ORAL FLUID SUB-COMMITTEE DUID SOFT-AAFS

FREQUENTLY ASKED QUESTIONS (FAQ)

1. What are the benefits of testing oral fluid for identifying drugs in driving under the influence of drugs (DUID) cases?

- Rapid, simple, non-invasive and does not require same-sex observed collection
- Specimen can be taken proximate to time of driving following a traffic stop or crash
- No requirement for medical professional to draw blood, eliminating transport time and costs
- Presence of parent drug and/or metabolites likely reflects recent drug use
- Difficult to adulterate the specimen
- Basic drugs concentrate in oral fluid compared to blood
- On-site screening devices are available for use at time of traffic stop or crash

2. What are the limitations of testing oral fluid for identifying drugs in DUID cases?

- Salivation decreases after stimulant, opioid and marijuana use, potentially extending the time required for obtaining adequate specimen volume
- Neutral, amphoteric and acidic drug do not partition well into oral fluid, creating challenges for detection even with supra-therapeutic use (e.g. benzodiazepines and opiates)
- Total oral fluid-elution buffer volume is typically low (~2 - 4mL) and may restrict number of confirmatory tests that can be performed
- Roadside devices do not typically allow confirmation testing of the same specimen that is screened
- Oral fluid testing is not currently common to most forensic laboratories, requiring method development and validation

3. Is oral fluid testing reliable and valid?

- Yes, there are multiple published studies regarding the utility, and reliability (sensitivity, specificity and efficiency) of point of contact (POC) oral fluid drug on-site screening devices and laboratory based confirmatory methods for drugs in oral fluid for DUID, drug treatment, pain management, criminal justice and workplace drug testing applications
- Validated and accepted analytical techniques are utilized for oral fluid testing
- Field based rapid screening devices need to be used according to manufacturers' instructions and operators must be fully trained

4. How long does it take until drugs appear in oral fluid?

- The onset of drug detection in oral fluid is dependent on the route of administration:
    - Drugs which are smoked, inhaled, snorted or taken as edibles appear rapidly in oral fluid because of buccal cavity contamination
    - Drugs that are administered orally in capsules (e.g. dronabinol) generally do not contaminate the oral mucosa, and if they are acidic, neutral or lipophilic may not be readily detectable in oral fluid
    - Drugs administered intravenously (e.g. cocaine) are detected in oral fluid within minutes of injection

5. What is the window of detection?

- The window of detection is dependent on the route of administration, drug dose, drug formulation, history of use, sensitivity of the analytical test method and cut-off concentration
- Typical windows of detection of drugs in oral fluid mirror blood, and are the order of a few hours

6. What concentration of drug in oral fluid is indicative of impairment?

- At this time, it is not possible to correlate a quantitative drug concentration in oral fluid, blood or urine directly to degree of impairment

7. Are oral fluid and blood concentrations equivalent?

- THC is highly lipophilic and does not partition well from blood to oral fluid, but is often detectable soon after smoked administration because of oral cavity deposition
- Oral fluid and blood THC concentrations are not directly correlated immediately after intake; drugs require time to equilibrate within the body; initial oral fluid concentrations are elevated because of oromucosal deposition depending upon the route of administration
- For many drugs, particularly when smoked, vaped or snorted, oral fluid drug concentrations do not predict concurrent blood drug concentrations
- At this time, it is not recommended to estimate drug concentrations in whole blood from oral fluid drug concentrations or vice versa

8. Is passive exposure to cannabis an issue with oral fluid drug testing?

- Possibly; several studies showed THC to be present in the oral fluid of individuals passively exposed to environments with high levels of cannabis smoke

9. After an oral fluid roadside or on-site test, does a second evidential specimen need to be collected?

- Yes. Roadside POC testing devices are immunoassay based, and consequently for forensic purposes require an independent confirmatory test as recommended with any laboratory based immunoassay screening procedure
- Oral fluid roadside drug screening devices can help establish probable cause in DUID cases, but the collection of a second evidentiary specimen is required whenever any adverse consequences for the donor may occur
- Preferably an oral fluid specimen will be collected as the evidential specimen proximate to the time of driving, or suspected impairment, because the rapid decline in drug blood concentrations and the time required to collect a blood specimen can inhibit the ability to obtain a confirmation in a sample collected later in the process
- Confirmation specimens should be collected in appropriate tubes/devices with volume indicators and/or a mechanism for demonstrating when adequate volume has been collected (e.g. color change)
- Specimens should not be left at extreme temperature (e.g. outdoors, vehicle trunks) for an extended period
- It is best practice to collect an oral fluid confirmation specimen by "passive" means as opposed to a stimulated and/or expectorant collection (stimulated and expectorant collection may dilute the drug concentration in oral fluid)

10. Which is the better specimen for DUID: blood, urine or oral fluid?

- Urine is the least preferred specimen for DUID cases because its window of drug detection may greatly exceed the window of drug impairment and generally the parent drug is not detected
- Blood and oral fluid specimens are preferable as both offer the possibility of documenting drug intake proximal to the incident
- Oral fluid offers non-invasive, rapid, observed sampling at the time of the traffic stop or crash

11. Is there a recommended deprivation period before I collect the oral fluid specimen?

- Yes, a 10-minute deprivation period without any food or drink is recommended to reduce the risk of interference from potentially inhibiting substances.

12. What is the stability of drugs in oral fluid?

- Stability depends upon the drug, collection device, elution buffer and storage conditions
- Oral fluid collection device manufacturers should provide specific storage instructions and stability data
- The consumables require proper storage conditions consistent with the manufacturers' recommendations, and timely analysis of oral fluid sample due to instability of some target drugs

13. Should laboratories develop qualitative or quantitative oral fluid confirmation methods?

- Laboratories may elect to develop qualitative methods since there is not a direct correlation between concentrations in oral fluid and blood in most cases due to a variety of factors (e.g. oral cavity contamination from recent use, unknown exact volume of confirmation oral fluid specimen, individual variability in pharmacokinetics and pharmacodynamics)
- Quantitative measurement of drug concentrations for research purposes is essential to developing a better understanding of typical oral fluid drug concentrations in various populations, which in turn helps with the development of screening devices with the appropriate sensitivity

14. Can oral fluid point of contact (POC) testing replace the DRE program?

- No, oral fluid drug testing is a test of drug use not impairment; the result can be used to support the DRE officer's opinion about which drug(s) is/are responsible for the observed impairment
- Oral fluid drug testing is a tool that assists with DRE investigation, providing real time chemical test information that can be used by the officer in questioning the subject about their drug use
- When a DRE officer is not available, officers should perform a standardized field sobriety test battery, followed by the oral fluid POC test; a DRE or toxicologist can later give an opinion about whether the observations in the SFST's are consistent with the drugs detected in the field
- Current oral fluid POC tests do not test for all impairing drug classes, including inhalants, some anticonvulsants, muscle relaxants, antidepressants, antipsychotics and other potentially impairing drugs
- When a field oral fluid test result is negative and there is objective evidence of impairment, a toxicological sample (blood, oral fluid or urine) should be collected and sent to the laboratory for comprehensive analysis

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