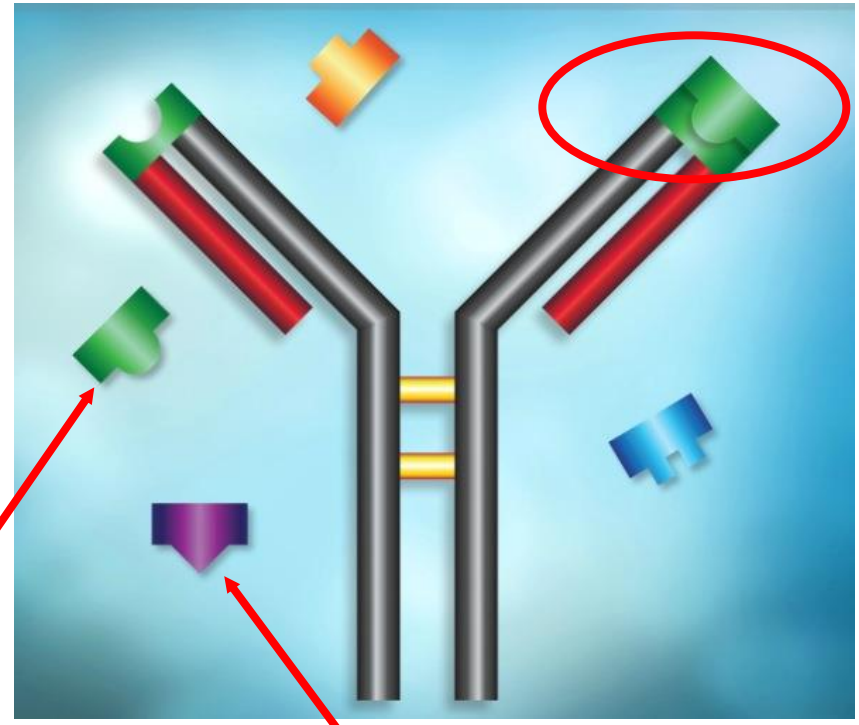
Ligand (MAT drug) Binds to Receptor



Drug tests & cross reactivity:

Immunoassay screening tests



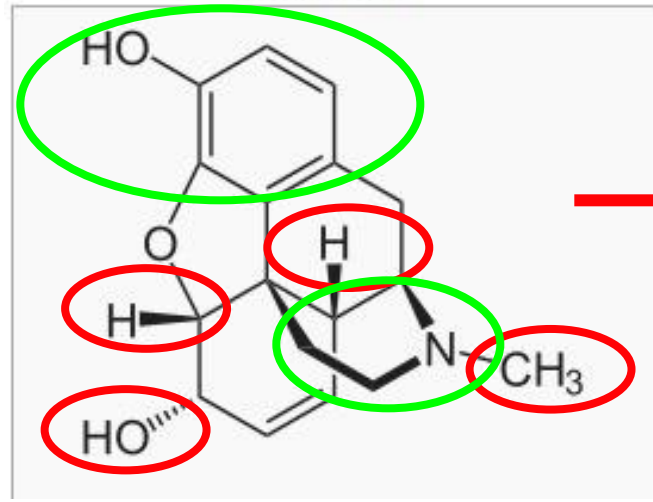


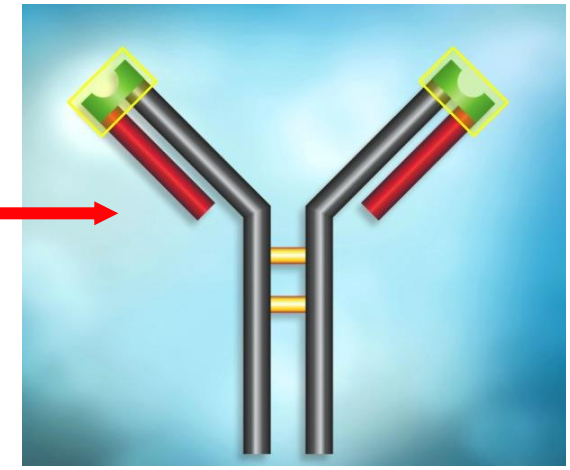
opiates antibody

opiates fit = positive test

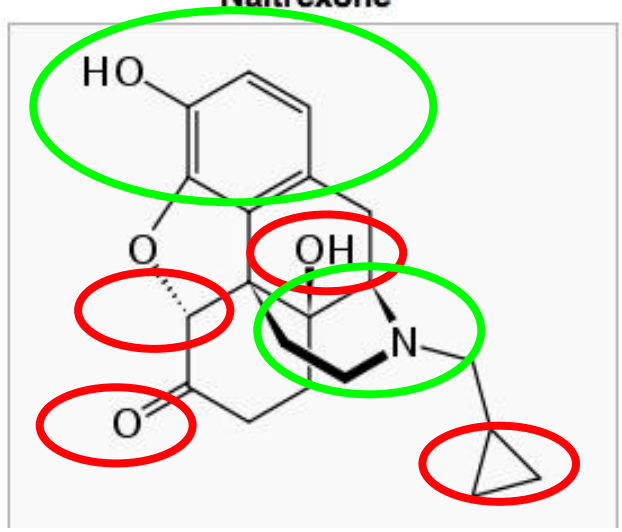
does naltrexone “fit” and produce a “false positive” result

Morphine

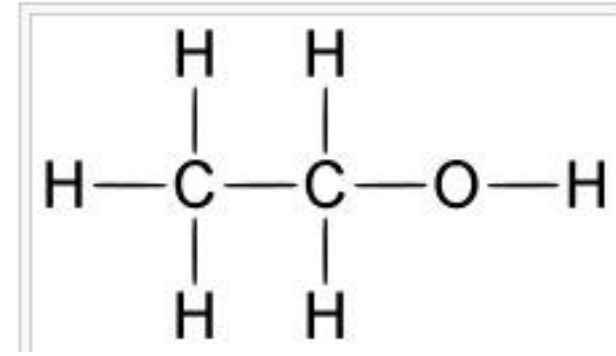




Naltrexone



Ethanol



EMIT® II PLUS – OPIATE

Negative

The compounds below were negative for the Opiate 300 and 2000 cutoffs at the concentrations shown except where noted. Concentrations listed are in µg/mL.

Acetaminophen	1000
Acetylsalicylic Acid	1000
Albuterol	1000
Alendronate	1000
Alprazolam	1000
5-Aminosalicyclic Acid	1000
Amitriptyline @ 300	500
Amitriptyline @ 2000	1000
Amlodipine	1000
Amoxicillin	1000
d-Amphetamine	1000
Atomoxetine	1000
Atorvastatin	1000
Azithromycin	1000
AZT (Zidovudine)	2000
Benazepril	1000
Benzoylecgonine	1000
Buprenorphine	1000
Bupropion	1000
Caffeine	1000
Carisoprodol	1000
Celecoxib	1000
Cephalexin	1000
Cetirizine	1000
Chlorpheniramine	1000
Chlorpromazine	125
Cimetidine	1000
Ciprofloxacin	1000
Citalopram	1000
Clomipramine	2.5
Clonazepam	1000
Clonidine	1000
Clopidogrel Hydrogen Sulfate	1000
Clotrimazole	1000
Cotinine	100
Cyclobenzaprine	63
Desipramine	800
Dextromethorphan	63
Dezocine	1000
Diazepam	1000
Diclofenac	1000
Dihydroergotamine	1000
Diltiazem	1000
Diphenhydramine	1000
Dothiepin	100
Doxepin	10
Doxycycline	1000
Doxylamine	500
Droperidol	1000
EDDP 2-Ethylidene-1, 5-dimethyl-3, 3-diphenylpyrrolidine	1000
EMDP	100
Enalapril Maleate	1000
Ephedrine	1000
Escitalopram	1000
Escomeprazole	1000
Eszopiclone	1000
Ezetimibe	1000
Fentanyl	1000
Fexofenadine	1000
Fluoxetine	900
Fluticasone Proprionate	1000
Furosemide	1000
Gabapentin	1000
Glutethimide	500
Glyburide	1000
Goldenseal	tea solution
Griseofulvin	1000
Hydrochlorothiazide	1000
Ibuprofen	1000
d,l-Isoproterenol	1000
Isoxsuprine	1000
Ketamine	100
Ketoprofen	1000
Ketorolac Tromethamine	1000
LAAM (l-α-Acetylmethadol)	25
dinor LAAM (α-Acetyl-N, N-dinormethadol)	25
Lamotrigine	1000
Lansoprazole	1000
Lidocaine	1000
Lisinopril	1000
Loperamide	1000
Lormetazepam	1
LSD (Lysergic acid diethylamide)	0.01
MDA (Methylenedioxyamphetamine)	5
MDMA (Methylenedioxymeth ampheamine)	200
Meloxicam	1000
Meprobamate	1000
Metaproterenol	1000
Metformin	1000
Methadone	100
d-Methamphetamine	35
Methaqualone	1500
Metoprolol Tartrate	1000
Metronidazole	1000
Myoglobin	287
Naltrexone	1000
NAPA (N-Acetylprocainamide)	400
Naproxen	1000
Netazodone	1000
Nortriptyline	250
Nylidrin	1000

Siemens EMIT Assay Cross-Reactivity Data

Myoglobin	287
Naltrexone	1000
NAPA (N-Acetylprocainamide)	400
Naproxen	1000

= 1,000,000 ng/mL

ThermoFisher SCIENTIFIC

The world leader in serving science

CEDIA® Opiate Cross-Reactivity Table
For catalog #s 100089, 100098 & 1661248

POSITIVE COMPOUNDS

The following compounds tested POSITIVE on the CEDIA® DAU Opiate assay at the 300 ng/mL cutoff.

Positive Compounds	Trade Name	Concentration Tested (ng/mL)
6-Monoacetylmorphine		370
Clomipramine HCl	Anafranil	500,000
Codeine		240
Cyclazocine		500,000
Cyamemazine		31,125
Diacetylmorphine	Heroin	570
Dihydrocodeine	DHC Plus, Synalgos-DC	600
Hydrocodone	Lortab, Vicodin	625
Hydromorphone	Dilaudid	530
Levorphanol tartrate	Levo-Dromoran	100,000
Morphine		300
Morphine SO4	MS Contin, MSIR, Oramorph SR, Roxanol	100,000
Morphine-3-glucuronide		370
Morphine-6-glucuronide		640
Nalorphine HCl		100,000
Naloxone	Narcan	6,000
Naltrexone HCl	Depade, ReVia	50,000
Ofloxacin	Floxin	100,000
Oxycodone	OxyContin	320,000
Pholcodine		500
Rifampin	Rifadin	65,000
Thebaine		1,250

Abstract: A clinical evaluation of the naltrexone, a biodegradable sustained-release dosage was carried out in 4 healthy normal males.

Subjects were given an intravenous dose of 10 mg naltrexone and approximately 1 week later a 63-mg dose of naltrexone by subcutaneous administration.

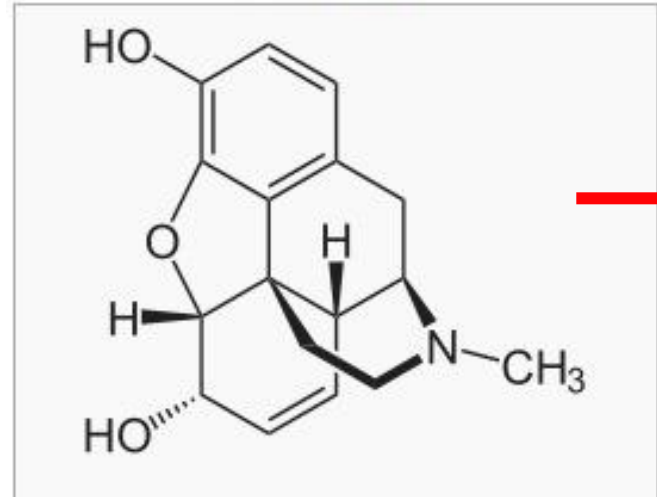
Urine levels for naltrexone were 79-215 ng/mL.

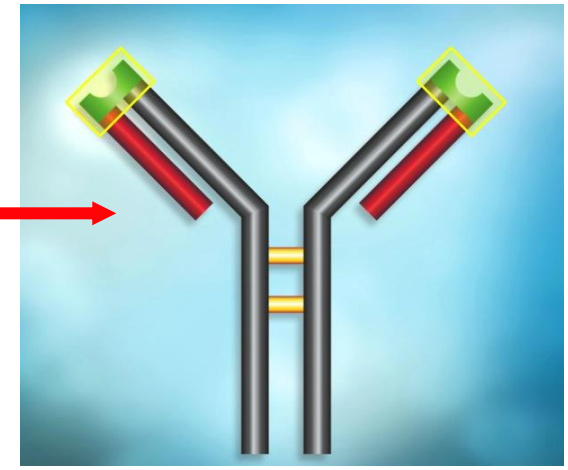
Naloxone	Narcan	6,000
Naltrexone HCl	Depade, ReVia	50,000
Ofloxacin	Floxin	100,000

MAT Drugs

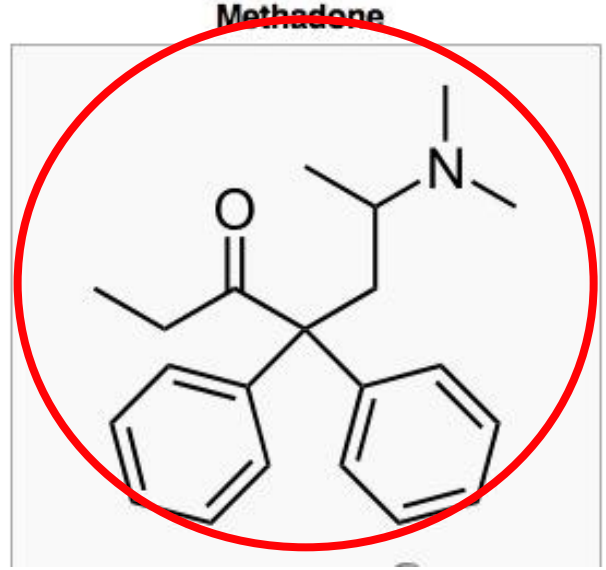
- Medications for Alcohol Dependence
  - Naltrexone: False Positive with Opiate Assay - NO!
  - Disulfiram: (Antabuse®)
  - Acamprosate: (Campral®)
- Medications for Opioid Dependence
  - Methadone:
  - Buprenorphine: (Suboxone® and Subutex®)
  - Naltrexone: False Positive with Opiate Assay - NO!

Morphine

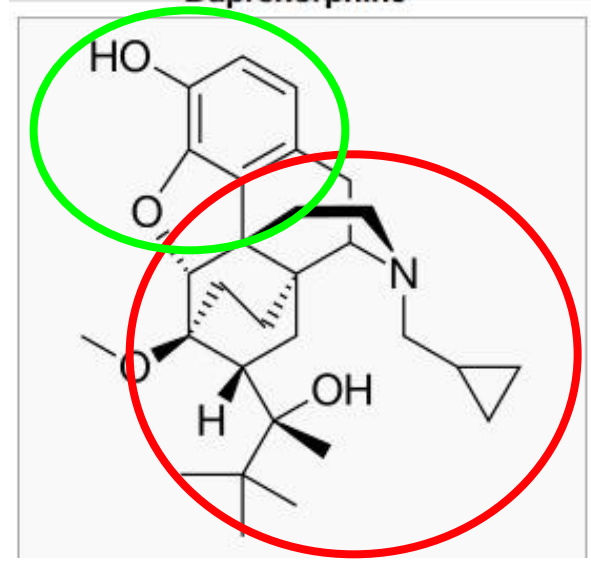




Methadone



Buprenorphine



Siemens Negative Reactivity Data

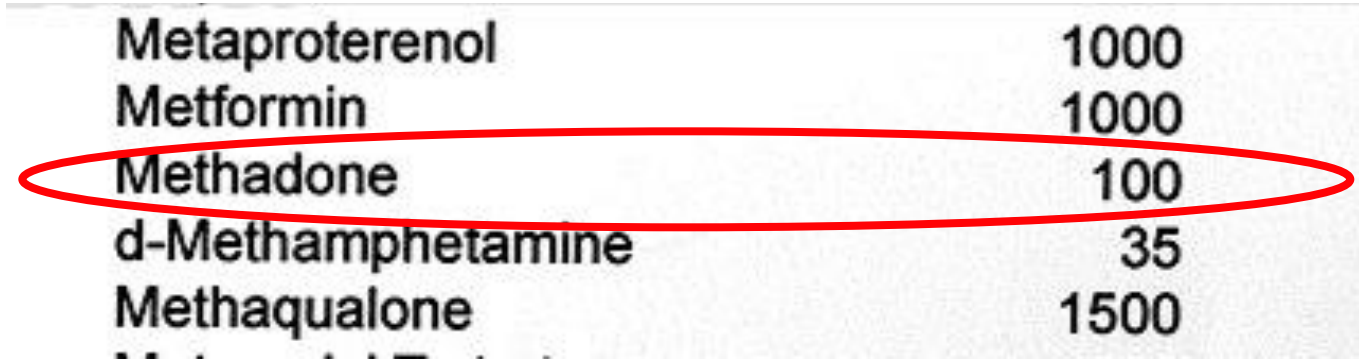
Azithromycin	1000
AZT (Zidovudine)	2000
Benazepril	1000
Benzoylecgonine	1000
Buprenorphine	1000
Bupropion	1000
Caffeine	1000

= 1,000,000 ng/mL

Thermo-Fisher Negative Reactivity Data

Negative Compounds	Trade Name	Concentration Tested (ng/mL)
Bromocriptine mesylate	Ergoset, Parlodel	500,000
Brompheniramine	Dimetane, Dimetapp, Nasahist, ND-Stat, Oraminic II	500,000
Bupivacaine	Marcaine, Sensorcaine	500,000
Buprenorphine	Buprenex	100,000
Bupropion	Wellbutrin, Zyban	100,000

Siemens Negative Reactivity Data



Metaproterenol	1000
Metformin	1000
Methadone	100
d-Methamphetamine	35
Methaqualone	1500

= 100,000 ng/mL

Thermo-Fisher Negative Reactivity Data

Metaproterenol hemisulfate salt	Alupent, Metaprel	500,000
Metaraminol bitartrate	Aramine	500,000
Methadone HCl	Dolophine	500,000
Methamphetamine	Desoxyn	500,000
Methaqualone HCl	Normi-Nox, Pallidan, Somnomed, Quaalude	100,000

MAT Drugs

- Medications for Alcohol Dependence
  - Naltrexone: False Positive with Opiate Assay - NO!
  - Disulfiram: NO! with drug tests reviewed
  - Acamprosate: NO! with drug tests reviewed
- Medications for Opioid Dependence
  - Methadone: NO! with Opiate Assay
  - Buprenorphine: NO! with Opiate Assay
  - Naltrexone: False Positive with Opiate Assay - NO!

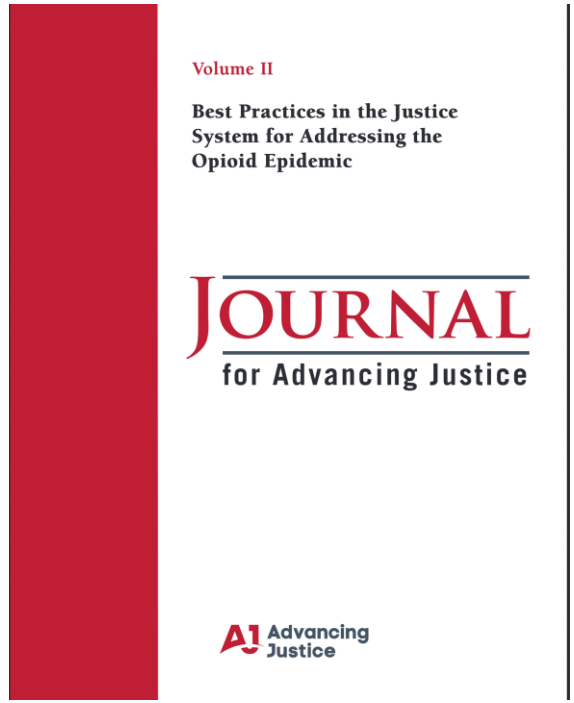


Table 2. Perceived Benefits of MAT

Prevalent Themes (reported by > 50% of respondents)	
Importance of Drug Testing: Two-thirds of participants (66%) emphasized the benefits of frequent and random drug testing in combination with MAT to minimize relapse and increase completion of treatment.	"All the drug testing is stressful, but it helps deter me from using drugs and the more I am clean, the easier it becomes."

Result Interpretation for Therapeutic/OTC Drugs

Very Difficult Task

- not all drug tests are created equal
  - laboratory-based tests (numerous products)
  - on-site, instant, POC tests (dozens of products)
  - each test has unique selectivity (i.e. ability to distinguish between similar compounds
- hundreds of therapeutic drugs
- hundreds of OTC medications

Court's Obligation

- limit use of therapeutic drugs
  - court must be notified
- prohibit the use of OTC medications without prior approval
- prohibit the use of dietary supplements, energy drinks, homeopathic substances, herbal products, sports nutrition powders, anything not regulated by FDA (anything from GNC)

Confirmation: Best Practice

- gas or liquid chromatography-mass spectrometry
  - GC/MS or LC/MS/MS
    - drug molecules separated by physical characteristics
    - identified based on chemical “finger-print”
    - considered “gold standard”
- refer to NADCP Adult Drug Court Best Practice Standards - Volume II

CONCLUSIONS

- Using standard instrument-based screening immunoassay drugs tests (in-lab or in-court), MAT drugs do not cross-react to produce “false positive” results
- When using on-site testing devices the cross-reactivity toward MAT drugs is largely unstudied. Contact product vendor.
- Confirmation testing (GC/MS or LC/MS) resolves nearly all cross-reactivity “false-positive” issues