

## **Annex 10**

### **Notes of urine drug testing**

#### **(I) Introduction**

Urine drug testing is a chemical procedure to screen whether a subject abuses drugs and to identify specific drugs being abused. It plays a vital role in management of drug abuse problems.

#### **(II) Purposes of urine drug testing**

- (1) Diagnostic: help to identify the drug abuser and the types of drug abused
- (2) Treatment: monitor the progress of detoxification and rehabilitation

#### **(III) Types of test**

- (1) Screening test: an analysis used to screen a sample for the presence of drugs and usually only the class of drug rather than a specific drug is identified.
  - a. Non-instrument quick test: it does not require instrumentation and can be carried out at site of care with simple technique. Usually the result is available within 20 minutes. However, reliability is not guaranteed because usually there is no internal quality control in individual test units.
  - b. Instrument-based laboratory test: it is done in laboratory using instrument which has regular and stringent quality control. Therefore, it produces more reliable result than a quick test.
- (2) Confirmation test: a follow-up test, more sensitive and more specific than screening test, to confirm the presence of a drug. When the presence of drug is not validated by the confirmation test, the test is reported as negative.

#### **(IV) Collection of urine**

- (1) Provide a private area for voiding
- (2) Collect urine in a clean container
- (3) Must be supervised to ensure the source
- (4) Check the temperature (should be warm) and colour (usually should be yellowish) of the urine
- (5) Pay attention to the common tricks used by the clients:
  - a. Adding bleach or soap to the specimen
  - b. Scooping water from the commode to dilute the specimen
  - c. Providing urine specimen from drug-free people
  - d. Releasing drug-free urine from a fluid-filled bulb (placed under the arm with a tube leading to the pelvis near genitalia) into the container
  - e. Concealing a plastic tube filled with drug-free urine in vagina, unscrewing cap, and 'urinating' into container
  - f. Puncturing the specimen container with a pin, thus allowing the urine to escape slowly during transport

#### **(V) Storage of urine**

- (1) Specimen should be either used for quick test or sent to laboratory as soon as possible
- (2) If the specimen cannot be sent to laboratory immediately after collection, it should be stored in refrigerator with temperature under 6°C for at most 2 days

**(VI) Points to note in interpretation of results**

- (1) The duration of detectability of each drug: refer to the table in the section of urine assessment
- (2) Cut-off concentration: the concentration of a drug or its metabolites must reach above this level to have positive result. Therefore, negative result may imply either absence of the tested drug or the concentration below this cut-off. The cut-off value for a certain drug is dependent on the sensitivity (detection limit) of the test. The more sensitive the test, the lower the concentration that can be measured.
- (3) Specificity of the test: it is the ability to discriminate between drugs. The more specific the test, the more accurate the determination of specific drug use.
- (4) Common causes of false negative result (the result is negative but actually there is drug present):
  - a. Below cut-off concentration
  - b. Improper storage of specimen
  - c. Dilution of specimen
  - d. Addition of bleach or soap into specimen
  - e. Taking large amount of water before collection of urine
  - f. Faked specimen
- (5) Common causes of false positive result (the result is positive but actually there is no suspected drug present)
  - a. Cross reactivity with other drugs, e.g. Panadeine (a pain-killer containing paracetamol & codeine phosphate) may produce opiate positive result
  - b. Interference from food ingredients, e.g. which contain tetrahydrocannabinoid (THC) may produce cannabis positive result

**(VII) Reasons of using urine as testing body fluid**

- (1) Non-invasive
- (2) Easy to get sufficient quantity
- (3) Higher concentration of drugs and their metabolites than in blood
- (4) Duration of detectability is usually longer than blood
- (5) Most drugs and their metabolites are excreted in the urine

**(VIII) Factors to be considered in choosing a quick test product**

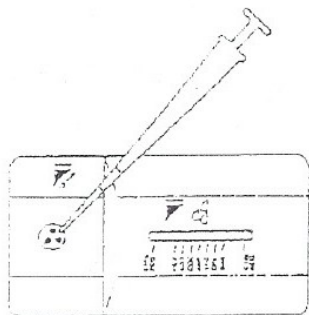
- (1) Sensitivity
- (2) Specificity
- (3) Number of drugs can be detected
- (4) Choice of combination of drugs if multiple drugs can be detected simultaneously in a single testing unit
- (5) Complexity of operation
- (6) Built-in quality control materials in each testing
- (7) Cost

**(IX) Example of a quick test**

### Test Procedure

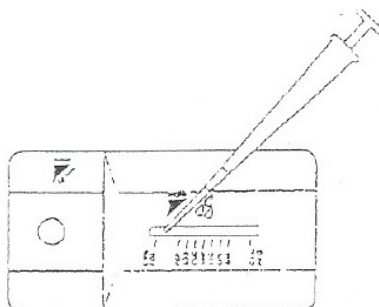
#### STEP 1: Add Sample

Slide the cap from the reaction cup. Using the pipet provided, pipet the urine sample (140µl) into the reaction cup and incubate **10 minutes** at room temperature



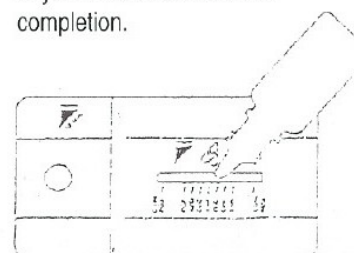
#### STEP 2: Transfer Solution

Using the pipet provided and a clean pipet tip, transfer the reaction mixture from the cup to the point in the Detection Area indicated by the pipet graphic. **Allow the contents to soak through completely.**



#### STEP 3: Wash and Read

As soon as the mixture has soaked through, add 3 drops of Wash Solution onto the center of the detection area. **Allow to soak through completely.** Read the CTRL NEG ZONE, the CTRL POS ZONE and the Drug Detection Zones. Results may be read anytime within 5 minutes of completion.

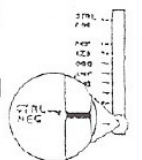


### Interpretation of results

#### STEP 1 READ THE CTRL NEG ZONE

If a color bar appears in the *CTRL NEG* Zone, discard the device and retest the sample using a new device.

If the same results are observed upon repeat analysis, another specimen should be obtained and tested. If the same results are observed upon analysis of the new specimen, contact Biosite Technical Services.

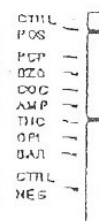


#### STEP 3 READ THE DRUG DETECTION ZONES

##### POSITIVE RESULTS

A sample is positive if a color bar appears in any of the Drug Detection Zones adjacent to the drug names.

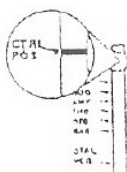
If a color bar appears, the sample is presumed to contain drug at a level equal to or greater than the cut-off concentration for that drug.



#### STEP 2 READ THE CTRL POS ZONE

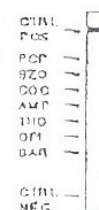
Results are valid if a color bar appears in the *CTRL POS* Zone. If no color bar appears in the *CTRL POS* Zone, discard the device and retest the sample using a new device.

If the same results are observed upon repeat analysis, another specimen should be obtained and retested. If the same results are observed upon analysis of the new specimen, contact Biosite Technical Services.



##### NEGATIVE RESULTS

A sample is negative if no color bar appears in any of the Drug Detection Zones adjacent to the drug names.



**(X) How to read the reports from Government Laboratory**

- (1) Result of drug screening test: only the class of drug instead of specific drug is test. In this report, although opiates is positive but it can't tell whether it is morphine (main metabolite of heroin) or codeine (constituent of some types of cough mixture)

政府化驗所

**Government Laboratory**

Date:

日期:

Lab. No.:  
化驗所編號:

Source Ref.  
送檢部門檔號:

Item for examination: Urine sample  
化驗樣本: 尿液

Officer-in-charge:  
負責人員:

Submitting office:  
送檢部門:

Sampling date:  
取樣日期:

Delivering date:  
送檢日期

**Result of Drug Screening****藥物篩選測試結果**

OPIATES 鴉片類	: Positive : 陽性	METHADONE 美沙酮	: Negative : 陰性
BENZODIAZEPINES 苯二氮草類	: Negative : 陰性	CANNABINOIDS 大麻脂類	: Negative : 陰性
AMPHETAMINES 安非他明類	: Negative : 陰性	KETAMINE 氯胺酮	: Negative : 陰性

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- (2) Result of drug confirmation test: specific drug can be detected. Morphine is positive in this case indicating that the client is likely to abuse heroin. (Heroin is mainly metabolized to morphine)

政府化驗所



Government Laboratory

Date:  
日期：

Lab No.:

化驗所編號：

Source Ref.:

送檢部門檔號：

Item for examination: Urine sample

化驗樣本： 尿液

Officer-in-charge:

負責人員：

Submitting office:

送檢部門：

Sampling date:

取樣日期：

Delivering date:

送檢日期：

**Result of Drug Confirmation****藥物檢定結果**

MORPHINE	: Positive	CODEINE	: Negative
嗎啡	: 陽性	可待因	: 陰性
METHADONE	: Negative	BENZODIAZEPINES	: Negative
美沙酮	: 陰性	苯二氮草類	: 陰性
CANNABINOIDS	: Negative	METHAMPHETAMINE/ AMPHETAMINE	: Negative
大麻脂類	: 陰性	甲基安非他明/安非他明	: 陰性
MDMA	: Negative	KETAMINE	: Negative
3,4 亞甲二氧基甲基安非他明	: 陰性	氯胺酮	: 陰性

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