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NATIONAL DRUG  
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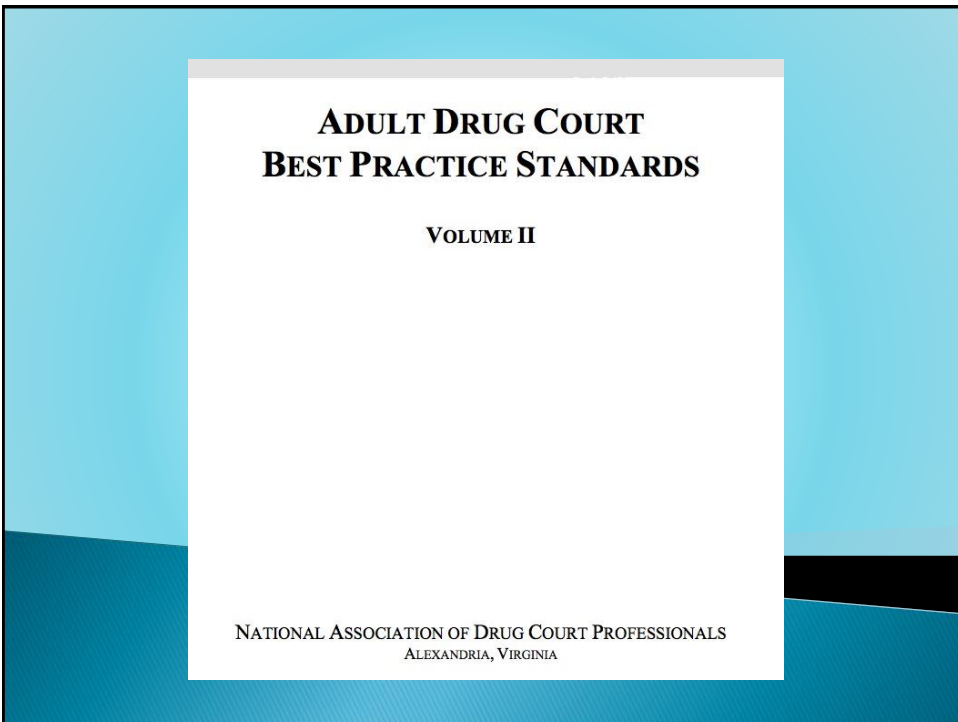
**AADP**  
American Academy of  
Addiction Psychiatry  
Translating Science. Transforming Lives

# Effective Drug Testing

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1



**ADULT DRUG COURT  
BEST PRACTICE STANDARDS**

**VOLUME II**

NATIONAL ASSOCIATION OF DRUG COURT PROFESSIONALS  
ALEXANDRIA, VIRGINIA

## Are “Best Practices” Mandatory?

“Best Practices” are  
GOALS!

### 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

## Characteristics of a Good Drug Test:

- scientifically valid
  - ◆ employs proven methods & techniques
  - ◆ accepted by the scientific community
- legally defensible
  - ◆ able to withstand challenge
  - ◆ established court track record
  - ◆ scrutinized by legal/judicial review
- therapeutically beneficial
  - ◆ provides accurate profile of client's drug use
  - ◆ provides rapid results for appropriate response

## 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

## A. Frequent Testing

## Frequency of Testing

- drug courts often reduce testing frequency for non-therapeutic reasons
  - ◆ cost saving measure
  - ◆ reward for good behavior
  - ◆ incentive for phase advancement
- phase advancement often equates to a reduction in therapeutic measures
  - ◆ fewer staffings
  - ◆ reduced time before the judge
  - ◆ reduced supervision (visits with case workers/PO' s)
  - ◆ reduction in treatment sessions

## How Often to Drug Test?

- Drug and alcohol testing is performed frequently enough to ensure substance use is detected quickly and reliably.
- for urine – test as often as possible – at least twice weekly
- ankle monitors – 90 days
- tests that have short detection windows – more frequently
- testing frequency remains constant throughout phase progression



## Twice Per Week?

- Drug and alcohol testing is within the direct preview and control of the drug court & it's affiliated programs (i.e. team members)
- Tests for which you do not have immediate & free access to results - DON'T COUNT
- Tests which are not witnessed - DON'T COUNT
- Tests that are significantly different in composition or cutoff levels - DON'T COUNT
- Tests where confirmation is not available - DON'T COUNT

## B. Random Testing

## 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

## C. Duration of Testing

## Duration of Testing



- basic tenet of behavior modification provides that the effects of interventions should be assessed continually
- relapse is difficult to predict
- reduction of services comes the ever-present risk of relapse or other behavioral setback
- duration of drug and alcohol testing continues until participants are engaged in continuing-care or aftercare plan

## D. Breadth of Testing



## Breadth of Drug Testing

- ▶ Drug Courts must test for the full range of substances that are likely to be used by participants in the program.
- ▶ short comings to certain limited/standards panels
  - NIDA 5 or standard eight-panel
- ▶ clients engage in evasion strategies
  - opiate switching – heroin to oxycodone
  - THC alternatives – marijuana to Spice/K2
- ▶ randomize your drug testing panels
- ▶ alternative specimen options (oral fluids)

## Types of Drug Tests

- ▶ On-site devices (“instant”, “rapid”, POCT – “point of care testing”
  - dozens and dozens of individual products
- ▶ Lab-based/Court-based immunoassay screening instruments
  - Siemens (EMIT)
  - Thermo-Fisher (CEDIA & DRI)
- ▶ Lab-based confirmation
  - GC/MS
  - LC/MS/MS

## E. Witnessed Collections

### “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



# Challenging Urine Collection Strategies

## 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
- 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 & control



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.

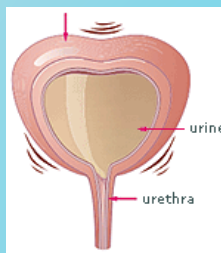
## **F. Valid Specimens – The Effective Use of Urine Creatinine Measurements in Abstinence Monitoring**

The most common form of specimen tampering is sample dilution.

**EVERY urine sample collected for drug detection should be tested for creatinine!**



You can't intervene to change behavior if you don't know a client has relapsed!



## 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.



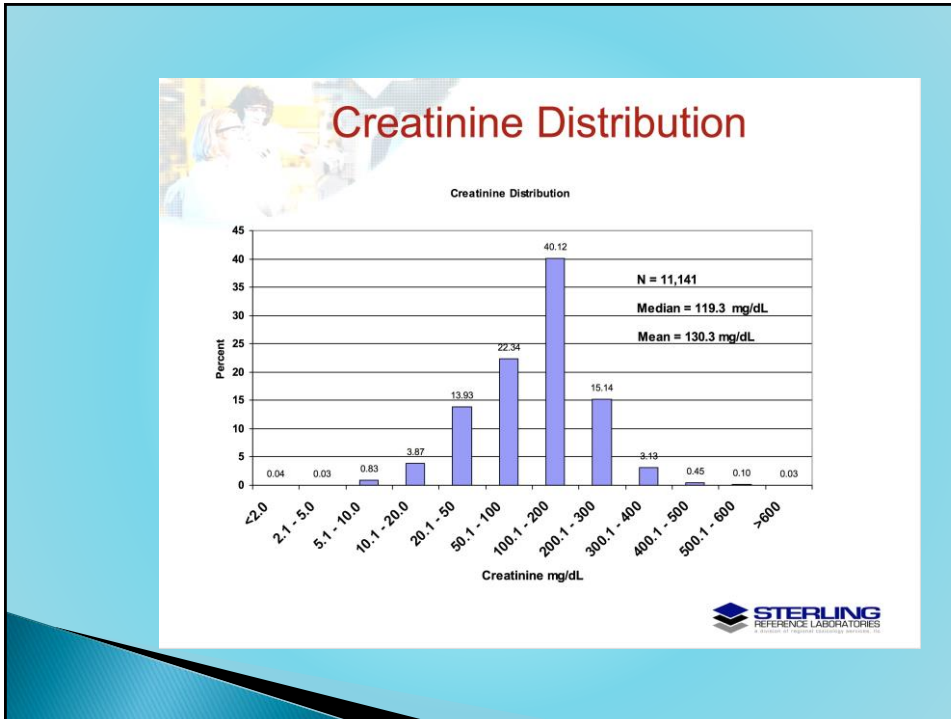
Urine in the bladder is diluted by the consumption of large amounts of non-drug containing fluid; which results in a drug concentration that is less than the cutoff level of the test - thus producing a negative result.

## Water contains no drugs!

- easiest, cheapest, simplest
- urines with a creatinine 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
- incidence of low creatinine in a population undergoing random drug testing is significantly (up to 10 times) greater than a non-drug tested population

## The “Normal” Urine 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
- ▶ study was not associated with drug testing
- ▶ subjects came from a variety of ethnic groups
- ▶ samples were collected AM, mid-day, and PM
- ▶ less than 1% below 20 mg/dL
- ▶ less than 1% greater than 400 mg/dL



## More Creatinine Issues

- rapid ingestion (90 minutes) of 2–4 quarts of fluid will almost always produce low creatinine & negative urine drug tests within one hour
- recovery time of urine creatinine and drug concentrations can take up to 10 hours



## “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)

## Creatinine Sanctions

- ▶ verbal warning
- ▶ community service
- ▶ write paper on how the kidney works
- ▶ increased surveillance (therapeutic response)
- ▶ loss of privileges
- ▶ jail time

## Dilutes & Therapeutic Goals

- honesty – touchstone concept
- dishonesty is a “learned behavior”
- honesty – proximal goal
- honesty – behavior that clients CAN and SHOULD control
- dilute samples represent an attempt to defraud the court’s recovery goals
- honesty should be a critical goal for phase advancement
- Do you want a client advancing who has not mastered honesty?

## Two final thoughts about dilute urine samples . . . . .

- a creatinine of less than 20 mg/dL (associated with a drug test) is nearly always an attempt by the donor to avoid drug use detection – REGARDLESS of how much liquid was consumed in order to achieve this result
- place a dilute sample prohibition in your client contract and sanction for repeat dilute samples

## G. Accurate and Reliable Testing Procedures

### 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

## 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 “fingerprint”
  - ◆ 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

## 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



# 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
- › opiates
- › cocaine metabolite
- › amphetamines

~~517 ng/mL~~  
negative  
negative  
negative

## 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.

NATIONAL DRUG COURT INSTITUTE  
Kathleen Peltzman-Watson, Executive Director | January 2004 | Vol. 1, No. 1

## 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.D.

#### 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.



## Scientific Rationale

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

# THIS ?

432 indicates he going up, right?

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?

115 is down from yesterday, probably continued elimination?

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

515 is much higher than last week, right?

don't we need to consider relapse at 57?

**OR THIS ?**

Negative or Positive

**Interpretation of  
Drug Test Results**

## What is a “Cutoff” Level ?

- ▶ Cutoffs are not designed to frustrate treatment professionals or court practitioners
- ▶ 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

53

## Cutoffs and False Positives



As you lower  
the cutoff  
level of a  
drug test



You increase  
the potential  
for false  
positive test  
results

54

## 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

## H. Rapid Results

### Timing is Everything

- timing is one of the most influential factors for success in a behavior modification program
- the sooner sanctions are delivered after an infraction and incentives delivered after an achievement, the better the results
- Test results, including the results of confirmation testing, are available to the Drug Court within forty-eight hours of sample collection

## Timing is Everything

- study of 70 drug courts show:
- significantly greater reductions in criminal recidivism and significantly greater cost benefits when the teams received drug and alcohol test results within forty-eight hours of sample collection
- 73% more effective at reducing crime and 68% more cost-effective

## I. Participant Contract

## Paint Roadmap for Success

- Upon entering the Drug Court, participants receive a clear and comprehensive explanation of their rights and responsibilities related to drug and alcohol testing
- outcomes are significantly better when Drug Courts specify their policies and procedures clearly
- participants significantly more likely to react favorably to an adverse judgment if they are given advance notice about how such judgments are made

## The Importance of “Specificity” in a Client Contract:

- ▶ “I understand . . . . .”
- ▶ I will be tested for the presence of drugs in my system on a random basis according to procedures established by the Drug Court Team and/or my treatment provider.
- ▶ I understand that I will be given a location and time to report for my drug test.
- ▶ I understand that it is my responsibility to report to the assigned location at the time given for the test.



## The Importance of “Specificity” in a Client Contract:

- ▶ I understand that if I am late for a test, or miss a test, it will be considered as a positive test for drugs/alcohol and that I may be sanctioned.
- ▶ I understand that if I fail to produce a urine specimen or if the sample provided is not of sufficient quantity, it will be considered as a positive test for drugs/alcohol and that I may be sanctioned.
- ▶ I understand that if I produce a dilute urine sample it will be considered as a positive test for drugs/alcohol and that I may be sanctioned.

## The Importance of “Specificity” in a Client Contract:

- ▶ I have been informed that the ingestion of excessive amounts of fluids can result in a diluted urine sample and I understand that my urine sample will be tested to ensure the sample is not dilute.
- ▶ I understand that substituting or altering my specimen or trying in any way to modify my body fluids for the purposes of changing the drug testing results will be considered as a positive test for drugs/alcohol and will result in sanctioning and may be grounds for immediate termination from drug court.

# 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 Specimen Substitution

- ▶ replacing donor urine sample with another drug-free specimen
- ▶ biological substitution – someone else’s “clean” urine
- ▶ non-biological substitution – replacing urine with urine “look-a-like” sample (diet Mountain Dew, water with food coloring)
- ▶ non-biologicals can be detected with creatinine testing

## Specimen Validity Tests (SVT)

- creatinine, UUN
- specific gravity
- pH
- nitrites
- glutaraldehyde
- pyridine
- chromium



Request SVT from testing laboratory or use dip-stick SVT products for on-site testing



## 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

## 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

73

## No Substitute for Knowledge & Expertise

- ▶ Unethical to adjudicate based upon misinformation – violation of due process
- ▶ Develop a relationship with your laboratory
- ▶ Develop a relationship with your on–site device vendor
- ▶ Don’t be afraid to “call the company”
- ▶ Seek expert advice
- ▶ CONFIRM – positive results!

74

## About this Project

For More Information:

Website: [www.ndcrc.org](http://www.ndcrc.org)

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