

The diagnosis of Acute Mountain Sickness (AMS) in children and a Children's Lake Louise Score (CLLS)

It is vital that you read page 2 of this document for important advice on taking small children to high altitude and the use of the CLLS.

A diagnosis of AMS in *preverbal children* is based on:

1. A rise in altitude within the last 4 days
2. A total score of 7 or higher, with a Fussiness Score (FS) of 4 or higher and a Pediatric Symptom Score (PS) score of 3 or higher

Table 1. **PEDIATRIC SYMPTOM SCORE**

score

Rate how well your child has eaten today	Normal	0	
	Slightly less than normal	1	
	Much less than normal	2	
	Vomiting or not eating	3	
Rate how playful your child is today	Normal	0	
	Playing slightly less	1	
	Playing much less than normal	2	
	Not playing	3	
Rate ability of your child to sleep today	Normal	0	
	Slightly less or more than normal	1	
	Much less or more than normal	2	
	Not able to sleep	3	
<i>SCORE PSS</i>			

Table 2. **FUSSINESS SCORE**

score

Amount of unexplained fussiness								
0	1	2	3	4	5	6		
No fussiness		Intermittent fussiness			Constant fussiness when awake			
Intensity of fussiness								
0	1	2	3	4	5	6		
No fussiness		Moderate fussiness			Hard crying and extreme fussiness			
<i>SCORE FS</i>								

Score PSS	
+ Score FS	
TOTAL SCORE	

For *children aged 4-11*, the adult LLS can be used but it is recommended to use age-appropriate communication, particularly for headache (the key symptom of AMS) and gastrointestinal symptoms.

Note:

- Do not ascend with symptoms of AMS
- Descend if symptoms are not improving or getting worse
- Descend if symptoms of HACE or HAPE develop

ACUTE MOUNTAIN SICKNESS AND PREVERBAL CHILDREN

by Drs Emma and Nick Mason*, edited by Dr Jim Duff

This advice is intended for use with *'Pocket First Aid and Wilderness Medicine'*.

As with any subjective scoring there are limitations. Just as in the adult Lake Louise Score, symptoms of a hangover can mimic severe AMS so that other factors will influence how you interpret the CLLS. In our experience the most important point is how well you know your child. If your child is a poor traveler and does not revel in new routines, how can you tell whether he/she is upset because they're away from their usual environment, or because of altitude, or whether they're feeling unwell because of concurrent illness or teething? Trust your parental instinct to know if your child is ill and deteriorating as one could argue that the CLLS is a good objective interpretation of a subjective measure (i.e. a score given for how worried a parent is about their child at altitude!).

When taking a young child to altitude imagine the worse case scenarios and think how you would manage them. Work out with your doctor what medications from your first aid kit your child can take and what are the doses. Plan a suitable route (preferably in a country you know well and are familiar with its infrastructure) with an ascent profile that allows adequate acclimatization time and evacuation/rapid altitude loss routes. Explore how your companions would feel about abrupt changes to the itinerary as dictated by your child.

At the start of our trek our average walking time was approximately 6-7 hours per day, which meant that our daughter was spending a significant amount of time in her backpack being carried by a porter. It was obvious to us that this was not acceptable to her (and thus to her parents) and hence we changed our plans and limited our walking time to 4-5 hours per day. We had very understanding fellow trekkers who readily agreed to the change of plan.

The question of how high you should go is a tricky one. There are recommendations on the subject and I am not qualified to comment on the scientific evidence behind these recommendations but I think it is more likely based on anecdote and opinion than any hard facts. Our child was 20-months-old when we went to Nepal and when she slept at 2200m on day 3 (having had no problems the previous 2 nights) we noticed she had periodic breathing and the next morning had developed peri-orbital oedema (swelling round the eyes). We descended to 1600m and returned to 2700m after 24 hours and then spent 2 nights at that altitude without any problems. Interestingly, I don't think the CLLS would have detected a difference as she had very little obvious manifestation of AMS, i.e. she ate and behaved normally. I would have thought her CLLS score was highest on the first 2 days when she had to sit for more than 6 hours in the backpack and later at the end of the trek when she was descending and teething!

Checklist

- Have a thorough understanding of High Altitude Illness and the other diseases that can afflict people in the country you are visiting (most importantly respiratory and diarrheal illnesses)
- Know your child well enough to be able to detect changes in behaviour and that they travel easily and are reasonably un-temperamental
- Have a route that permits rapid and easy loss of altitude and a group which accepts the child being the person who dictates the rate of ascent, the need for descent and the rhythm of the day.
- Make sure you know what medications your child can take and the doses of the same.
- If in doubt descend!

Finally I know of no reports of pre verbal children being treated in portable hyperbaric chambers but if it became necessary a parent would need to be in the chamber with them and expect considerable distress due to problems equalizing middle ear pressures.

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