

HIGH BLOOD PRESSURE & HEART DISEASE

adventure travel pre-trip preparation

For the use of medical practitioners only (Dr Jim Duff, 28/07/2011)

These notes are to aid the assessment and preparation of a patient with pre-existing cardiovascular disease (CVD), who is intending to undertake an adventure holiday in a wilderness setting. It will help to:

- Assess their suitability for wilderness/adventure
- Reduce exercise restriction due to CVD
- Reduce the risk and severity of problems due to CVD while travelling
- Advise on fitness
- Ensure they have the basic skills and means to direct their treatment if they suffer a problem

This advice assumes your patient is otherwise well physically, mentally and emotionally, and has no coexisting chronic conditions such as epilepsy, asthma or diabetes (if they do, each condition needs individual assessment). If you have any doubts about their suitability for a particular trip, a cardiologist's advice should be sought.

HIGH BLOOD PRESSURE

PRE-DEPARTURE ASSESSMENT AND PREPARATION

1) General considerations

- A rough guide to fitness is to comfortably exercise aerobically to the level expected on the journey
- Their past history of similar activities is the best guide to how they will cope on their proposed adventure
- Advise on a graded exercise program to gain fitness and convert fat to muscle, while stopping smoking
- Uncontrolled hypertension is a contraindication to travel.

2) History, examination and investigations

- Aim to exclude any underlying disease (including undiagnosed diabetes) well before departure
- A full history and examination should also seek out/exclude: heart failure, angina, heart attack, stroke and renal/liver damage or failure. (If you don't check this out, the challenging nature of an adventure holiday is likely to do it for you)
- BMI, cholesterol/lipids, liver and renal function, blood sugar, FBC
- Demonstrate good BP control (a series of BP readings, or a 24 hour BP monitor)
- Resting ECG (an exercise ECG -stress test is required if symptoms are present, if there are several risk factors or the traveller cannot exercise to the level expected)
- If there is any evidence of end organ (liver, kidneys, heart) damage or (especially) failure, a full work up is mandatory and a specialist opinion sought

3) Review medications

Side effects of medications:

- Beta-blockers may cause tiredness and muscular weakness; they can limit the maximum heart rate when exercising. They may make extremities cold, a consideration in cold environments (frostbite). It is probably best to avoid using the antimalarial mefloquine if they are on beta-blockers
- Calcium channel blockers may slow heart rate response to exercise and make the ankles swell
- Diuretics (bendroflumethazide) may lead to hypotension if the patient becomes dehydrated or suffers from diarrhoea. If they have to take acetazolamide/Diamox™ (a diuretic) for altitude illness, it would be worth considering stopping their usual diuretic medication for the days they are taking acetazolamide
- Angiotensin-converting enzyme (ACE) inhibitors and calcium channel blockers may cause a drop in BP after exercise especially in the presence of dehydration
- Relaxing, becoming fitter, losing weight and stopping alcohol can all lower blood pressure resulting in dizziness on standing up suddenly or unexplained tiredness. So BP medication may need reduction. But note that there is an obligatory rise in BP as one ascends to very high altitude. Conclusion being that a personal BP measuring device is a good idea!
- Aspirin (or other anti-platelet medication) may increase the risk of retinal, intra-cerebral or GIT bleeding at high altitude

Note: Gingko Biloba is sometimes taken as an alternative to acetazolamide at altitude and can increase bleeding tendency due to aspirin. Currently the use of Gingko Biloba for AMS prevention is not recommended

4) May they go?

If hypertension is well controlled and there is no end organ damage, it is reasonably safe to undertake adventure travel (including high altitude) if they have been prepared correctly.

5) Pre-departure check list

Does the traveler have:

- A written medical history with current medication, plus phone numbers of their doctor(s)
- Nitrolingual GTN spray for chest pain (angina)
- Aspirin 75mg tablets in case of chest pain (x 20, take two, then one daily)
- A written description of warning symptoms and signs of stroke or heart attack
- Personal BP monitor (recommended)

HEART DISEASE (ISCHAEMIC HEART DISEASE -IHD-, CORONARY ARTERY DISEASE -CAD-)

PRE-DEPARTURE ASSESSMENT AND PREPARATION

1) General considerations

- Even with the best of preparation, your patient is at increased risk during adventure travel if only due to the extra time to access medical resuscitation. This is especially so at very high altitude (over 3500m) when hypoxia (lower oxygen levels) puts an extra stress on heart muscle with an increased risk of sudden death. Sudden cardiac death is the commonest medical cause of death in the mountains due to the inability of the heart's vessels to dilate, especially at the capillary level.
- However the wonders of modern medicine (coronary angioplasty, stenting, pacemakers) now make it possible for patients to go on challenging trips. Even a previous history of heart attack or severe angina is not an absolute contraindication if treatment has been successful and sufficient time for the re establishment of good cardio-vascular fitness has elapsed.
- There should be no symptoms during exercise to the levels expected. All preparatory training should be done by gradually increasing the work rate slowly.

2) History and examination

Before departure a full investigation should be made along the lines of those suggested for raised BP and a cardiologist's opinion sought if there is the slightest doubt. Arrhythmia (irregular heartbeat) must be excluded and if present thoroughly investigated (see 'May they go?' below).

3) Review medications

Side effects of medications:

- See above under high blood pressure, plus:
- Travelers with CAD are often on medication to thin their blood such as aspirin, clopidogrel or warfarin.
- Warfarin increases the risk of severe uncontrollable bleeding due to trauma. The INR needs measuring and absorption may be reduced due to diarrhoea, vomiting or dehydration..
- Aspirin and clopidogrel are anti-platelet medicines used to prevent clotting. They will increase the chances of an internal haemorrhage with potential bleeding in the retina, lungs or brain.
- Co-administration of PPI like Omeprazole inhibits the metabolism of clopidogrel into the active component.
- Statins, taken to lower cholesterol, are of no known significance.

4) May they go?

A recent MI, angina, an arrhythmia or the inability to exercise to at least the peak levels of exertion expected are absolute contra-indications to high altitude or remote travel.

Warfarin, or other anticoagulants, pose a special risk and the ramifications of this need to be understood. As a rule of thumb remote trips, very high altitude trips and trips with a higher risk of trauma (eg mountaineering, kayaking) are best avoided.

If the advice above has been followed then risks due to CVD are minimized as much as possible but not completely removed.

5) Pre-departure check list

Carry the same medications and notes as for high blood pressure but with extra nitrates in the form of patches or tablets and vitamin K if on warfarin.