

3.1.1 Cardiovascular and Cerebrovascular Disease

Cardiovascular disease is the leading cause of death in adult travellers. The stress and physical challenges of travel can precipitate either a new cardiovascular or cerebrovascular event or exacerbate an existing condition. Travellers should be advised to read the holiday and travel top tips from the British Heart Foundation.

See Resource Guide: 3.1.1a.

- Risk management advice should follow that of the general traveller and be tailored as described below.
- Destination-specific risk management advice can be found on the NaTHNaC Country Information Pages¹ www.nathnac.org.
- See Resource Guide: 3.1.1.



Medical Preparation

- Comprehensive travel insurance is essential for all travellers. A full declaration of medical conditions should be made to the insurers. All equipment and planned activities should be covered.
- Travellers with a history of cardiovascular or cerebrovascular disease should discuss the suitability of the proposed trip with their GP and/or specialist.
- Travellers should be advised, and receive written instructions, on the use of medication for self-treatment of minor illness, and know when and how to seek medical assistance.
- Potential drug interactions should be carefully checked prior to prescribing any medication; specialist advice should be sought when necessary.



Vaccination

Influenza/pneumococcal disease

- Individuals with congenital heart disease, hypertension with cardiac complications, chronic heart failure and individuals requiring regular medication or follow up for ischaemic heart disease should be vaccinated according to the UK schedule against influenza and pneumococcal disease.

Malaria

- Some antimalarials are contraindicated for use in individuals with cardiac conditions. Potential drug interactions should be considered carefully and avoided where possible. See Table 3-1.
- For those taking anticoagulants, careful monitoring of the International Normalised Ratio (INR) is strongly recommended when commencing additional medication and until stable control is established.
- Travellers should start taking their antimalarials at least 1 week (and ideally 2 to 3 weeks in the case of mefloquine) prior to their departure to allow time for adjustments to be made if necessary. A baseline INR should be checked before, and 1 week after, starting the antimalarials. The dose of warfarin should be adjusted accordingly and the INR rechecked if there is a demonstrated effect.

1 Alternatively see Travax <http://www.travax.nhs.uk/> or Fit for Travel <http://www.fitfortravel.nhs.uk/>

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- For trips exceeding 2 to 3 weeks, the INR should be checked at regular intervals at their destination/s. Travellers should be aware that the sensitivity of thromboplastin reagent used to measure INR may vary between laboratories and countries, and make interpretation and comparison of results difficult. Medical advice should be sought when necessary.
- Once the antimalarials have been discontinued, depending on INR results, the traveller can resume their normal maintenance dose of warfarin.
- See Resource Guide: 3.1.1b and 3.1.1c.



Journey Risks

- Recent myocardial infarction, congestive cardiac failure, history of deep vein thrombosis (DVT) and peripheral vascular disease are risk factors for flight-associated DVT. See Risk Management: 2.3.2 Journey Risks – DVT.

Fitness to Fly

- Travellers with a history of cardiovascular or cerebrovascular disease should have a medical evaluation prior to flying and be assessed as fit to fly according to the guidelines stated by their airline.
- Contraindications to flying with a history of cardiovascular or cerebrovascular disease are given by the Civil Aviation Authority (CAA), and summarised in Table 2-1 in The Pre-Travel Health Consultation Section 2. See Resource Guide: A6 – Key Resources.
- Hypertension is not a contraindication to flying providing it is controlled and stable.
- Supplemental oxygen may be required for those with heart failure or cerebrovascular disease; airlines must be consulted in advance and appropriate provision made. There may be a charge for in-flight oxygen.
- Proper functioning of implanted cardiac devices (defibrillators/pacemakers) should be ensured before departure. These devices are unlikely to be affected by airport security systems and are not a contraindication to flying when the cardiac condition is stable. Carrying a card from their physician or device manufacturer is advised in order to alert security personnel using hand-held magnetic security devices.



Environmental Risks

Altitude

- Travellers with vascular disease should discuss their plans with their GP and/or specialist, ideally prior to booking their trip. They should limit their activities during the first days and allow extra time to acclimatise.
- Those with good exercise tolerance at sea level usually tolerate travel to altitude although there is always an increased risk of exacerbation of pre-existing cardiovascular or cerebrovascular disease due to hypoxia.
- Recent myocardial infarction or poorly controlled heart failure are contraindications to ascent to high altitude. Those with cardiac failure can experience deterioration in cardiac function at altitudes above 3,000m.

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- Following an uncomplicated myocardial infarction, a 3 month programme of cardiac rehabilitation is recommended, including control of risk factors and progressive exercise training, prior to assessment by a specialist of the suitability of travel to altitude.
- Persons with mild stable angina or those who have had successful bypass surgery can usually travel to altitude without ill effects.
- Those with existing pulmonary hypertension can experience an increase in pulmonary artery pressure, even at moderate altitudes; travel to altitude is not recommended. If unavoidable, supplemental oxygen is recommended at altitudes of 2,000m or above.
- There is little evidence of adverse events associated with well controlled hypertension at altitude. A rise of 5 to 10mmHg systolic and diastolic blood pressure is recognised to occur, however it is transient and rarely requires intervention. There is no indication for increased dosages of anti-hypertensive medication.
- Acetazolamide (Diamox®), when used for prevention of altitude illness, has a minimal antihypertensive effect. It can be taken with other diuretics used for high blood pressure.
- Health professionals should ensure that the travellers who routinely use diuretics, have normal blood electrolytes prior to starting acetazolamide (Diamox®) and advise good hydration in order to avoid complications associated with the use of 2 drugs causing diuresis. Test doses prior to travel are advised.
- The combination of acetazolamide (Diamox®) and aspirin should be avoided due to the potential for enhanced metabolic acidosis.



Food- and Water-borne Risks

- Alcohol and some foods may interact with the metabolism of warfarin and alter INR. Specialist advice should be sought before travel.
- Dehydration in travellers taking diuretics and/or ACE inhibitors can result in a rapid fall in blood pressure, and should be avoided.
- Travellers should be advised, and receive written instructions, on the use of medication for self-treatment of travellers' diarrhoea, and know when and how to seek medical assistance. See Box 2-7 in [The Pre-Travel Health Consultation Section 2](#). Prompt treatment of gastrointestinal infections is essential.



Skin Health

- Wound management advice should be emphasised in consultation with travellers with peripheral vascular disease.

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Table 3-1. Contraindications to antimalarials for those with cardiac conditions (in alphabetical order)*

Antimalarial	Potential drug interaction	Nature of interaction
Atovaquone/ Proguanil	Warfarin	Isolated reports that proguanil increases the anticoagulant effect of warfarin. It is unknown if there is an interaction with atovaquone/proguanil.
Chloroquine	Amiodarone	Increased risk of ventricular arrhythmias.
	Digoxin	Possible increase in plasma concentration of digoxin.
Doxycycline	ACE inhibitor: Quinapril	Absorption of tetracyclines reduced by quinapril.
	Warfarin	Possible increased anticoagulant effect of warfarin.
Mefloquine	Amiodarone Quinidine	Increased risk of ventricular arrhythmias.
	Beta-blockers Calcium channel blockers Cardiac glycosides	Increased risk of bradycardias. Use with caution.
Proguanil	Warfarin	Isolated reports that proguanil increases the anticoagulant effect of warfarin.

*Drug information should be checked in the British National Formulary (BNF); see Resource Guide: A2 – Key Resources.