Drug Testing Reference Tables for Drug Courts

July, 2009

TABLE I.

Specimen	Detection Period	Advantages	Disadvantages
URINE	Provides a profile of both current and recent past substance usage - detection time generally calculated in days for most drugs (excluding alcohol). See Table IV that outlines additional detection window estimates.	• provides detection for both recent and past usage • sample is generally available in large quantities for testing • drug & metabolites are highly concentrated therefore easily detectable using both laboratory-based & on-site testing devices • numerous inexpensive testing options including on-site testing • uniform forensic criteria supported by years of court/legal case law & adjudication • established cutoffs	• invasive "witnessed" collection procedures required– necessitates same gender observed collections • specimen is susceptible to tampering via dilution/adulteration • drug concentration influenced by fluid intake, savvy clients may consume copious fluids to alter testing results • sample collection process can be time consuming • urine drug levels provide no interpretive data (no dose/concentration relationship)
SWEAT (patch)	Measures current (on-going) drug use following patch application; past exposure not detected - patch is FDA approved to be worn for up to 7 days	• ability to monitor 24/7 for extended periods which provides a significant adjunct to the therapeutic process • relatively client tamper-proof • use has participant acceptability due to non-invasive approach • increased deterrent to drug use • cross-gender collections	• cannot detect prior drug exposure • limited collection devices & testing laboratories • potential risk of contamination during patch application/ removal • limited number of drugs detected • no on-site testing
ORAL FLUID (saliva)	Provides recent usage detection - many drugs cannot be detected beyond 24 hours after use	• non-invasive, cross-gender collections • specimen tampering reduced • data may relate to behavior/performance • on-site testing available (but not recommended)	• short detection window • specimen collection can be time consuming • limited collection devices & testing facilities • cutoffs not well established • limited number of drugs detected • on-site testing devices pose forensic concerns regarding accuracy & reliability

TABLE I. (continued)

Specimen	Detection Period	Advantages	Disadvantages
HAIR	Provides past drug usage only - detection period up to 90 days - does not provide recent drug use information (hair required to grow out of scalp prior to sample acquisition)	• extended detection period • non-invasive, cross-gender sample collection • reduced specimen tampering • no bio-hazard issues • no poppy seed interference	• increased cost per sample tested • inability to detect recent drug usage • limited number of testing facilities • no on-site testing • continuing concerns regarding ethnic, hair color bias • use of “body” hair forensically controversial • testing may not detect single drug use event • date of drug use cannot be assessed
BLOOD	Detects very recent usage of abused substances - detection time often measured in hours following use	• results both qualitative and quantitative - may provide behavior/performance data in select circumstances (DUID) • specimen tampering eliminated	• invasive sample collection - venipuncture required by medical staff • no on-site testing • traditional urine testing methods not applicable to blood analysis • limited sample volume can be obtained • detection of abused drugs in blood difficult for many laboratories due to low levels of drug • high potential for false negative results • specimen not recommended for drug court abstinence monitoring
EYE SCANNING/ PUPILOMETER instruments	Designed to determine ***impairment***, recent use monitoring client only - detection time measured in hours	• no specimen collection • on-site devices, immediate results • ease of operation	• monitors impairment rather than abstinence • short detection window • may require additional specimen collections to confirm positives • not peer-reviewed • devices may detect client fatigue as “positive”

TABLE II.

Type	Advantages	Disadvantages
ON-SITE DRUG TESTING	• provides rapid result turn-around time (quick reward for drug free behavior/quick justification for sanctions) • ease of use technology • potential for reduced testing costs • no capital equipment expenditures • reduced training costs • elimination of specimen transport and storage issues	• increased cross-reactivity and interference (potential false positive results) • on-site testing often does not include quality control • on-site testing often does not include testing for diluted samples (creatinine) and adulteration testing • testing personnel competency is often not assessed • reduced flexibility in testing panels (limited number of drugs tested) • potential privacy/conflict of interest concerns
LABORATORY-BASED DRUG TESTING	• tested often provided by professionally trained technologists • use of approved scientific methods • integrated quality assurance • confirmation testing more readily available • creatinine and adulteration testing more readily available • toxicology expertise/forensic competency • established custody and control procedures	• increased result turn-around time (compared to on-site testing) • additional sample handling and shipment required • potential increased cost per test • difficulty in accessing data and information from large corporate laboratories

TABLE III.

Drug	Screening Cutoffs	Confirmation Cutoffs
	in ng/mL	**in ng/mL**
AMPHETAMINES	500 or 1000	500
BARBITURATES	200 or 300	100 - 300
BENZODIAZEPINES	200 or 300	100 - 300
CANNABINOIDS	20 - 50	15
COCAINE METABOLITE	150 or 300	150
OPIATES **	300	100 - 300
PHENCYCLIDINE (PCP)	25	25
ALCOHOL	variable	10 mg/dL

** The federal opiates cutoff level of 2000 ng/mL is <u>not recommended</u> for abstinence monitoring programs. Consult your laboratory or on-site vendor to ensure appropriate opiates cutoff is being used.

TABLE IV.

Drug	Approximate Drug Times in Urine
AMPHETAMINES	1 - 4 days
BARBITURATES	1 - 7 days
BENZODIAZEPINES	1 - 7 days
CANNABINOIDS ** Detailed cannabinoid detection information available in NDCI Fact Sheet - Volume IV, Issue 2, April 2006	at 50 ng/mL cutoff: up to 3 days for single event/occasional use up to 10 days for heavy chronic use at 20 ng/mL cutoff: up to 7 days for single event/occasional use up to 21 days for heavy chronic use
COCAINE METABOLITE	1 - 3 days
OPIATES	1 - 4 days
PHENCYCLIDINE (PCP)	1 - 6 days
ALCOHOL (as ethyl alcohol) ---------- as alcohol metabolites EtG/EtS	variable, usually measured in hours ---------- at the 500/100 ng/mL cutoff: 24-48 hours

** NOTE: The only timeframe in which an individual's chronic marijuana use (possibly leading to extended cannabinoids elimination) is relevant is during a client's admission into the drug court program. Following the initial detoxification phase, the extent of a client's past chronic marijuana usage does not influence the cannabinoid detection window as long as appropriate supervision and drug monitoring for abstinence continues on a regular basis. Therefore, the consequences of chronic marijuana usage on cannabinoid detection are effectively limited to the initial entry phase of the program.

TABLE V.

Type	Method Description	Control Strategy
PRE-COLLECTION DILUTION	Consumption of large volumes of fluid just prior to sample collection in an effort to dilute urine drug concentrations to below the screening test cutoff - thus producing false negative results. (flushing, water loading, hydrating)	Perform creatinine levels on all drug court samples to assess specimen validity. Samples with creatinine concentrations of less than 20 mg/dL are generally considered dilute and test results do not accurately reflect a client's drug use history.
POST-COLLECTION DILUTION	Addition of liquid (water, colored fluid) to sample post collection in an effort to dilute urine drug concentrations to below the screening test cutoff - thus producing false negative results.	Direct observation/witnessed collection should preclude most post-collection dilution – in addition to determining creatinine levels.
ADULTERATION	Addition of chemical agents (liquids or powders) to sample (post-collection) designed to disrupt testing procedures or to mask the presence of drugs.	Specimen validity testing (SVT). Specialized tests capable of detected chemical adulteration agents. Available from most drug testing labs - on-site "instant" SVT devices are also available.
SUBSTITUTION	Replacing client urine sample with a substitute "look-a-like" sample – biological substitution (another person's "clean" urine OR non-biological substitution (replacing urine with apple juice, Mountain Dew, water with food coloring)	Use of specimen validity testing (SVT) combined with creatinine testing - most non-biological samples will result in minimal creatinine concentrations.

Specimen validity tests (SVT) are specialized analyses designed to identify chemical substances the presence of which are inconsistent with normal human urine.