

Altitude Sickness

Team River Runner hosted their National Conference and Swiftwater Rescue Training out West this year. It was a great place to visit and our hosts: TRR Boise and Pilgrim's Cove couldn't have been more accommodating. Several participants came from low lying areas – near sea level including myself. Some attendees and myself as well experienced:

- Headache
- Loss of normal appetite
- Nausea
- Insomnia
- General Fatigue

We each came up with different conclusions on why we were experiencing these symptoms, in my case possible motion sickness, dehydration, etc. None of us thought Altitude Sickness may be contributing to our malaise.

It wasn't till after the conference when several of us that live near sea level and were experiencing the above symptoms figured out that a mild form of Altitude Sickness was a highly probably diagnosis. Part of my job is Risk Management so it's well worth considering this possibility and precautions we should consider whenever traveling to locales that can trigger these issues.

Most whom take Wilderness First Aid courses are taught the magic cutoff: 2400m or roughly 8,000' (Red Cross says 7,000'). McCall Idaho is roughly 5,000', roughly a mile high. It turns out that the 8,000' cutoff is actually for:

- HACE – High Altitude Cerebral Edema
- HAPE – High Altitude Pulmonary Edema

High Altitude per Wilderness EMS is actually from 1,500m to 3,500m, or starting at 4,921' (roughly the altitude where we were staying at).

A good guide is the Lake Louise Acute Mountain Sickness (AMS) Scoring System (LLS).

AMS Self-Report Score	
Headache	
No headache	0
Mild Headache	1
Moderate Headache	2
Severe headache, incapacitating	3
Gastrointestinal Symptoms	
None	0
Poor Appetite or nausea	1
Moderate nausea or vomiting	2
Severe nausea or vomiting	3
Fatigue and/or Weakness	
Not tired or weak	0
Mild fatigue/weakness	1
Moderate fatigue/weakness	2
Severe fatigue/weakness	3

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Dizziness/Lightheadedness	
Not dizzy	0
Mild dizziness	1
Moderate dizziness	2
Severe dizziness, incapacitating	3
Difficulty Sleeping	
Slept well as usual	0
Did not sleep as well as usual	1
Woke many times, poor sleep	2
Could not sleep at all	3

Table 1: LLS Table from Wilderness EMS – Seth C. Hawkins

A diagnosis of AMS requires a recent gain in altitude (check), several hours at altitude (check), a headache and at least one of the above symptoms (check). An LLS score of 3 or more constitutes AMS.

My score was as follows: headache (1), GI (3), Fatigue (1), Dizzy (0), Sleeping (2) or a total of 7. If you were impacted, it may be beneficial to take the same test.

Prevention

There's an old saying, Climb High – Sleep Low. We did the opposite, exercise low (Banks was at 2,900') and slept high. Many like myself flew in from close to sea level, landed in Boise and drove out immediately to McCall Idaho – not exactly following that golden rule. Boise is only 2,730'. If I spent the first evening in Boise I probably would have acclimated more gradually. The Himalayan Rescue Association (HRA) actually recommends 900m or 3,000' for the first evening. Their recommendation for maximum altitude gain is 800m which is right in line with McCall. 800m is for climbing, resting is a bit lower 500m per Wilderness Medical Society (300m for HRA).

What else could we have done? Extra hydration as a preventative measure is a myth. Overhydration can cause other issues. Monitor your outflows and drink the same as you would normally for your physical activity. Dehydration unfortunately shares some of the AMS symptoms (the headache is a key differentiator as well as proper urination color). Don't change your caffeine consumption as that will lead to a severe headache and is a trigger for AMS. Caffeine is helpful in AMS prevention as it stimulates the brain, kidneys, and breathing.

The recommended drug for prevention is Acetazolamide (Diomox) taken twice daily. Unfortunately, this is by prescription only and only indicated for those with prior AMS issues. Discuss with your doctor and follow their advice. Since McCall was only 5,000' – Diomox would be overkill.

Ibuprofen has been proven to be beneficial in prevention of AMS. The recommended dosage is 600mg three times a day.

With 20:20 hindsight, I should have slept the first evening in Boise to begin acclimation and then travel to McCall the next day. Its quite doubtful I would have encountered any issues with this approach.

Conclusions

The good news is although mild AMS is very unpleasant, the issues tend to subside in a few days as you become acclimated. It's always wise to spot the early warning signs for AMS and take feasible precautions. It's also good to know the differences between AMS and Dehydration so you can treat

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appropriately. AMS can get worse and become HACE or HAPE but generally at significantly higher altitudes. Knowing your susceptibility (main one is living near sea level) and taking actions to mitigate will save you a great deal of discomfort. If you haven't done so, I always encourage taking a decent Wilderness First Aid course which will cover AMS, dehydration, and much more.

Fortunately, paddling venues are usually at lower altitudes which is why we seldom encounter Altitude Sickness.