

Human Performance & Limitations - Module G — The Fit Aviator

Drugs & Self-Medication

Chapter 18 — The last word on fitness: the self-medication clearance rule, caffeine, anaesthetics and analgesics — and the final environmental hazards of hypothermia, toxic substances and dangerous cargo.

BOOK

Human Performance & Limitations

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EXAM

DGCA CPL / ATPL — HPL

CHAPTER

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§ 76

DRUGS AND SELF-MEDICATION

76.1 The Aviation-Medicine-Specialist Clearance Rule

DGCA-QUOTED — THE ABSOLUTE RULE

It is absolutely essential that pilots **DO NOT FLY** as part of the operating crew of an aircraft when taking drugs or medication, **UNLESS THEY HAVE BEEN CLEARED TO DO SO BY AN AVIATION MEDICINE SPECIALIST.**

DGCA-QUOTED — RISKS OF SELF-PRESCRIBED MEDICATION

A pilot who flies on **self-prescribed medication** runs the risk of:

- Suffering **side effects**, and
- Faces the **hazards associated with the underlying illness in the in-flight environment** which can **make the symptoms of any illness much more debilitating than they might be on the ground.**

76.2 Four Reasons Medicines Have Flight-Qualification Consequences

DGCA-QUOTED — VERBATIM FOUR REASONS

The consumption of **medicines or other substances** may have consequences on qualification to fly for the following reasons:

1. **The disease requiring a treatment may be cause for disqualification.**
2. **Flight conditions may modify the reactions of the body to a treatment.**
3. **Drugs may cause adverse side effects impairing flight safety.**
4. **The effects of medicine do not necessarily immediately disappear when the treatment is stopped.**

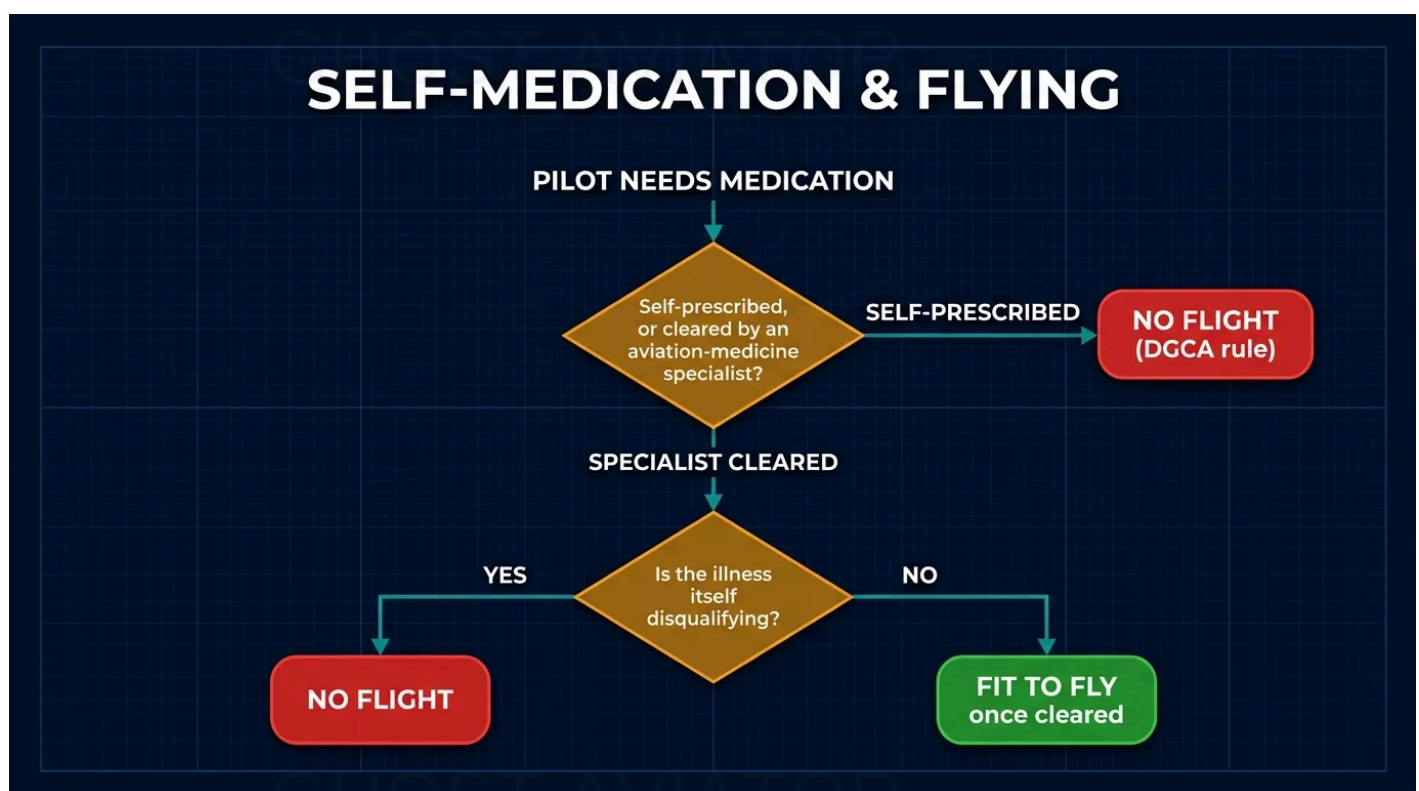


Figure 18.1 — Self-medication and flying: if you need the medicine you may be unfit; any drug must be cleared by an aviation-medicine specialist.

CAFFEINE CONTENT OF COMMON DRINKS

ENERGY DRINK (250 ml) — 80 to 150 mg

FILTER COFFEE (250 ml) — 100 to 120 mg

ESPRESSO (single) — 60 to 80 mg

BLACK TEA (250 ml) — 40 to 60 mg

COLA (330 ml) — 30 to 45 mg

DARK CHOCOLATE (50 g) — ~30 mg

moderation: too much brings tremor, anxiety and a dehydrating effect

Figure 18.2 — Caffeine: a useful stimulant in moderation, but too much brings tremor, anxiety and a diuretic (dehydrating) effect.

DGCA-QUOTED — CAFFEINE AS A DRUG

Caffeine is probably the most widely used drug in the world. It can easily lead to ADDICTION.

Caffeine is present in coffee, tea, cocoa, chocolate, and fizzy drinks such as cola.

DGCA-QUOTED — RECOMMENDED MAXIMUM DAILY INTAKE

The recommended maximum caffeine intake per day is approximately 250 – 300 mg corresponding to 2 – 3 cups of coffee .

Approximate caffeine content of common beverages

Beverage	Caffeine (mg)	Notes
Filter coffee (250 ml cup)	~ 100 – 120 mg	2–3 cups → DGCA daily max
Espresso (single shot, 30 ml)	~ 60 – 80 mg	—
Black tea (250 ml cup)	~ 40 – 60 mg	Lower than coffee
Cocoa / hot chocolate	~ 5 – 15 mg	Plus theobromine
Cola (330 ml can)	~ 30 – 45 mg	—
Energy drink (250 ml)	~ 80 – 150 mg	Often exceeded
Dark chocolate (50 g)	~ 30 mg	—

250–300_{mg} DGCA max recommended daily caffeine

2–3 Cups of coffee = approximate DGCA limit

⚠ Caffeine is addictive — DGCA word

WHY THE DGCA BOTHERS TO SET A CAFFEINE LIMIT

Caffeine is a CNS stimulant. In moderate doses it sharpens alertness — useful on long sectors. In excess it:

- Increases heart rate and blood pressure (interacts with §15 hypertension & §43 cardiovascular reserve under G).
- Is a **diuretic** (interacts with §23 humidity / §73 dehydration).
- Disrupts sleep — undermining the very alertness it was meant to provide; classic withdrawal cycle.
- Causes tremor & anxiety at high doses — degrades fine motor control.

The "2-3 cups" guidance is the dose that keeps you alert without these costs.

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Anaesthetics & Analgesics

DGCA-QUOTED — NO-FLY PERIODS

A pilot should NOT fly for at least:

- **12 hours** after a **LOCAL anaesthetic**, and
- **48 hours** following a **GENERAL anaesthetic**.

The more potent forms of ANALGESICS (pain killers) may produce a significant deterioration in human performance.

12_{hr} After LOCAL anaesthetic — no fly

48_{hr} After GENERAL anaesthetic — no fly

⚠ Strong analgesics — performance deterioration

Join live classes for guided practice and doubt clearing.

CROSS-LINK — ADDS TO THE "WAIT-BEFORE-FLYING" MASTER TABLE

You now hold these wait-before-flying numbers in long-term memory:

- **12 hr** — after rapid decompression (§20.4); after local anaesthetic (§78)
- **24 hr** — after alcohol (§14.1); after diving (§21)
- **48 hr** — after blood donation (§17); after general anaesthetic (§78)
- **48–72 hr** — after major dental work (§72.2)

The DGCA examiner pulls these numbers in MCQs — match the event to the number.

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Hypothermia

DGCA-QUOTED — TEMPERATURE THRESHOLDS (IN FAHRENHEIT, SOURCE PDF)

Normal body temperature averages **98.6 °F**.

With **hypothermia**, the core temperature drops below **95 °F**.

In **SEVERE hypothermia**, core body temperature can drop to **82 °F or lower**.

98.6 °F NORMAL

37 °C — baseline core temperature

< 95 °F HYPOTHERMIA

≈ 35 °C — onset of impaired ability

≤ 82 °F SEVERE

≈ 28 °C — life-threatening

DGCA-QUOTED — WHAT HYPOTHERMIA DOES

Hypothermia AFFECTS PHYSICAL AND MENTAL ABILITIES.

Shivering makes it possible to combat the cold to a certain extent but USES UP A LOT OF ENERGY.

In a PROLONGED exposure, **shivering will tend to CEASE**, and be followed by the **ONSET OF APATHY**.

Hypothermia is a potentially LIFE-THREATENING condition that needs EMERGENCY MEDICAL ATTENTION.

HYPOTHERMIA

NORMAL — core 98.6 °F

MILD — core below 95 °F, shivering

MODERATE — shivering peaks, judgement falls

shivering CEASES + apathy sets in

SEVERE — core 82 °F or below, loss of consciousness

Figure 18.3 — Hypothermia: as core temperature falls, shivering gives way to confusion, then loss of consciousness.

OPERATIONAL RELEVANCE — SURVIVAL IN COLD DITCHING / MOUNTAIN CRASH

For commercial pilots flying over cold water (North Atlantic, Bering Sea) or high-terrain routes, hypothermia is the second-most-common post-ditching cause of death (after drowning). Survival suits, life rafts with thermal protection, and immersion-suit drills exist precisely because **cold water kills faster than the absence of food or water**. The "**cessation of shivering + apathy**" is the danger sign that mild hypothermia is becoming severe.

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Toxic Hazards

DGCA-QUOTED — OPENING

Even MILD toxic effects can degrade a pilot's performance and lead to an accident.

Prolonged exposure to toxic influences can damage a person's general health.

Anyone who has been exposed to any toxic hazard should seek MEDICAL ASSISTANCE AS SOON AS POSSIBLE.

DGCA-QUOTED — SIX TOXIC-HAZARD SOURCES (VERBATIM)

The following materials may produce toxic hazards:

1. **Furnishings and Baggage.**
2. **Acetone and Turpentine.**
3. **Fuels, Lubricants and propellants.**
4. **Anti-icing Fluid.**
5. **Fire Extinguishing Agents.**
6. **Battery Fumes.**

Toxic-hazard sources in aviation — DGCA list with context

#	Source	Typical Toxin / Mechanism
1	Furnishings and Baggage	Off-gassing of plastics, adhesives, treated fabrics — VOCs, formaldehyde. Also packaged chemicals in baggage holds that leak in flight.
2	Acetone and Turpentine	Solvents — CNS depressants on inhalation. Respiratory irritation, headache, dizziness.
3	Fuels, Lubricants and Propellants	Jet-A vapours, oil mists, hydraulic fluid mists. Skin irritation, respiratory irritation, possible CNS effects.
4	Anti-icing Fluid	Glycols (mono-/di-ethylene glycol) — toxic if ingested, irritant if inhaled as mist.
5	Fire Extinguishing Agents	Halons / their replacements — high concentrations displace oxygen, can produce hypoxia (§10). Some thermal decomposition products are corrosive.
6	Battery Fumes	Sulphuric acid vapours (lead-acid), or KOH (Ni-Cd), or lithium-fire smoke. Strong respiratory irritants, possibly corrosive.

§ 81 Dangerous Cargo

DGCA-QUOTED — VERBATIM

Pilots must be aware that they must **NOT** carry certain defined items on board their aircraft. Such items are referred to as **DANGEROUS CARGO** because of the possibility that their discharge, spillage or breakage may endanger the aircraft and/or crew in flight or on the ground.

THE REGULATORY BACKBONE — DGR / ICAO TI / 49 CFR 175

The Indian DGCA enforces dangerous-goods carriage rules in line with **ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air** and the **IATA Dangerous Goods Regulations (DGR)**. The nine UN dangerous-goods classes are:

1. **Explosives** (ammunition, fireworks)
2. **Gases** (compressed, liquefied, dissolved — including aerosols)
3. **Flammable liquids** (fuel, paint, solvents)
4. **Flammable solids · spontaneously combustible · dangerous when wet**
5. **Oxidizers · organic peroxides**
6. **Toxic & infectious substances**
7. **Radioactive material**
8. **Corrosives** (acids, alkalies)
9. **Miscellaneous** (asbestos, lithium batteries, magnetised material, dry ice)

(For full HPL/exam preparation, learn these nine classes — DGCA RTR & DGR examinations routinely ask which class a given item belongs to and whether it is forbidden, restricted, or permitted in checked/cabin baggage.)

WHY THIS SECTION ENDS CHAPTER 26

The chapter has built up systematically: **atmosphere → body systems → environmental stressors → orientation & illusions → fitness & diet → drugs & toxins → dangerous cargo**. The last paragraph closes by reminding the pilot that the threat to the aircraft does not come only from the pilot's own body, but also from **what is loaded into the cabin and cargo holds**. The pilot's command authority extends to ensuring forbidden items are not on board — the pre-flight cargo manifest is a flight-safety document, not paperwork.

◆ END OF CHAPTER 18 ◆

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