

ADVICE ON ALTITUDE SICKNESS

Some of our missions are carried out at high altitude. Some clinics are visited in remote mountain areas. The concentration of oxygen at sea level is 21% and the barometric pressure averages 760mmHg. As altitude increases, the concentrations remain the same but the number of oxygen molecules per breath decreases. At 12,000ft (3658 meters) the pressure reduces to 483mmHG so there are approximately 40% fewer oxygen molecules per breath. To oxygenate, breathing rate has to increase, so that oxygen content in the blood rises. It does not reach the concentration at sea level. High altitude and low pressure also causes fluid to leak out of capillaries, which can cause fluid accumulation in lungs and the brain. Lightheadedness and nausea are common until adjustment is reached. Inadequate acclimatization without rest and an adjustment period of 24 hours or more, can lead to serious illness. Most problems are caused from going too high, too fast. Ten thousand feet is a maxim that climbers use as the limit point. A day's rest should accompany each 1000ft climbed thereafter. ("Don't go up until the symptoms go down".) If possible, try to return to the lower point to sleep at night.

The physiological consequences are:

- Increased breathing
- Elevated pulmonary artery pressure
- Increased red cell production
- Increased enzyme utilization production for oxygen transfer
- Acclimatization at different rates for each individual
- Minimal effort dyspnea
- Severe headache
- Nausea
- Bleeding nose
- RECOVERY usually within 24-36 hours.

Management:

Emphasize group awareness and support; stay properly hydrated (3 liters/day), avoid over-exertion. Note that breathing depth and frequency drops during the night and may exacerbate symptoms. Avoid tobacco, alcohol and tranquillizers/sleeping pills. Eat a HIGH carbohydrate diet (70% calories) while at altitude. Check sufferer to see if they can walk heel-to-toe (ataxia). If test is failed, immediate descent is recommended.

Treatment:

Obtain and take Diamox (acetazolamide) 24 hours before climbing and for at least 5 days whilst at altitude. This allows you to breathe faster so that you metabolize more oxygen, therefore minimizing symptoms from poor oxygenation. **DO TAKE A TRIAL DOSE FOR 36 HOURS BEFORE EMBARKING ON THE MISSION TO CHECK NO ALLERGY. DO NOT TAKE THIS DRUG IF YOU ARE ALLERGIC TO SULPHONAMIDES**

The recommendation of the Himalayan Rescue Association Medical Clinic is 125mg twice daily. They found no difference to that commonly prescribed (250mg twice daily), but remember small studies may not consider the different weights/body masses of volunteers who are not there principally to climb!! Common side effects: Tingling of lips and fingers, blurring of vision, alteration of taste, nausea.

Dexamethasone 4mg twice daily, is an alternative, but it is essential you obtain formal medical advice first.

If symptoms remain severe, descending 1000 feet almost always resolves symptoms.

Aubyn Marath MBBS MS FRCSEd