



# **Alcohol, Drugs, Medication Testing in the initial Class 1 medical assessment**

Dr. Ries Simons, MD

Chair Advisory Board ESAM

Medical Adviser TNO

## D&A testing initial Class 1 medical: CONs

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The yield of drugs and alcohol testing at the initial Class 1 medical assessment is anticipated to be comparably low to the yield of pre-employment testing of pilots.

US Aviation Industry Drug Testing 2001			
Type Test	Total Tests	Total Positives	Rate %
Random	117,339	694	0.59*
Reasonable Suspicion	288	27	9.4
Post-Accident	460	9	2.0
Pre-Employment	136,862	2,047	1.5

The significance of a negative drugs and alcohol test at the initial Class 1 medical assessment for flight safety is limited because in aircrew members mental problems, including misuse of alcohol, drugs, or medication may evolve during their professional career [Simons & Valk, 2003].



## D&A testing initial Class 1 medical: PROs

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D&A testing at the initial Class 1 medical assessment may be useful to show the applicants the seriousness of regulations concerning use of drugs and/or alcohol by aircrew.

The D&A testing requirement provides an opportunity to educate aircrew on the safety risks of illicit drugs, medication, and alcohol and to stimulate their awareness of the safety consequences of mental health problems and life stress.

## Initial Class 1 applicants should be informed in advance:

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- 1) that there will be a mandatory drugs and alcohol screening during the medical assessment, including method of testing and legal aspects;
- 2) the rationale of testing: what are the risks of drugs and alcohol in terms of flight safety and personal well-being;
- 3) information concerning the use of smart drugs, OTC, and prescription drugs: tell your physician that you are a pilot and that use of medication may be subject to restrictions; always inform the AME about the use of medication; be aware that some medication can impair your flying performance.

4) information about life stresses which can emerge during the pilot career and how these can become mental health problems affecting performance, flight safety, and personal well-being;

5) information about Peer Support Systems: how the system works and how to access the system in case of problematic drugs and alcohol use or mental health problems of yourself or a colleague.



The AME should discuss all these issues in order to provide the applicant with sufficient knowledge to guarantee a basic awareness on the flight safety consequences of drugs, alcohol, medication, and mental health problems at the start of her/his commercial pilot career.

Applicants should know that self-reporting of addiction or mental health problems will improve flight safety; that one can recover from addiction and/or mental health problems; and that self-reporting can be the start of regaining a healthy and safe pilot career.

Pre-requisites for the above approach are sufficiently trained and dedicated AMEs, availability of Peer Support Programmes, and a Just Culture.

## D&A screening: Procedures and Methods



# Procedural Requirements

- Handling of results should be done by impartial, trained Medical Review Officers (MRO) who are independent from the applicant, ensure a proper process, and determine the true positives. MRO could be a member of the AeMC staff, but not the AME assessing Class 1 fitness of the applicant.
- Safeguards for the process should be laid down in rules which are transparent to the applicant e.g. chain of custody, legally secure, robust process, confidentiality.
- Define procedure to be followed in the event of a positive test; the procedure should be in accordance with national law

# Procedural Requirements

- Tests should be carried out by an accredited laboratory using accepted guidelines for procedures.
- Initial screening and confirmation methods must be based on different principles of analytical chemistry or different chromatographic separations.
- Consider data collection with ongoing risk and trend analysis to drive policy and process development.
- Define policy on health promotion and safety management, with focus on prevention and support.

# What is tested ?

- ICAO defines psychoactive substances as alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents
- Several countries use a standard screen: cannabis, amphetamines, methamphetamines, cocaine, opiates, and benzodiazepines.
- Define a standard screen and allow national authorities to add substances to that list of psychoactive substances based on a risk assessment.

Methods are very sensitive:  
 occurrence of false positives is  
 inevitable in a population where the  
 addiction rate is low, such as pilots

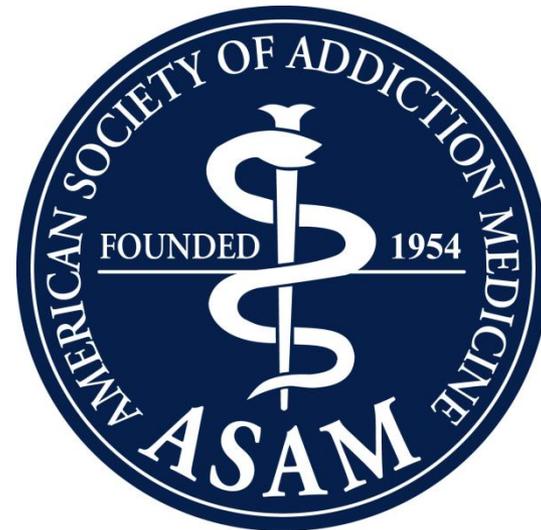
[Markway & Baker, 2011]

**Selected False Positives Reported in UDS<sup>2,3,6</sup>**

Substance	False Positives
Alcohol	Isopropyl alcohol
Amphetamine/ methamphetamine	Amantadine, brompheniramine, bupropion, chlorpromazine, desipramine, dextroamphetamine, ephedrine, isometheptene, labetalol, methylene dioxymethamphetamine, methylphenidate, phentermine, phenylephrine, phenylpropanolamine, promethazine, pseudoephedrine, ranitidine, selegiline, thioridazine, trazodone, trimethobenzamide, trimipramine
Barbiturates	Fenoprofen, ibuprofen, naproxen
Benzodiazepines	Oxaprozin, sertraline
Cannabinoids	Dronabinol, efavirenz, fenoprofen, ibuprofen, naproxen, pantoprazole
Opiates	Dextromethorphan, diphenhydramine, gatifloxacin, ofloxacin, rifampin, verapamil
Methadone	Clomipramine, chlorpromazine, diphenhydramine, doxylamine, quetiapine, thioridazine, verapamil
Phencyclidine	Dextromethorphan, diphenhydramine, doxylamine, ibuprofen, imipramine, ketamine, meperidine, mesoridazine, thioridazine, tramadol, venlafaxine

*Abbreviation: UDS, urine drug screen.*

For testing of hair, oral fluid, or urine the guidelines and cut-off criteria for a positive drug test, as laid down by the European Workplace Drug Testing Society (2015), or the American Society of Addiction Medicine (2013) should be followed.



# Breath tests: Breathalyzer, Intoxilyzer, Alcosensor

Advantage: easy to apply and give instantaneous results.

Disadvantage: only detects use of alcohol within a limited time frame (up to 4-6 hrs) before the assessment. Therefore, breath testing is useful for DWI testing, but it is less suitable for alcohol screening at the initial Class 1 medical assessments.



## Man eats underwear to beat breathalyzer

By D'ARCY RICKARD  
of The Advocate

STETTLE — An 18-year-old Stettler man tried to eat his underwear in the hope that the cotton fabric would absorb alcohol before he took a breathalyzer test, provincial court heard this week.

David Zurfluh was subsequently acquitted of a charge of impaired driving because he blew .08, the legal limit.

But the testimony broke up people in Judge David MacNaughton's provincial court here Thursday afternoon.

Mr. Zurfluh was collared by RCMP Const. Bill Robinson after he ran from his vehicle, which had been seen weaving down the highway.

While sitting in the back of the patrol car, Mr. Zurfluh tried to eat his shorts, Const. Robinson told the court.

Mr. Zurfluh said he ripped the crotch out of his shorts, stuffed the fabric in his mouth and then spit it out.

A class of law students from William E. Hay Composite High, in court as observers,

was removed by the teacher when testimony enlivened the proceedings. The Grade 11 and 12 students had difficulty maintaining composure.

"People were leaving the courtroom with tears in their eyes, trying not to laugh," said RCMP Const. Peter McFarlane.



# Urine Drug Screen

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- The most common and economic test used for identification of drugs.
- Collection facilities should be used for convenience and a team should be hired to focus only on the results.
- A drug screen is not specific, and may create false positives for some painkillers, antibiotics, antihistamines, proton-pump inhibitors, poppy seeds, and some herbal teas.
- A drug screen should be followed by a urine drug test (analysis) in case of positive results.

# Urine Drug Screen

Window of detection from 1 - 2 days (amphetamines) to 3-6 weeks (long acting benzodiazepines).

A major disadvantage of urine tests is that there are many methods for cheating published on the internet.



# Oral fluid - Saliva

Provides a quick and non-invasive specimen for drug testing.

Collection may be hindered by lack of available oral fluid due to physiological factors, including drug use itself (e.g. amphetamine, ecstasy, cannabis, anticholinergic drugs, and antidepressants)

[Drummer, 2006]



# Oral fluid - Saliva

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Less invasive than urine tests and can be randomly administered at any time and at any place.

The disadvantage is that only those drugs that are taken 1 - 48 hours prior to the test can be detected.

The advantage is that in oral tests it is very difficult to tamper with the sample and detection is instantaneous.

# Oral fluid vs. urine testing

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Urine testing has a longer window of detection but oral fluid testing is more aligned with recency of use and therefore, by extrapolation, impairment.

Urine testing is more intrusive and logistically complex

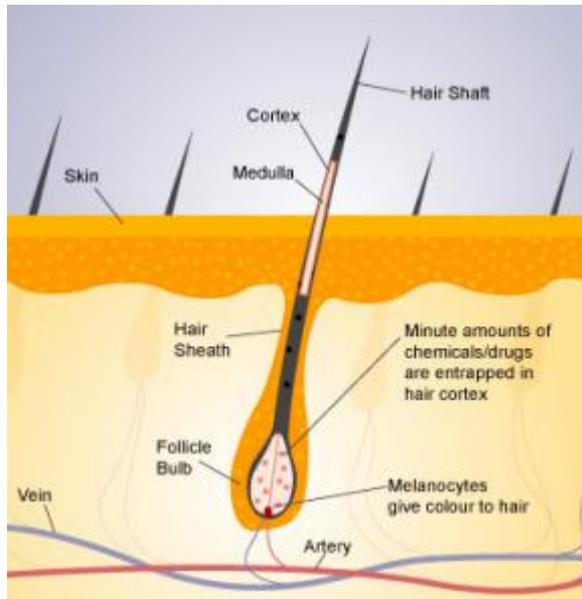
When the aim is to detect and remove impaired persons from the aviation safety sensitive activities: oral fluid testing is recommended

When the aim is to identify persons who may have used a substance at some time in the recent past: urine testing (or hair testing)

# Hair testing

PRO:

- Hair analysis shows a 'history' of drug use due to hair's slow growth
- The standard hair follicle screen covers a period of 30-90 days with hair growing at around 1cm per month, each centimetre can usually identify drugs consumed in 30 days, although certain cosmetic treatments (e.g. dyeing or bleaching hair) can interfere



## Hair - PRO:

- Tampering with the sample is much more difficult than with urine
- Over 30 drugs + alcohol (ethylglucuronide = EtG) can be identified
- Baldness: hair from the nape of the neck can be used as well



## Hair - CON:

- Hair testing is much more expensive than urine or saliva testing (also depending on which drugs/medication are to be analysed)
- Hair testing will not detect drugs used 7-10 days prior to the test
- Turnaround time for results is approximately four to six weeks which can impact on the management of the initial Class 1 assessment

## Hair - Conclusion

- Hair testing seems useful for initial Class 1 or pre-employment testing because it provides a 30-90 days drugs/medication history of the applicant (e.g. antidepressants and tranquillizers can be detected)
- The AME should discuss positive results with the applicant and further steps should be considered
- Cost-Effectiveness very low

**Thanks for your attention**



[simons-aeromed@ziggo.nl](mailto:simons-aeromed@ziggo.nl)



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