

Use of psychoactive substances

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WHICH Psychoactive substances are included in the current EASA Guidelines?

- Alcohol
- Opioids
- Cannabinoids
- Sedatives and hypnotics
- Cocaine and other psychostimulants
- Hallucinogens
- Volatile solvents

Caffeine and tobacco are excluded



WHY do people take drugs?

- To feel good. Alcohol and Drugs can produce intense feelings of pleasure.
- To feel better. Some people who suffer from social anxiety, stress, and depression start using alcohol and/or drugs to try to feel less anxious.
- To do better. Some people feel pressure to improve their focus in school or at work or their abilities in sports.
- Curiosity and social pressure. In this respect, teens are particularly at risk because peer pressure can be very strong.



WHY do people take drugs?

Misuse of alcohol and/or drugs use may be a stand-alone problem, a consequence, cause, or an accompanying symptom of ill mental health [e.g., Kessler et al., 1997; LeardMann et al., 2013].

Identifying a case of problematic alcohol or drugs use is likely to unveil other psychological or psychiatric problems.



Wealth of scientific evidence that use of psychoactive drugs and/or alcohol may cause physical and/or mental health problems and impair cognitive functions, such as Information processing, decision making and problem solving, and may lead to slowing of reaction times, poor coordination, poor concentration, risk taking behaviour or inappropriate action, and mood changes.

All these effects may endanger flight safety



Residual effects of alcohol on cognitive functioning are often potentiated by the effects of poor sleep / sleep apnoea

AUTHOR(S)	EVENING BAC	TYPE OF TASKS	EFFECT ON PERFORMANCE	MEASURED AFTER	BAC%
Morrow et al. (1990)	0.1%	Radio communication	impairment	8 hrs	0
Taylor et al. (1994)	0.08%	ATC communication	impairment	8 hrs	0
Simons & Valk (2003)	0.07%	Tracking & vigilance	impairment	9 hrs	0



Prevalence of harmful or risky alcohol use by aircrew and ATCOs

Available data of random testing, toxicological, and questionnaire survey are not suited to determine the prevalence of alcohol misuse by aviation personnel

National European estimates indicate that between 5 % and 20 % of workers are either dependent on alcohol or at risk of becoming so

[European Monitoring Centre for Drugs and Drug Addiction, 2022].

Approx. 9% of total workforce in the USA struggled with a substance or alcohol use disorder in the past 12 months [National Safety Council, 2021]



Prevalence of harmful or risky alcohol use by aircrew and ATCOs

Netherlands: 6.6% of employed population is a heavy drinker and 15% of the working population are risky drinkers because their drinking behaviour causes problems on the job, they regret their use of alcohol, or have had colleagues recommending them to drink less [Lifestyle Monitor, 2018].

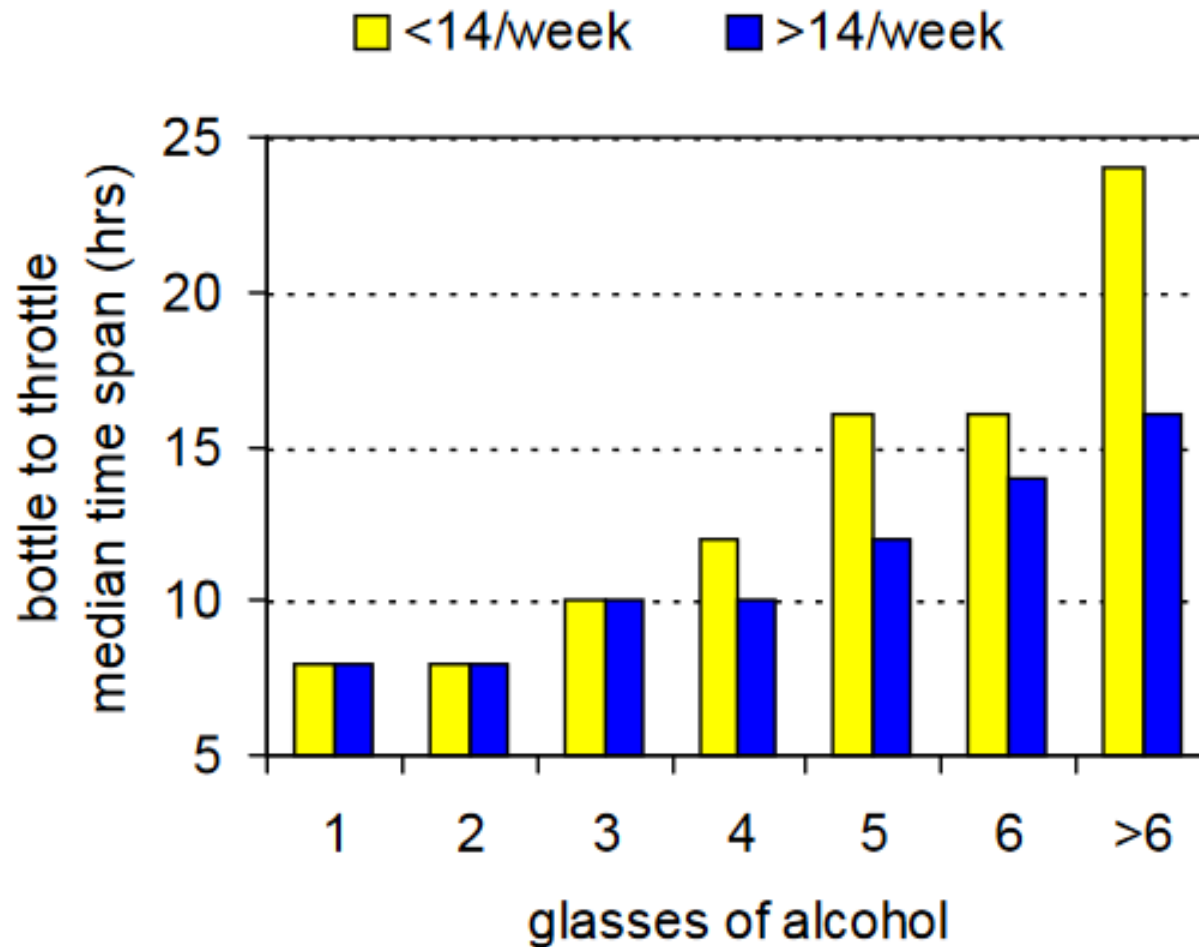
In a survey among Dutch charter pilots, 15.6% of the respondents used more than 14 glasses alcoholic beverage per week - extremes up to 40 drinks/week.

6% experienced adverse effects of night-before alcohol intake on the day of the flight.

[Simons et al., 1999]



Attitudes of Aircrew towards Alcohol use



The more pilots are used to drink, the shorter the bottle to throttle periods they consider to be safe

[Simons & Valk, 2003]

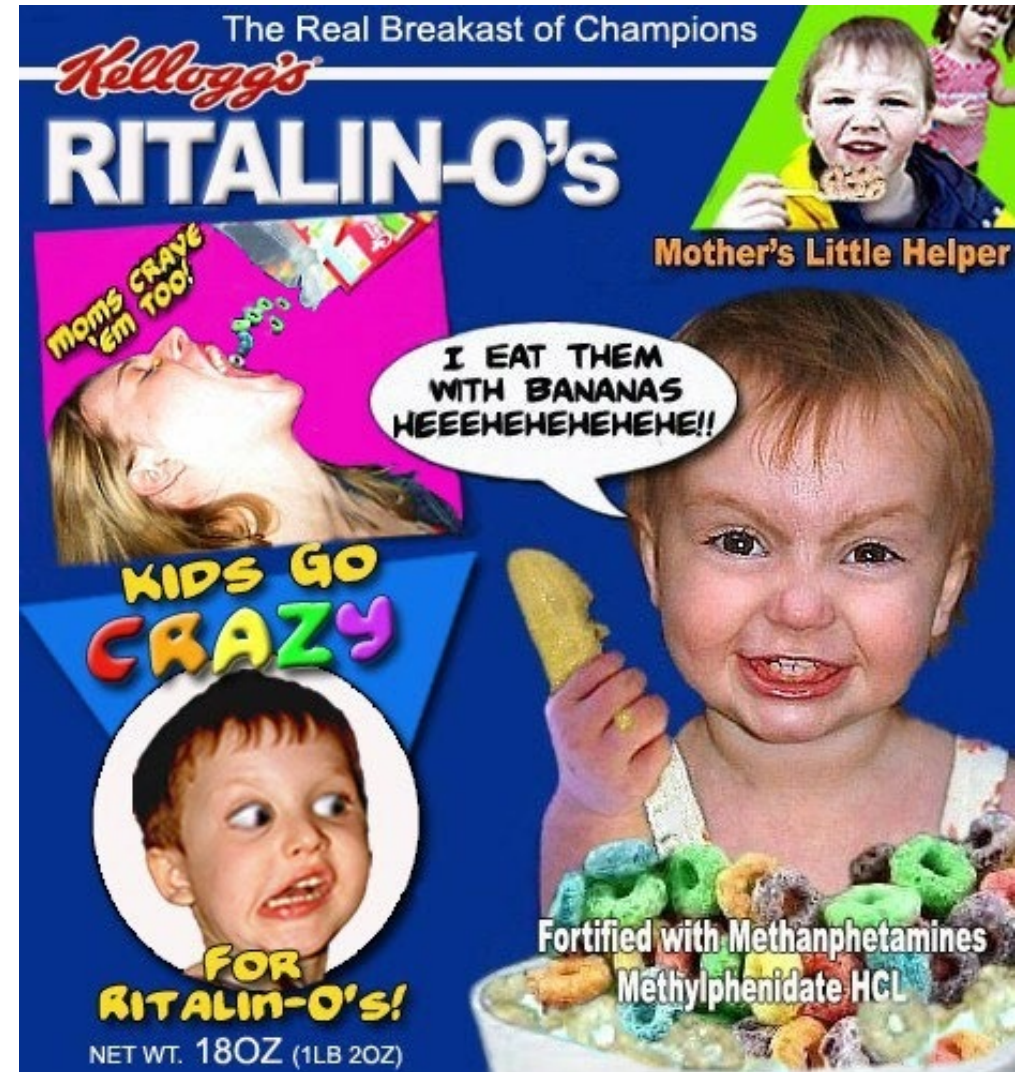


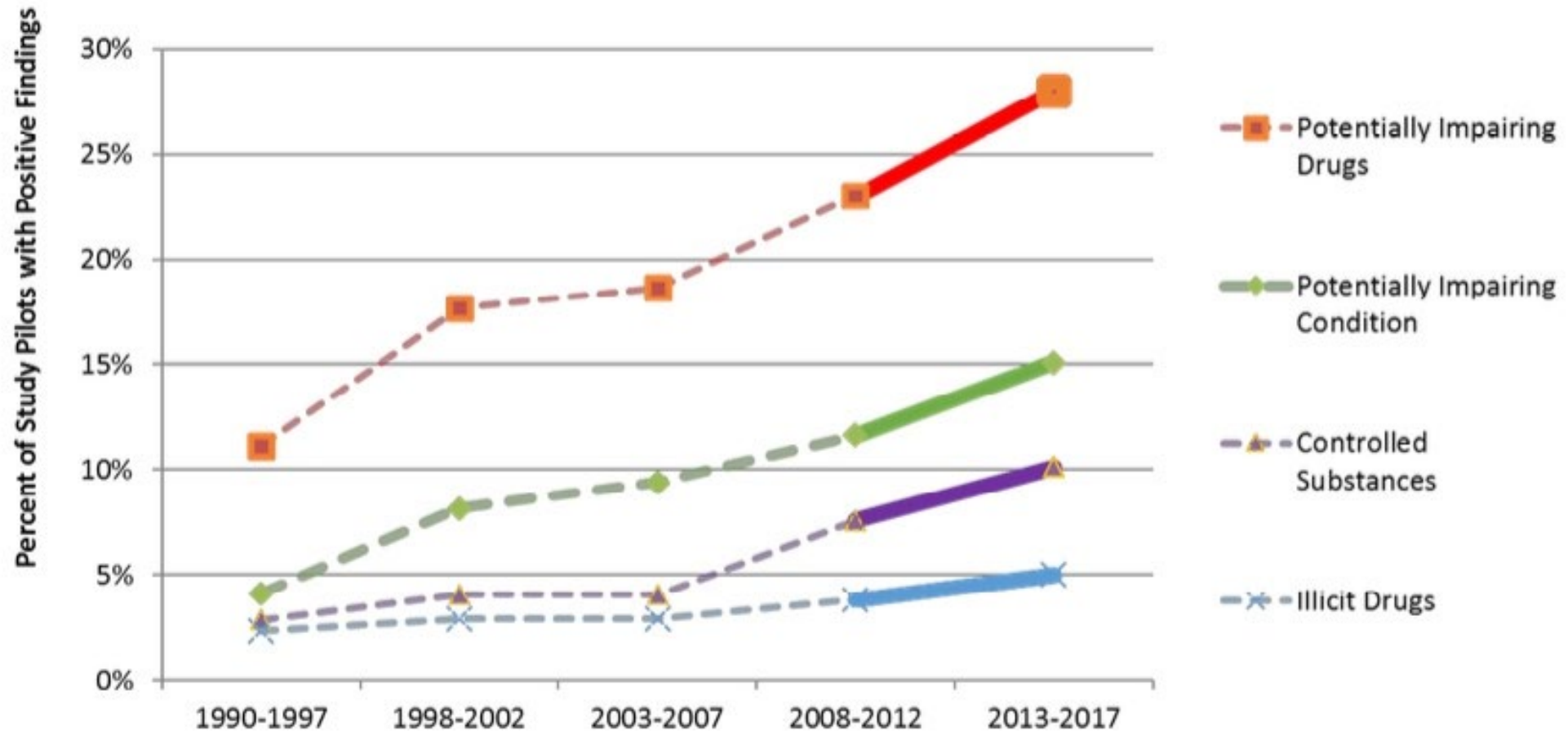
Prevalence of illicit drugs use among aircrew

- Questionnaire surveys: unreliable results
- Consumption of synthetic drugs such as cocaine and ecstasy is widespread at festivals, and in discotheques, nightclubs, and private settings.



- Younger aircrew may have become acquainted with the use of drugs in their youth and may consider drugs as harmless and normal 'additives' to their social life.





Toxicology test results of 952 pilots who were fatally injured in the US between 2013 and 2017 [NTSB, 2020]



Prevalence Drugs Misuse

Prevalence of risky substance use by aircrew and ATCOs is unknown due to a lack of representative data.

European working population aged 18-67 years: estimated lifetime risk 5%
[EMCDDA, 2022].

NL working population aged 18-67 years: cannabis 7.2%; ecstasy (XTC) 4%; cocaine 1.9%; amphetamines 1.5%; ketamine 4%; laughing gas 2.5%,
sedatives/hypnotics 10.2% [Lifestyle Monitor 2018].

Representative for Western-Europe? Prevalence of drugs use by employees differs between countries within Europe due to cultural differences and local availability
[EMCDDA, 2022].



DRUG	EU LAST YEAR USE (# MILLION)	EU LIFETIME USE (# MILLION)	NATIONAL ESTIMATES OF USE IN LAST YEAR SURVEY 2015 - 2020 IN 26 COUNTRIES LOWEST – HIGHEST
Cannabis	7.7% (22.2)	27.3% (78.6)	3.4% (HU) – 22.9% (FR)
Cocaine	1.2% (3.5)	5.0% (14.4)	0.3% (SK) – 5.6% (UK)
MDMA (Ecstasy)	0.9% (2.6)	3.7% (10.6)	0.2% (PT) – 7.7% (NL)
Amphetamines	0.7% (2.0)	3.1% (8.9)	0.0% (PT) – 4.2% (NL)

[EMCDDA, 2022]



'I use Ecstasy only once a week when I have no flying duties in the next 24 hrs' –
is that OK or not OK?

Immediate and long-term effects depend on choice of substance, frequency of use and method of ingestion

Some MDMA tablets contain very high concentrations and may also contain other drugs!

Most effects described in ICAO Manual are acute effects, knowledge on the residual or long-term effects is important in the context of flight safety

Illicit Drugs: Acute and prolonged psychological effects are disqualifying for
flying duties



Trend

- Simultaneous use of different substances is popular.
Popular combinations: alcohol with cannabis, cocaine, or ecstasy, and cannabis with ecstasy. This often leads to potentiation: aggressive behavior after alcohol mixed with cocaine is notorious (and can be fatal).



- Drugs and alcohol screening shall form part of the initial class 1 aero-medical examination.
- Applicants with a mental or behavioural disorder due to use or misuse of alcohol or other psychoactive substances shall be assessed as unfit pending recovery and freedom from psychoactive substance use or misuse and subject to satisfactory psychiatric evaluation after successful treatment.



D&A testing initial Aircrew / ATCO medical

D&A testing at the initial medical assessment may be useful to show the applicants the seriousness of regulations concerning use of drugs and/or alcohol by personnel in safety sensitive jobs.

The D&A testing requirement provides an AME the opportunity to educate pilots and ATCOs on the safety risks of illicit drugs, medication, and alcohol.



The AME should discuss A&D issues 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 pilot career.

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



Tools for Prevention

- Refer to Peer Support or 'anti-skid' teams:
 - identification, counseling by colleague pilots
 - oversight by mental health expert
 - assistance: 'pilots for pilots'



- UDS is the most common and economic test used for identification of drugs.
- A drug screen is very sensitive:
 - occurrence of false positives is inevitable in a population where the addiction rate is low, such as Aircrew and ATCOs
- A drug screen should be followed by a urine drug test (analysis) in case of positive results.
- There are many methods for cheating published on the internet.



- Hair testing is useful for initial pilot/ATCO 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).
- Hair testing is more expensive than UDS or saliva testing.
- The AME should discuss positive results with the applicant and further steps should be considered



How can the Aeromedical Examiner find red flags
for alcohol or drugs misuse in a pilot?



Risk-assessment A & D as part of mandatory medical



APPLICATION FORM FOR AN AVIATION MEDICAL CERTIFICATE

Complete this page fully and in block capitals - Refer to [instructions](#) pages for details.

	YES	NO
119 Alcohol/drug/substance abuse		X

(31) Declaration: I hereby declare that I have carefully considered the statements made above and to the best of my belief they are complete and correct and that I have not withheld any relevant information or made any misleading statements. I understand that if I have made any false or misleading statements in connection with this application, or fail to release the supporting medical information, the Licensing Authority may refuse to grant me a medical certificate or may withdraw any medical certificate granted.



Questionnaires?

All available questionnaires are designed and validated for clinical use among patients who visit a health care facility to seek help.

In contrast with patients, pilots and ATCOs do not seek help when they visit the AME for their mandatory medical screening.

Validity of questionnaires developed for screening of alcohol misuse or use of drugs varies with the target group for whom the questionnaire was developed, the aim of the questionnaire, the cut-off points used, and the classification of misuse that is used.



Questionnaires?

Questionnaires that are potentially suitable to be used for routine aeromedical screening of pilots/ATCOs by AMEs should be highly sensitive addressing essential questions that could lead to identifying “Red Flags”



CAGE Questions for Alcohol Use

Have you ever felt you needed to Cut down on your drinking?

No 0

Yes +1

Have people Annoyed you by criticizing your drinking?

No 0

Yes +1

Have you ever felt Guilty about drinking?

No 0

Yes +1

Have you ever felt you needed a drink first thing in the morning (Eye-opener) to steady your nerves or to get rid of a hangover?

No 0

Yes +1

Score ≥ 2 is considered clinically significant

For AMEs: score of 1 is red flag



Alcohol Use Disorders Identification Test: AUDIT 1-3 (EU)

QUESTIONS	SCORING SYSTEM					
	0	1	2	3	4	Score
How often do you have a drink containing alcohol?	Never	Monthly or less	2 to 4 times per month	2 to 3 times per week	4 times or more per week	
How many units of alcohol do you drink on a typical day when you are drinking?	0 to 2	3 to 4	5 to 6	7 to 9	10 or more	
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	



NIDA Quick Screen (National Institute on Drug Abuse, 2020)

Combines a single alcohol screen and single drug screen

Question: In the past year, how often have you used

- 5 or more drinks a day (for men) / 4 or more drinks a day (women)?
- prescription drugs for non-medical reasons?
- illegal drugs?

Answer: Never / Once or Twice / Monthly / Weekly / Daily or almost daily

In case of suspicion: in-depth assessment of alcohol- or drug-related problems should be carried out and biochemical testing should be considered

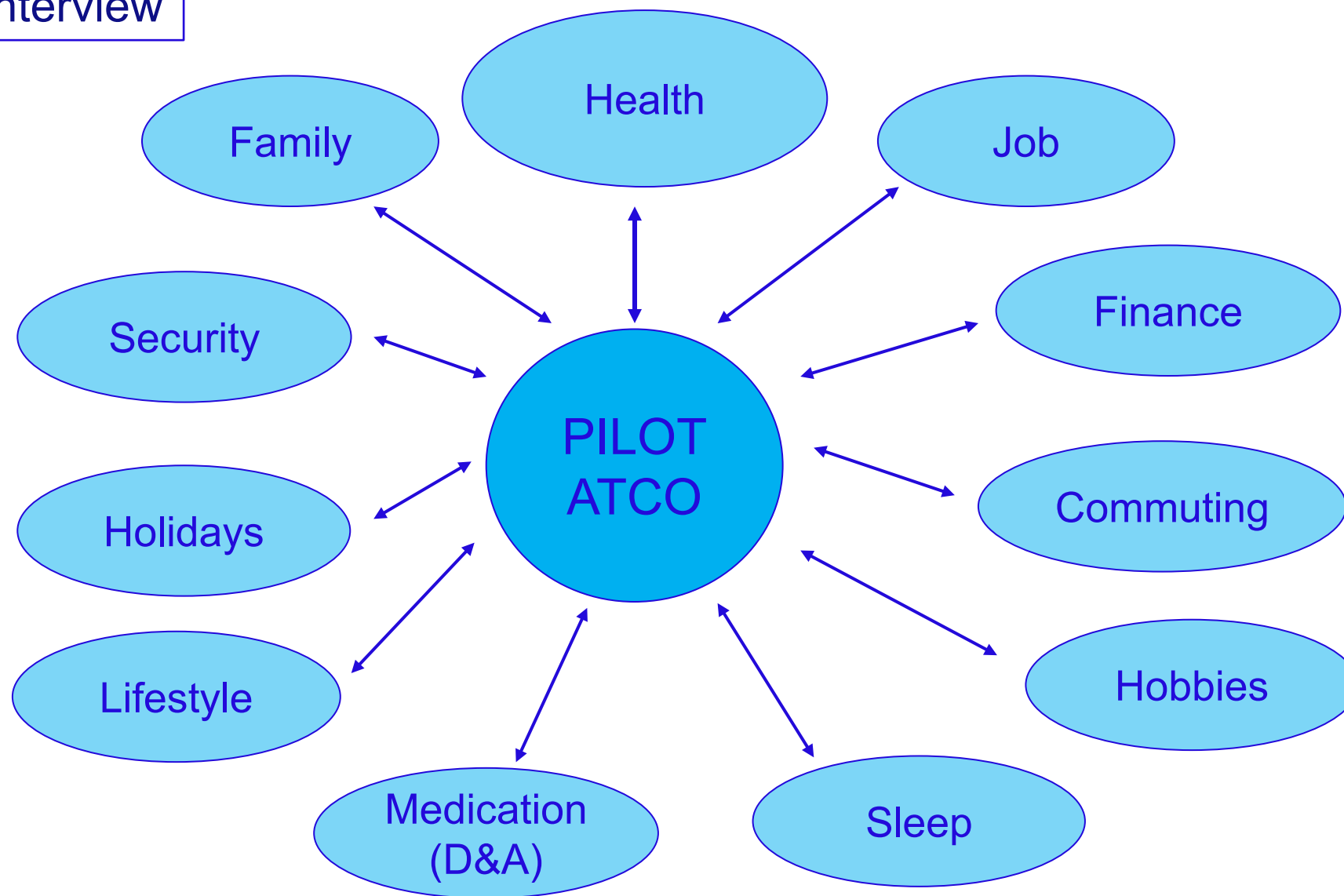


Questions have very limited value when asked as part of a paper/pencil or electronic mental health questionnaire because pilots and ATCOs will know what they should answer to be declared fit.

AMEs are advised to use the questions provided by the available questionnaires and “wave them in” into the conversation with the pilot during the aeromedical examination as part of a general health promotion discussion that addresses a variety of health issues, such as mood, quality of sleep, current sources of stress, stress coping abilities, and alcohol and/or substance use.



The AME Interview



[adapted from Hudson & Herbert, 2017]

Biochemical Tests in case of suspicion

- Combination of Gamma-GT + Carbohydrate Deficient Transferrin (CDT) provides evidence for chronic excessive alcohol consumption. Use formula $[0.8 \times \ln(\text{GGT})] + [1.3 \times \ln(\% \text{CDT})]$
- Urine Ethyl Glucuronide (EtG)
- PEth: Phosphatidylethanol in whole blood or dry blood spot (DBS). Considered as specific for binge drinking during the past 2–4 weeks.
- Urine Drug Screen



Disorders due to alcohol or other psychoactive substance(s) use or misuse

(iii) A fit assessment may be considered after a period of two years of documented sobriety or freedom from psychoactive substance use or misuse.

At revalidation or renewal, a fit assessment may be considered earlier with an OML.

✓ Be aware of possible relapse: Regular / Random testing



Recommendation

Make use of smart drugs and medication discussible and give guidance

In case of (occasional) use of smart drugs to improve performance or to feel better:

- discuss how one can cope without drugs and consider referral to
Peer Support / Anti-Skid Programme



If commercial pilots use performance enhancing drugs or hypnotics to try and cope with the demands of their job, a thorough evaluation of these job demands and alternative coping strategies is needed



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MESAFE - D-3.1 - Report on the analysis of the suitability of screening and confirmation tests

<https://www.easa.europa.eu/en/research-projects/mesafe-mental-health>

Thank you for your attention!

