

Flying with medical conditions

Fitness to fly with medical conditions

Over one billion people travel by air each year^[1]. The information in this article refers to considerations regarding fitness to fly as a passenger. Where asked to advise or certify an aviator's fitness to fly, please refer to the 'Further Reading and References' link below for the Aviation Health Unit of the Civil Aviation Authority (the UK's aviation regulatory authority) and look under their 'Medical' section.

The information given is general and not exhaustive; the links to the individual guidelines should be used to examine issues in more detail. Individual patients may need to have several conditions taken into account and different airlines have varied policies. More difficult cases are best considered with specialist advice and/or liaison with the particular airline's medical advisors. The sources of advice used are only guidelines and clinical judgement should always be used in their interpretation.

Some airlines require medical certificates confirming that a patient is currently stable and fit to fly with a medical condition. Most have medical advisors who provide advice and 'clear' passengers as fit to fly^[1]. They may ask for a medical information form (MEDIF). The British Medical Association (BMA) advises doctors 'to word statements on a person's fitness to fly carefully, indicating the information on which the advice is based, rather than positively certifying a person's fitness'. For example:

- 'I know of no obvious reason why this person should not fly.'
- Or: 'There is nothing in the medical record to indicate that flying is risky for this patient.'

This ensures that the doctor is not guaranteeing in any way that this patient can travel without any problem but rather saying that, on the available evidence, there is nothing to indicate a greater risk for this person than for others. However, the doctor is partly dependent on what the patient chooses to disclose to them about past health problems.

The main factors to take into account are whether air travel could adversely affect a pre-existing medical condition and whether or not a patient's condition could adversely affect the comfort and safety of the other passengers, or the operation of the flight. Regardless of a doctor's opinion on this latter question, the ultimate sanction to refuse travel lies with the airline and captain of the flight. If they consider there is a risk to the aircraft or its passengers, they may refuse to carry a particular passenger.

Basic considerations when assessing a patient's fitness to fly

These include:

- The effect of mild hypoxia and decreased air pressure in the cabin.
- The effect of immobility.
- The ability to adopt the brace position in emergency landing.
- The timing of regular medication for long-haul/transmeridian travel.
- The ability of the patient to cope mentally and physically with travel to and through the airport to reach the flight and on disembarkation.
- Whether the patient's medical condition may adversely affect the comfort or safety of the other passengers and the operation of the aircraft.
- What health insurance cover the patient has in case of problems.

The UK Civil Aviation Authority's Aviation Health Unit (AHU) was formed in 2003 to advise government on passenger and aircrew health issues. It now also has a statutory function in safeguarding the health of all persons on board aircraft. They can be contacted regarding aviation health matters using the link below.

Physiology during flight^[1]

Modern aircraft are not pressurised to sea level equivalent. Cabin altitude equivalent is usually between 5,000 and 8,000 feet which means that there is a reduction in barometric pressure and a reduction in the partial pressure of alveolar oxygen (PaO₂). Sometimes during flight, although not usually for long periods, oxygen saturation levels can fall to around 90%. A healthy individual can usually tolerate this with no problems but it may not be the same for someone with cardiac or respiratory conditions or with anaemia.

Aircraft cabins also have low humidity levels which can cause dryness of mucous membranes and also the skin. Reduced cabin pressure can also cause gas volume expansion. This can be a problem if there has been recent surgery that has introduced gas into the abdominal cavity or the eye. Gas can also expand if it has been trapped in the ear.

Cardiovascular disease^[1]

Cardiovascular contra-indications to commercial airline flight include:

- Uncomplicated myocardial infarction within seven days (exercise testing to show that there is no residual ischaemia or symptoms is not mandatory before travel).
- Complicated [myocardial infarction](#) within 4-6 weeks.
- Unstable angina.
- Decompensated [congestive cardiac failure](#).
- Uncontrolled hypertension.
- Coronary artery bypass graft within 10 days.
- [Cerebrovascular accident](#) within three days.
- Uncontrolled cardiac arrhythmia.
- Severe symptomatic valvular heart disease.
- Uncomplicated percutaneous coronary interventions (eg, angioplasty with stent placement) within five days - individual assessment is needed after that to ensure fitness and stability.

The decrease in oxygen saturated during air travel may affect those with cardiovascular disease. Indications for in-flight oxygen in cardiovascular disease include:

- Need for oxygen at baseline altitude.
- Heart failure – New York Heart Association's (NYHA) Class III-IV or baseline PaO₂ <70 mm Hg
- Angina Canadian Cardiovascular Society (CCS) Class III-IV.
- Cyanotic [congenital heart disease](#).
- Primary pulmonary hypertension.
- Other cardiovascular diseases associated with known baseline hypoxia.

It is unusual for patients to be allowed to take their own oxygen supply and oxygen is usually arranged by the airline who must be aware in advance. A fee is usually charged. This may change in the future and there are ongoing discussions regarding this.

Patients with pacemakers and implantable cardioverter defibrillators can fly once medically stable.

Deep vein thrombosis^[2]

- The risk of [venous thromboembolism](#) (VTE) increases 2- to 3-fold after a long-haul flight (>4 hours). The risk increases with the duration of the travel and with multiple flights within a short period.
- It is immobilisation rather than any cabin environment effects of the coagulation system that is thought to be the cause of the increased risk.
- The risk also increases significantly in the presence of other known risk factors for VTE (obesity, extremes of height, use of oral contraceptives and the presence of prothrombotic blood abnormalities).
- The absolute risk of VTE per flight longer than four hours in a cohort of healthy individuals was 1 in 6,000.

Risk factors for DVT include^[1] :

- [Thrombophilia](#) enhancing clotting activity.
- Recent major surgery.
- Trauma or surgery of the lower limbs.
- Family history of DVT.
- Age >40 years.
- The oral contraceptive pill.

The risk of flight-related VTE is also increased in both shorter and taller individuals and in the overweight and is associated with location in a window seat^[3] .

DVT prevention

It is wise for anyone undertaking a long-haul flight to take sensible precautions, such as to:

- Remain adequately hydrated.
- Exercise the calves.
- Spend periods out of their seat.
- Avoid excess alcohol.
- Avoid tight-fitting socks or stockings.
- Perhaps use graduated compression stockings.

Advice about any more specific DVT prophylaxis should be based on relevant risk stratification and clinical judgement. The table below outlines advice from the British Cardiovascular Society. See also the separate [Prevention of Venous Thromboembolism](#) article which outlines Department of Health (DH) and National Institute for Health and Care Excellence Clinical Knowledge Summaries (NICE CKS) guidance^[2] .

Risk category	Relevant risk factors	Suggested prophylaxis
Minimal risk	Age <40; otherwise fit and healthy.	General advice.
Low risk	Age >40; obesity; active inflammation; minor surgery within three days.	As above ± graduated compression stockings.
Moderate risk	Varicose veins; poorly controlled heart failure; myocardial infarction within six weeks; oestrogen therapy (including oral contraception); polycythaemia; pregnancy/puerperium; lower limb paralysis/trauma within six weeks.	Consider aspirin if there is no contra-indication ± graduated compression stockings.
High risk	Previous VTE; known thrombophilia; major surgery within six weeks; previous stroke; malignancy; family history of VTE.	As above but consider low molecular weight (LMW) heparin in place of aspirin.

For patients who are diagnosed with a DVT, specialist advice should be sought as to when they can fly. When they do fly it is clearly essential that they adhere to all the general advice and continue to be fully compliant with anticoagulation treatment.

Respiratory disease

- Those with active respiratory infection, including both [pneumonia](#) and viral infections, should be clinically recovered and no longer infectious before they travel^[1].

- There is still no consensus about which patient to refer before air travel and the gold standard test of assessment of hypoxaemia in COPD and patients with dyspnoea on exertion, forced expiratory volume in 1 s (FEV1) <1.5 L or FEV1 <30% predicted, a pre-existing requirement of oxygen/ventilatory support, bullous lung disease, comorbid conditions that may worsen hypoxaemia like cardiac disease and significant symptoms during previous air travel are considered as high risk and need further evaluation^[4] .
- The hypoxic challenge test simulates the cabin environment in the laboratory, using oxygen-nitrogen mixes. If the challenge results in a PaO₂ of less than 55 mm Hg, oxygen is indicated during flight^[1] .
- Untreated pneumothorax is an absolute contra-indication to air travel. Travel can usually be carried out two weeks after effective treatment, provided there has been full expansion of the lung^[1] .
- Patients with stable asthma should be able to fly with no problems. However, they should keep their medication to hand. It may be advisable to prescribe a course of oral steroids for them to start if their condition deteriorates^[1] .

It is unusual for patients to be allowed to take their own oxygen supply and oxygen is usually arranged by the airline who must be aware in advance (see above under 'Cardiovascular disease').

Fitness to fly while pregnant^[1]

- Due to the increasing risk of an in-flight delivery, most airlines prohibit travel after the end of the 36th week in uncomplicated singleton pregnancies. Earlier limits apply for multiple/complicated pregnancies or with a history of premature delivery. The limit for multiple pregnancy is generally 32 weeks.
- Most airlines require confirmation of dates from healthcare providers for pregnancies >28 weeks. This should include the expected date of delivery and details that the pregnancy is progressing normally with no expected complications.

- The risk of DVT is increased in pregnancy but it is unclear how this risk is affected by flying. Sensible precautions should be taken as for any traveller and compression stockings should be considered. If there are additional risk factors for thrombosis, specialist advice may need to be taken.
- The risk of increased exposure to cosmic ionising radiation for the fetus is not thought to be significant, but is unquantifiable and must be taken at the mother's discretion. The risk may be increased if flying several times a week.

Infants and children^[5]

- For babies born after 37 weeks of gestation, the BTS advises waiting one week after birth term of 40 weeks before flying to ensure the infant is healthy.
- Infants born prematurely (<37 weeks) with or without a history of respiratory disease who have not yet reached their expected date of delivery should have in-flight oxygen available if they develop tachypnoea, recession or other signs of respiratory distress.
- Infants with a history of neonatal respiratory illness and children with chronic lung disease should have pre-flight hypoxic challenge testing.

Anaemia

- Someone with a haemoglobin <7.5 g/dL has a risk of hypoxia and an assessment of their fitness to fly should be carried out. In-flight oxygen should be considered.
- The degree of adaptation to the anaemia will affect the likelihood of problems. Patients with chronic anaemia will tolerate hypoxia better than those who have had a recent haemorrhage.
- Patients with sickle cell disease should have access to in-flight oxygen. They should not travel for 10 days following a crisis^[1]. Patients with sickle cell trait can usually travel without restriction.

Ear, nose and throat problems

- Active middle-ear infections, effusions, or recent ear surgery are contra-indications to flying unless the patient is deemed fit to fly by an ear, nose and throat (ENT) specialist.
- Acute sinusitis, large nasal polyps and recent nasal surgery are relative contra-indications.
- Seek advice from an otolaryngologist if uncertain.

Fitness to fly after surgery^[1]

- Patients should not fly for 10 days following abdominal surgery.
- Flying is not advised for 24 hours after a colonoscopy or other procedures where a large amount of gas has been introduced into the colon.
- Flying is not advised for 24 hours after a laparoscopy.
- Travellers with colostomies may need to use a larger bag, as intestinal distension during the flight may increase faecal output.
- Air travel should be avoided for seven days following neurosurgery, due to the possibility of residual gas being trapped in the skull.
- Interventions for retinal detachment usually involve the introduction of gas by intra-ocular injections and can cause an increase in intra-ocular pressure. Air travel should not be undertaken for 2-6 weeks depending on the type of gas used.
- Flight should be delayed for one week after other ophthalmological procedures or penetrating eye trauma.
- British Airways has a list of guidelines outlining the minimum time before it is advisable to travel after surgery (see link below). Different airlines may have different policies.

Trauma/orthopaedics

- Patients should wait for 24 hours following application of a plaster cast, for flights of less than two hours and for 48 hours on longer flights because air may be trapped beneath the cast^[1].

- If urgent travel is necessary, a bi-valved plaster cast can be used.

Neurological/psychiatric illness

- Fitness to fly is best considered on an individual basis and with expert advice if there is uncertainty. The freedoms of the affected individual to travel must be balanced against those of other passengers and safety considerations.
- Acutely disturbed or psychotic patients should not travel.
- Patients with controlled epilepsy can generally fly safely. However, they should be made aware of the potential seizure threshold-lowering effects of fatigue, delayed meals, hypoxia and disturbed circadian rhythm. Care should be taken that medication should not be omitted inadvertently when travelling through different time zones.

Contagious infectious disease

- This is a relative contra-indication to travel, depending on the nature of the condition and its transmissibility at that phase of the illness.
- Tuberculosis is a particular concern. A passenger should have had adequate treatment and be non-infectious (sputum smear-negative on at least two occasions) prior to the flight^[6].

Flying with diabetes

- There are no restrictions on flying with well-controlled diabetes^[1].
- Those with insulin-dependent diabetes are normally required to have a letter of authorisation from their doctor to allow carriage of needles in their hand luggage. Insulin should be carried in a cool bag or pre-cooled vacuum flask.
- Insulin should not be stored in the hold, as temperatures may cause it to freeze and denature.

- Special consideration needs to be given to insulin-dosing regimens on long-haul flights, depending on the direction of travel and movement across time zones. Advice from a diabetes specialist may be needed. However, as a general rule ^[1] :
 - When travelling east and if more than two hours are lost, it may be necessary to take fewer units with intermediate or long-acting insulin.
 - When travelling west and the day is extended by more than two hours, supplemental short-acting insulin or an increased dose of intermediate-acting insulin may be needed.
- Sugar tablets and snacks to prevent episodes of hypoglycaemia should be carried.
- More information is available on the Diabetes UK website using the link in Further reading below.

Further reading

- [Travelling if you have a medical condition](#); British Airways (includes downloadable MEDIF forms)
- [Travel by air: health considerations](#); World Health Organization.
- [Travel and Diabetes](#); Diabetes UK
- [Heng S, Hughes B, Hibbert M, et al; Traveling With Cancer: A Guide for Oncologists in the Modern World. J Glob Oncol. 2019 Jul;5:1-10. doi: 10.1200/JGO.19.00029.](#)

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