DOCUMENT
GSM-G-CPL.021

DOCUMENT TITLE

HUMAN PERFORMANCE AND LIMITATIONS

CHAPTER 7 – DRUGS AND ALCOHOL

Version 2.0
October 2017

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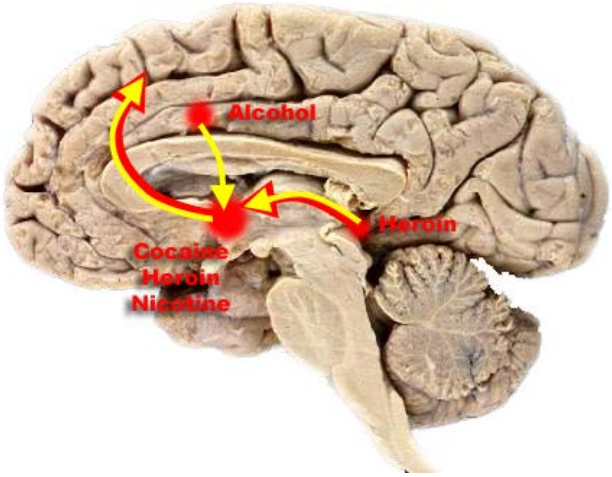
DRUGS, ALCOHOL AND ADDICTIONS

7.1 Introduction

Research on eating disorders has shown that there are similarities between many cases of eating disorders and addictive conditions such as alcoholism and drug addiction. The human brain has special reward centres, which are normally activated when a person feels well, take care of the body, behaves sensibly, is praised, is in love, exercises, etc.



Activation of the reward pathway of addictive drugs

It is also possible to stimulate these reward centres by artificial means. Drugs of all kinds, forbidden and permitted, produce chemical stimulation, which is an important part of the cause of addiction. Stimulation also blocks unpleasant feelings and therefore those with eating disorders, as well as those with other addictive disorders, may use them to block unbearable feelings.

Normal people get their stimulation of the reward centre by doing good things. However, if the reward centre is stimulated by drugs, alcohol or abuse of food, they cease to function in the way they should. Incorrect usage of the reward centres is especially common with people who have a personality requiring a lot of reward effects in order for them to feel well, and also have worry and stress, which can be reduced by drugs.

7.2 Smoking

A smoker is addicted to, or physically dependent on, nicotine. Nicotine stimulates the central nervous system and reduces sensations of fatigue. However, withdrawal occurs within about 20 minutes, sometimes showing as irritability, aggression and hostility.

Oxygen is transported around the body by the haemoglobin in the blood. However, **the haemoglobin has a greater affinity for carbon monoxide than oxygen** and in a smoker the haemoglobin will be carrying a reduced level of oxygen. The maximum blood oxygen concentration for a smoker is about 90% because about 10% of the haemoglobin is taken up by carbon monoxide, thus any increase in altitude will result in a more rapid onset of hypoxia.

The smoker's physiology is therefore equivalent to that of a non-smoker at several thousand feet.

Smoking also reduces night vision as the eyes are very dependent on oxygen.

Smoking narrows the blood vessels of the brain and heart, causes shortness of breath and increase the risk of respiratory infections, bronchitis, heart attacks and strokes. It also increases the risk of cancer of the lungs, mouth, bladder, kidney and cervix.

7.3 Alcohol

Alcohol, or more correctly called ethanol, is a potent central nervous system depressant, with a wide range of side effects that will severely prejudice a pilot's ability to perform properly.

The amount and circumstances of consumption play a large part in determining the extent of intoxication, e.g. consuming alcohol after a heavy meal is less likely to produce visible signs of intoxication than consumption on an empty stomach. Hydration (drinking water) also plays a role, as it may reduce the extent of a hangover. The concentration of alcohol in the blood is usually measured in terms of the blood alcohol content.

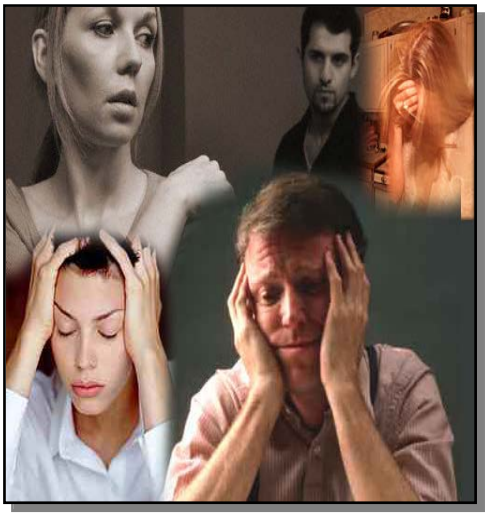
Alcohol has a biphasic effect on the body, which is to say that its effects change over time. Initially, alcohol generally produces feelings of relaxation and cheerfulness, but further consumption can lead to blurred vision and substantial coordination problems.

Cell membranes are highly permeable to alcohol, so once alcohol is in the bloodstream it can diffuse into nearly every biological tissue of the body.

- Alcohol will change the specific gravity of the endolymph fluid in the semicircular canals of the ears, affecting balance.
- Alcohol will severely affect performance.
- Alcohol will severely affect judgement.
- Alcohol will severely affect abilities.

It takes time for the body to remove alcohol. Sleep will not speed up the removal process— in fact it will slow it down. Black coffee doesn't help. Exercise might, slightly.

Alcohol is a high-calorie drug with no nutritional value, causing the appetite of the abuser to be dramatically reduced and in turn often leads to malnutrition.



The long-term effect of alcohol can include:

- Increased risk of cancer
- Chronic fatigue (tiredness)
- Over sensitivity
- Depression
- Lowered feelings of worth
- Impaired reasoning and judgement
- Gradual personality degradation
- Inappropriate behaviour
- Family degradation
- Brain damage
- Damage to the liver and kidneys.

For people who have excessive drinking patterns, the picture is unpleasant: The body only absorbs around 5–10% of alcohol consumed, the liver assimilates the remainder and over time heavy drinkers have a 1 in 10 chance of developing liver disease.

Hangovers are multi-causal. Ethanol (the form of alcohol in drinks) has a dehydrating effect by causing increased urine production (such substances are known as diuretics), which causes headaches, dry mouth, and lethargy.

Dehydration causes the brain to shrink away from the skull slightly, but these dehydration symptoms can be mitigated slightly by drinking water after consumption of alcohol.

Alcohol's effect on the stomach lining can result in nausea. Another factor contributing to a hangover are the products resulting from the breakdown of ethanol by the liver enzymes. For example, ethanol is converted by a liver enzyme to acetaldehyde, which is mildly toxic, contributing to hangover.

An alcohol hangover is associated with a variety of symptoms that may include dehydration, fatigue, headache, nausea, vomiting, diarrhea, weakness, elevated body temperature, hyper salivation (drooling or dribbling), difficulty concentrating, anxiety, irritability, sensitivity to light and noise, erratic motor functions and trouble sleeping. Judgment, comprehension and attention to detail will all suffer, as will co-ordination and reaction times. Many people will also be repulsed by the thought or taste of alcohol during a hangover. The symptoms vary from person to person, and occasion to occasion.

All of the above symptoms will have significant adverse effects on a pilot's performance.

Quite simply, the more alcohol that is consumed over a given time—the greater the degree of hangover and the longer time that will be required to recover.

There is debate about whether a hangover might be prevented or at least mitigated. There is currently no known proven mechanism for making oneself sober, short of waiting for the body to metabolize ingested alcohol, which occurs via oxidation through the liver.

A literature review in British Medical Journal on hangover cures concludes: "No compelling evidence exists to suggest that any conventional or complementary intervention is effective for preventing or treating alcohol hangover. The most effective way to avoid the symptoms of alcohol induced hangover is to practice moderation".

Aviation law (CAR256 (3) contains the well known 'eight hours bottle-to-throttle' rule. However, careful interpretation is required. The Regulation also refers to 'preparation for flight', which would include actions such as daily inspections or flight planning.
So, in practical terms, more than eight hours abstinence is required before the actual departure, the actual time will depend on the amount of pre-flight preparation. In a practical sense, it is 'eight hours from bottle to reporting for duty'.
CAR 256 (2) also states that a person cannot act as a crew member if, after consuming alcohol (or any other medical preparation), his or her capacity to act is impaired. Therefore, a person must be clear of alcohol before flight and the eight hours must be regarded as a minimum time. You cannot legally perform a pilot's duties until all symptoms of alcohol have left the body.

Traces of alcohol can be found in the body up to 14 hours after moderate consumption, and much longer in the case of heavy consumption.

Blood Alcohol Level: BAL

Measured as milligrams per 100 ml

Maximum recommended intake:

Scientists disagree over what constitutes a safe level of alcohol consumption. However more than the following recommendation is considered harmful:

- **Females 14 to 21 standard drinks per week**
- **Males 21 to 28 standard drinks per week**
- **(A standard drink contains 10gm alcohol)**

Removal rate:

- Cannot be increased, but absorption can be slowed by food in the stomach.
- Varies between individuals
- BAC falls at 10–15gm/hr (1hr/std drink), or 0.01% per hour
- Slower at altitude
- Black coffee and sleep will not help, exercise might.

7.3.1 Safe Level of Alcohol Consumption

It's difficult to set safe drinking levels for everybody. Some scientists say that there is **no** safe level. The risks increase with the amount you drink. Here are some general guidelines for regular drinking:

7.3.1.1 Number of Standard Drinks per Day

Health Risk	Men	Women
Low	**1-4**	**1-3**
Hazardous	**5-6**	**4-5**
Harmful	**over 6**	**over 4**

Restricting heavy drinking to just a couple of days a week, or 'binge' drinking occasionally, may place you in the harmful health risk category.

7.3.1.2 What is a Standard Drink?

Drinks vary in strength. Following is a list of 'standard drinks'. These are served in hotels and restaurants in South Australia and contain about 10gm of alcohol, which gives a **BAL of 0.01% to 0.02%, depending upon a number of factors** (i.e. age and weight of the subject, gender, whether fatigued, whether ill or healthy, whether he/she has eaten recently).

Care should be taken as drinks served at home are usually not a standard size.

7.3.2 Alcohol Content

A **'standard drink'** contains about **10 gm** of alcohol. Examples of standard drinks are:

- Low Alcohol Beer **425 ml**
- Ordinary Beer **285 ml**
- Wine Cooler **285 ml**
- Mixed Drinks (30ml spirit + mixer) **30 ml**
- Wine (small glass) **120 ml**
- Fortified Wine (port, sherry) **60 ml**
- Spirits, Liqueurs. **30 ml**

- One standard drink will result in a blood alcohol level of 0.01% to 0.02%.
- **BAL will peak one hour after the last drink has been consumed**. It takes this time to be absorbed from the stomach into the circulatory system.

- **It takes approximately one hour for the liver to metabolise 0.01% BAL**
- **When is it safe to fly after drinking? Depends wholly on how much you have had to drink!**
- **Alcohol may still be found in the blood up to 14 hours after the last drink.**
- **Alcohol may be found in brain cells up to 24 hours after drinking.**

7.3.3 Common misconceptions regarding alcohol use

Fiction	Fact
Alcohol is a stimulant.	Alcohol is actually a nervous system depressant.
You can always detect alcohol on the breath of a person who has been drinking.	It is not always possible to detect the alcohol. Some individuals successfully cover alcohol abuse for years.
Alcohol can help a person sleep more soundly.	Alcohol may actually interfere with sound sleep.
Impaired judgement does not occur before there are obvious signs of intoxication.	In fact, impaired judgment can occur long before motor signs of intoxication are apparent.
The individual will get more intoxicated by "mixing' liquors than by taking comparable amounts of one kind (e.g. bourbon, Scotch, or vodka).	It is the actual amount of alcohol in the bloodstream rather than the mix that determines intoxication.
Drinking several cups of coffee can counteract the effects of alcohol and enable the drinker to "sober up."	Drinking coffee does not affect the level of intoxication.
Exercise or a cold shower helps speed up the metabolism to get rid of alcohol.	Exercise and cold showers are futile efforts at decreasing alcohol in the metabolism.
One cannot become an alcoholic by drinking just beer.	One can consume a considerable amount of alcohol by drinking beer. It is, of course, the amount of alcohol that determines whether one becomes an alcoholic.
Alcohol is far less dangerous than marijuana.	There are considerably more individuals in treatment programmes for alcohol problems than for marijuana abuse.

The physiological withdrawal reaction from heroin is considered more dangerous than is withdrawal from alcohol.	The physiological symptoms accompanying withdrawal from heroin are no more frightening or traumatic to the individual than alcohol withdrawal.

7.3.4 Causes of alcohol abuse

Alcohol dependency can be either physical or psychological. Physically, alcohol causes cell metabolism to adapt to alcohol and therefore have a strong need for it. This may even be genetically passed to children, who have a high disposition to alcoholism.

Very often however, addiction is as a result of psychological factors such as stress, marital problems and peer pressure. Although most people experience these stressors and other problems, not all become alcoholics. Studies done have shown that certain personality types have a higher disposition to alcohol abuse than others. They have shown that depressive and anti-social personality types have the strongest pre-disposition to alcohol abuse.

7.3.5 Treatment

The most crucial part of the "cure" for alcohol abuse is the alcoholic admitting to a problem. Once this is achieved, treatment usually comes in the form of chemicals and therapy.

It is important to note: "once an alcoholic, always an alcoholic". The urge to drink may always be present, even for "rehabilitated alcoholics". **Never force anyone to take a drink if they have declined!**

7.4 Drugs

If we recognise the need for a pilot to maintain the highest possible state of readiness to do his job safely and efficiently, it is clear that anything that impedes that readiness is unacceptable in a professional aviation environment.

While it might be necessary to take medication for a specific medical condition, should that medication result in any reduction in the pilot's state of readiness, the use of that drug is unacceptable.

All medication will affect the body—not just the part that needs to be cured, but there could be side effects that cause problems in other areas of the body. These side effects may be incompatible with flying

We are talking not just about drugs used for legitimate medical reasons, but with the growing use of 'recreational' drugs, and in particular the psychoactive (both illicit and non-illicit) substances.

7.4.1 Psychoactive Drugs

No

A **psychoactive drug** or **psychotropic substance** is a chemical substance that acts primarily upon the central nervous system where it alters brain function, resulting in temporary changes in perception, mood, consciousness and behavior. These drugs may be used recreationally to purposefully alter one's consciousness.

Because psychoactive substances affect the brain and bring about subjective changes in mood, behavior and perception the user may find favorable, many psychoactive substances that may have been legitimately prescribed by a doctor, are often abused, that is, used outside of the guidance of a medical professional and for reasons other than what they were originally intended for. With sustained use, physical dependence may develop, making the cycle of abuse even more difficult to interrupt.

The simple statement for a pilot is: If it affects our brain, we do not use it—EVER!

7.4.2 Substance Abuse

Substance abuse refers to the use of any substance, legal or illegal, when that use is causing detriment to the individual's physical health or causes the user legal, social, financial or other problems including endangering their lives or the lives of others. The substance could be used in any manner of ways such as sniffing, inhaling, swallowing, drinking, smoking or injecting.

7.4.3 Cannabis (marijuana, ganja)

Cannabis has a broad spectrum of possible cognitive, behavioural, or perceptual effects, the occurrence of which varies from user to user. Some of these are the intended effect desired by users, some may be considered desirable depending on the situation, and others are generally considered undesirable. The general effects of Cannabis include many mind-altering states.

Some effects include, but are not limited to:

- Impairment of short-term memory in some users
- Sound or visual hallucinations
- Induced sense of novelty
- Increased or decreased sexual pleasure
- Initial stimulation and wakefulness followed by fatigue, drowsiness and lassitude
- Varying degree of euphoria, ranging from feelings of general well-being to lengthy, pointless laughter
- Varying amounts of paranoia and anxiety
- Happiness (aka bliss).

7.4.4 Amphetamines

Amphetamines do have many legitimate medical uses. At therapeutic levels these effects could include control of appetite, increased stamina and physical energy, and increased sexual drive/response. When the drug is abused in the short-term, effects could include involuntary bodily movements, excessive sweating, hyperactivity, jitteriness, nausea, itchy, blotchy or greasy skin, irregular heart rate, hypertension, and headaches. Fatigue can often follow the dose's period of effectiveness.

Long-term abuse or overdose effects can include tremor, restlessness, changed sleep patterns, anxiety and increase in pre-existing anxiety, poor skin condition, gastrointestinal narrowing, weakened immune system, erectile dysfunction, heart problems, stroke, and liver, kidney and lung damage.

There are also many psychological effects of amphetamines:

- Short-term psychological effects of the drug at therapeutic levels could include alertness, euphoria, increased concentration, rapid talking, increased confidence, and increased social responsiveness. Effects of the drug when abused could include, nystagmus (eye wiggles), hallucinations, and loss of REM sleep the night after use.
- Long-term amphetamine abuse can induce psychological effects that include insomnia, mental states resembling schizophrenia, aggressiveness (not associated with schizophrenia), addiction or dependence with accompanying withdrawal symptoms, irritability, confusion, and panic.

7.4.5 Opium

Opium is a narcotic formed from the sap released by lacerating the immature seed pods of opium poppies. It contains up to 16% morphine, which is often processed chemically to produce heroin for the illegal drugs market.

7.4.6 Codeine

Codeine is a common medication used for moderate to severe pain, coughs, diarrhoea and irritable bowel syndrome. Codeine is an opioid, i.e. extracted from opium.

Common adverse drug reactions include itching, nausea, vomiting, drowsiness, dry mouth, lack of sexual drive and urinary retention and constipation. A potentially serious adverse drug reaction as with other opioids is respiratory depression.

Some people may also have an allergic reaction to codeine, which may cause severe allergic reactions such as the swelling of skin and rashes.

Codeine is often used as a recreational drug. This is mainly due to its easy availability over the counter or on prescription. People use it in order to obtain the euphoric effects associated with use of opioids.

7.4.7 Sedatives, Tranquillizers and Anti-Depressants

No

A sedative is a substance that depresses the central nervous system (CNS), resulting in calmness, relaxation, reduction of anxiety, sleepiness, and slowed breathing, as well as slurred speech, staggering gait, poor judgment, and slow, uncertain reflexes.

Sedatives may be referred to as tranquilizers, anti-depressants, anxiolytics, soporifics, sleeping pills, downers, or sedative-hypnotics. Sedatives can be abused to produce an overly-calming effect (alcohol being the classic and most common sedating drug). At high doses or when they are abused, many of these drugs can cause unconsciousness and even death.

All sedatives can be abused, but barbiturates and benzodiazepines are responsible for most of the problems with sedative abuse due to their widespread "recreational" or non-medical use. People who have difficulty dealing with stress, anxiety or sleeplessness may overuse or become dependent on sedatives.

Heroin users take them either to supplement their drug or to substitute for it. Stimulant users frequently take sedatives to calm excessive jitteriness. Others take sedatives recreationally to relax and forget their worries.

These drugs slow down reaction times, and allow the individual to take a more relaxed and casual attitude to all things, and do not relate well to aircrew duties. Your DAME's opinion must be sought regarding the use of these drugs whilst flying.

Sedatives and alcohol are sometimes combined recreationally or carelessly. Since alcohol is a strong depressant that slows brain function and depresses respiration, the two substances compound each other's actions synergistically and this combination can prove fatal.

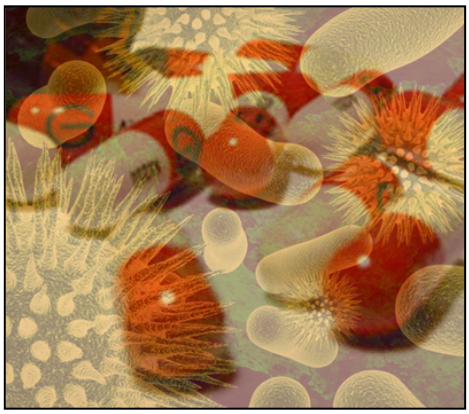
7.4.8 Antibiotics

An antibiotic is a chemical compound that inhibits or abolishes the growth of certain microorganisms in the body. Antibiotics are used widely by the medical community.

The most commonly prescribed groups of antibiotics are penicillin and its derivatives and the erythromycins. Most find that they can take a course of antibiotics without the drug having any effect on their well being, or their ability to work.

The most important problem when antibiotics are being used by pilots is the underlying illness, which has required their use, and whether this illness impacts on their ability to fly safely.

If the problem is such that it does not cause incapacity of any sort and provided the first dose of antibiotic is not taken on a flying day, then these drugs may be compatible with flying.



Common forms of antibiotic misuse include failure to take the entire prescribed course of the antibiotic, or failure to rest for sufficient recovery time to allow clearance of the drug from the infecting organ.

Misuse of antibiotics may result in the development of bacterial populations with antibiotic resistance. Inappropriate antibiotic treatment is another common form of antibiotic misuse. A common example is the use of antibacterial antibiotics to treat viral infections such as the common cold.

7.4.9 Aspirin

A few decades ago, aspirin was the most commonly used analgesic (pain killer). However, it was found that aspirin could cause stomach upsets, nausea, internal bleeding of the stomach and gastrointestinal tract and liver or kidney problems. It may also cause difficulty in controlling external bleeding. (Aspirin is often used to 'thin' the blood of people with heart problems.)

Paracetamol is now commonly used instead of aspirin.

7.4.10 Antihistamines

An antihistamine is a medication which reduces or eliminates the effects caused by a histamine, which is an often undesirable chemical released within the body during allergic reactions. These drugs are prescribed for allergic symptoms, commonly for hay fever. Many over the counter preparations for the common cold also contain an antihistamine. Many antihistamines cause **drowsiness**, although some are now available that are supposedly 'drowsiness free'.

Professional advice should be sought before any drug containing antihistamines is taken by a pilot.

The common adverse effects noted for antihistamines are listed in the table below. The most common are highlighted in **red** print.

RECOGNISED SIDE EFFECTS OF ANTIHISTAMINES (In susceptible individuals)			
Drowsiness Fatigue Dry mouth Headaches Muscle twitching Rapid heart rate Tremor Insomnia Hypertension Delirium	Chills Weakness Anorexia Impaired judgment Hypertension Nasal stiffness Hypoglycaemia Irritability Euphoria Double vision	Confusion Delusions Hysteria Paralysis Neuritis Tinnitus Blurred vision Dilated pupils Vertigo Sugar in urine	Heartburn Nausea Constipation Nightmares EKG changes Hypotension Dermatitis Anaemia

7.4.11 Sleeping Drugs

No

Sleeping drugs are also known as **Hypnotics.** From time to time, individuals may go through sleeping difficulties and it is not uncommon to have sleeping drugs prescribed. Many of the older sleeping drugs remain in the body and have a residual effect well into the next day. This situation is not compatible with aircrew duties.

Fortunately there are newer drugs which have a very short half-life and the effects of these drugs will have diminished significantly within 8 hours. These drugs are short acting **benzodiazepines** such as Temazepam and Triazolam.

Sleeping drugs should not be relied upon for sleep on a long-term basis. **It is not advisable to take sleeping tablets within 24 hrs of flying.**

Again, it is essential that pilots seek professional medical advice before taking these preparations.

7.4.12 Stimulants

Most stimulants are now not available either over the counter, or on prescription. This is because despite keeping the individual awake, they effect the decision making process, causing over confidence, tremors, anxiety, and in some cases bizarre hallucinations. Their use is not compatible with aircrew duties.

7.4.13 Antihypertensive Drugs

These drugs are used in the control of blood pressure do not usually cause any problems, or affect an individual's performance. It would be advisable to confirm with a DAME that the use of a particular drug would be compatible with flying duties. However, these drugs generally have few side effects and are quite compatible with flying.

7.4.14 Nasal Decongestants

Nasal congestion is the blockage of the nasal passages usually due to membranes lining the nose becoming swollen from inflamed blood vessels. It is also known as **blocked nose**, **runny nose** and **stuffy nose**.

A cause of nasal congestion may also be due to an allergic reaction caused by hay fever, so avoiding allergens is a common remedy if an allergic reaction is diagnosed.

A **decongestant** is a broad class of medications used to relieve nasal congestion. Generally, they work by reducing swelling of the mucous membranes in the nasal passages.

Antihistamines and decongestants can provide significant symptom relief although they do not cure the underlying hay fever. Antihistamines may be given continuously during pollen season for optimum control of symptoms.

Antihistamines are usually administered **topically** (by a nasal spray) or **orally** (by mouth). Many oral decongestants include pseudoephedrine and phenylephrine. A significant side-effect of pseudoephedrine is elevated blood pressure.

Topical decongestants should only be used by patients for a maximum of 7 days in a row because rebound congestion may occur.

7.5 Undesirable Effects of Drugs

Drugs need to be considered for:

- **The reason they are being taken**. For example, painkillers (analgesics) are taken to lessen the sensation of pain. What caused the pain in the first place and is this underlying condition prejudicing our ability to fly safely? Analgesics affect the nervous system, and consequently may be incompatible with safe flight.
- **Their side effects**. Side effects are harmful unintended actions at normal dose levels. The drug may be prescribed to treat a certain area of the body, but often result in adverse reactions elsewhere in the body.

- **Their half life, or the duration of their effects.** This is the time taken for the concentration within the body to fall to half its initial concentration. For example, with some sleeping preparations drowsiness may remain well after the subject has woken up.
- **Potentiating Agents.** Some drugs interact to give altered and often dangerous effects. Alcohol is a common potentiating agent; for example, the reaction between alcohol and tranquillisers can often be quite dangerous. Alcohol plus many common medications can result in drowsiness.
- **Hypoxia.** (lack of oxygen) can increase the effects of drugs.

All drugs have a limited life and should not be used after the expiry date.

7.6 Some points to Remember:

- If an illness is serious enough to need medication it may be serious enough not to fly.
- No medication is free of side effects.
- A pilot should get aviation medical opinion before flying when taking medication for a significant medical condition.
- Always tell a doctor you are a pilot.
- As a rule of thumb, over the counter (OTC) medication the generic name of which ends in **"-ine"** should be suspected as incompatible with safe flight.
- Be watchful of medications that use alcohol as a base. Some OTC medications are 25% alcohol by volume.

An individual starting a course of drugs, or changing diet significantly, should always check to see if it is compatible with air crew duties. If it is considered safe, there is still no guarantee that there will not be any side effects. The most reliable indication as to the effects of any medication on an individual is how that person feels in the hours following the taking of the drug.Commonsense dictates therefore, that when anything new is used in the treatment, at least 24 hours should be allowed to elapse before commencing aircrew duties.

7.7 Background Information

The following is some general back-ground information that might be found interesting and useful.

Half Life: The time for a substance to lose half of its pharmacological activity

Some common drug half lives

Chemical name	Half life*	Actions and side effects
Caffeine	Varies	Stimulant (adrenalin-like) Diuretic (fluid loss) Fatiguing Withdrawal 'anxiety'
Aspirin	20 minutes	Analgesic (pain killer) Antipyretic (fever suppressant) Anti-inflammatory Tinnitus (ringing ears) Gastritis (See notes above for side effects.)
Acetaminophen Paracetamol	3 hours	Analgesic. Dangerous due to liver damage if taken in overdose (even accidentally)
Dextromethorphan	Varies	Antitussive (cough suppressant) (Can produce psychological dependence)
Ephedrine and Phenylephrine	3 hours	Nasal Decongestant Stimulant (like caffeine) (See notes above for side effects.)
Chlorpheniramine	6 hours	Decongestant Stimulant Anorectic (appetite suppressant) Amphetamine-like Increases blood sugar Increases blood pressure

Note: It takes about five times the 'half-life' for drugs to completely clear the body.

MEDICATION THAT CAN USUALLY BE USED BY A FLIGHT CREW MEMBER	
Type	**Restrictions/limitations**
1. Antihypertensive medication a) Thiazide diuretics b) Beta blockers (e.g. Atenolol) c) ACE inhibitors (e.g. medications ending in 'pril'.) d) Calcium channel blockers	Must submit a 6/12 E Only water-soluble, cardio-selective Beta blockers may be used. Applicant unfit if symptomatic, or using additional medication.
2. Antigout medication a) Allopurinol	Applicant unfit if any side-effects occur (eg. nausea, malaise)
3. Malaria prophylaxis	After a 3 month trial period, in the absence of any side- effects.
4. Oral contraceptive	
5. Thyroid supplementation 6. Sodium chromoglycate 7. Cholestyramine	Applicant unfit if any side effects occur.

7.7.1 Medications That Should Not Be Used By Flight Crew

- **Painkillers.** Stilpane, Stopayne, Painrite forte, Betacod, Dolorol forte, Beserol, Betapyn.
- **Decongestants.** Actifed, Sinutab, Cepacol, Degoran, Dristan.
- **Cough Medicines.** Benylin, Cepacol, Demazin, Linctifed, Phensedyl, Vicks formula 44.
- **Antacids.** Rubragel, Bisma-rex.
- **Antidiarrhoeals.** Lomotil, Imodium.