Ultimate Challenges
High altitude notes

You have applied to take part in a high altitude trek. It is very important that you read these notes, so that you are fully aware of the significance of travelling at altitude, and of the risks involved.

Each year more and more people travel to high altitude areas. Unfortunately, at elevations above 2500m, because of the relative shortage of oxygen, one can develop a syndrome of unpleasant symptoms known as acute mountain sickness (AMS).
Altitude is defined as:

1500m—3500m - High altitude
3500m - 5500m - Very high altitude
Above 5500m - Extreme altitude

Certain normal physiological changes occur in every person who goes to altitude, and should be expected:

Hyperventilation (breathing faster)
Shortness of breath on exercise
Changed breathing pattern at night
Frequent waking at night
Increased urination

These processes reflect the body acclimatizing to the decreased availability of oxygen at high altitudes. It is a slow process, taking place over a period of days to weeks.

Individuals vary widely in the height at which they develop symptoms, the speed of onset of AMS, and the severity of their illness. There is unfortunately no way of predicting whom AMS will seriously trouble and who will escape it. It is tempting to suppose that being physically fit would help prevention, but unfortunately this does not seem to be the case.

AMS is a spectrum of illness that represents your body not being acclimatized to its current altitude, and varies from mild to life threatening. The diagnosis of mild AMS is made when the following symptoms are present after a recent ascent above 2500m:

Headache plus one of the following:
Loss of appetite, nausea or vomiting
Fatigue or weakness
Dizziness of light-headedness
Difficulty sleeping

The mainstay of treatment is rest, fluids and mild painkillers such as paracetemol, aspirin and ibuprofen. The natural progression for AMS is for it to get better, as long as you do not climb higher. Descent is also an option, and recovery will be rapid. Unfortunately a very small number of people develop one or both of the more severe forms of AMS: High Altitude Pulmonary Oedema (HAPE) or High Altitude Cerebral Edema (HACE).

The vast majority of HACE cases occur in persons who *ascend* with symptoms of early AMS, so in all but a very few cases can be avoided. In HACE the brain swells and ceases to function properly. HACE can progress rapidly, and can be fatal in a matter of a few hours to one or two days. The hallmark of HACE is a change in mentation, or the ability to think. There may be confusion, changes in behaviour or lethargy. There is also a characteristic loss of co-ordination, that leads to a staggering walk, similar to that of someone with alcohol intoxication.

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Another form of severe altitude illness is High Altitude Pulmonary Edema (HAPE), of fluid in the lungs. Signs and symptoms of HAPE include any of the following:

Extreme fatigue
Fast, shallow breathing
Chest tightness
Breathlessness at rest
Cough, possibly with frothy or pink sputum
Drowsiness

Immediate descent, with oxygen if possible, is the treatment of choice. HAPE resolves rapidly with descent, and one or two days of rest at a lower elevation may be adequate for complete recovery.

Preventing AMS
The key to avoiding AMS is a gradual ascent that gives you body time to acclimatise.
Several drugs have been promoted as helpful in preventing AMS:

Acetazolamide (Diamox) - as yet there is no consensus on whether or not it is advisable to take acetazolamide to prevent AMS. It is, however, widely used by individuals travelling to altitude and may help to prevent AMS. It works by increasing the amount of urine produced, and thus reducing fluid retention. It also alters the pH of the blood, leading to an increase in breathing, particularly at night. In the UK it is widely used to treat glaucoma (a disease of high pressure in the eyes), is generally well tolerated, but does have side effects, the most common of which are: tingling of fingers, toes and around the mouth, nausea, increased urination, and altered taste sensation. As with all drugs there are many other rarer side effects, some of which are serious.
In the UK acetazolamide is fairly widely prescribed for prevention of AMS, but it is not licensed for this indication. Therefore your GP may, or may not, be happy to prescribe it.
If you do choose to take acetazolamide the recommended dose is 125-250mg twice daily starting at 24 hours before ascent to 2500m.

Ginkgo biloba extract—some early work on Gingko biloba extract was encouraging with regards to its use in preventing AMS, but some recent large, well-designed studies have shown no benefit.

Our policy on AMS
All of the above makes very sobering reading, and is designed to help you make an informed choice as to whether you which to embark on this challenge. However I can reassure you that we work very hard to minimise the risks of AMS, in the following ways:

- Carefully planning itineraries
- Employing experienced trek leaders
- Ensuring our doctors have good knowledge of AMS, and comprehensive medical kit
- Planning good evacuation procedures

We, Ultimate Travel Company, have organised over 80 trips to areas of high/very high altitude, and have an extremely good record of health and safety.

Prepared by Dr Sarah Hollis, Oct 2006. (revised Oct 2008)

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