

ASTHMA

adventure travel pre-trip preparation

For medical practitioners (Dr Jim Duff, 10/07/2011)

These notes are to aid the assessment and preparation of a patient with asthma who is intending to undertake an adventure holiday in a wilderness setting. It will help to:

- Assess their suitability for wilderness/adventure travel
- Reduce exercise restriction due to asthma symptoms
- Reduce the possibility and severity of an asthma attack while travelling
- Ensure the asthmatic has the skill and means to direct their treatment during an attack

This advice assumes the asthmatic is otherwise well physically, mentally and emotionally, and has no co-existing chronic conditions such as epilepsy, diabetes or cardiovascular disease (if they do, each condition needs individual assessment). If you have any doubts about their suitability for a particular trip, a respiratory physician's advice should be sought.

PRE-DEPARTURE ASSESSMENT AND PREPARATION

The best guide to how your patient's asthma will react on a trek or expedition is their past history.

1) Assess the present degree of asthma

- **Mild:** mild asthma symptoms easily controlled by occasional short acting bronchodilators, symptoms only with *vigorous* exercise, and again easily controlled
- **Moderate:** uses bronchodilators and/or inhaled steroids in acceptable doses. Has needed to increase inhaled medication in the past, plus occasional courses of oral prednisolone to control an exacerbation. Symptoms come on after *moderate* exercise
- **Severe:** asthma symptoms refractory to treatment with higher doses of inhaled bronchodilators and steroids, and/or past life-threatening episodes, and/or hospitalisation. Frequent use of oral prednisolone. *Mild* exertion brings on symptoms.

2) Assess control

- **Stable:** well controlled on acceptable doses of inhaled medication
- **Unstable:** frequent episodes of wheezing with the need to increase inhaled medications or addition of oral prednisolone
- **Refractory:** poor control on high doses of medications, frequently needs oral prednisolone, and/or antibiotics, and/or hospitalisation

3) Note all triggers and discuss avoidance measures

- Cold air, dry air and dust
- Allergens: airborne (dust, pollen, exhaust, smoke, etc) and ingested drugs (aspirin and NSAIDs such as ibuprofen, diclofenac, etc), and some foods (peanuts and food additives such as MSG)
- Infection: this is more likely while flying and in hot climates. Pneumococcal and influenza vaccinations are recommended if infection is a known trigger
- Exercise: see below

4) Review medications

Review inhaler use and dose using a peak expiratory flow (PEF) meter and diary to get the best result according to the current asthma guidelines in your country.

5) Optimize asthma medication for exercise-induced asthma

Check for exercise-induced asthma. (Note that symptoms of asthma due to exercise often come on some minutes after the end of the exercise). Use a peak expiratory flow (PEF) meter and diary to record peak expiratory flow rate before, during and after exercise of similar **intensity to that expected on their adventure holiday**.

Use these results to adjust medication (Salbutamol taken 5-10 minutes before exercise with the addition of regular inhaled steroids, if needed).

6) Prepare written personal management plans

- These should be based on peak flow measurements, with clear guidelines (such as when to step up treatment, when to seek medical help and when to evacuate)
- Management plan for mild to moderate and for severe attacks of asthma. Including, as appropriate:
 - Sit the victim up with their arms on a table
 - Give multiple doses of salbutamol spray via a large volume spacer device (a sample protocol is given in the appendix below)
 - Start a course of oral prednisolone if the attack is worsening or severe
 - Treat any chest infection
 - Advise that it is best to step up treatment *early* rather than wait
 - Advise that if an attack occurs they should not swim, should avoid exercising vigorously (to the point of getting out of breath), and should not ascend to higher altitude
 - If an asthma attack occurs at high altitude check for HAPE (and treat for both if you cannot decide what it is)

7) May they go?

If your patient is suffering mild to moderate asthma that is stable, with no need for oral steroids or hospitalization in the last 12 months and has gone through the above steps (1 to 6), they are well prepared for adventure holidays in wilderness or at altitude areas. If they do not meet these criteria, or you have any doubts, consult a respiratory physician.

8) Pre-departure check list, medication and equipment

Written medical history with current medication, plus phone numbers of their doctor(s)

Make sure your patient has all the inhaler medication mentioned in your management plan including those for an acute attack, PLUS:

- Prednisolone 25mg tablets x 10
- Lightweight peak expiratory flow (PEF) meter, e.g. Mini-Wright meter (these can start to become unreliable at high altitude)
- PEF charts
- Spacer for the delivery of inhaled medications (or instructions on how to make one)
- One course of antibiotic for chest infection

PLUS management plans:

A) Management plan for mild to moderate worsening of asthma

B) Management plan for a severe attack

Reminder: while flying, carry all asthma medication and equipment in the cabin.

APPENDIX

Grading an asthma attack, with suggested response

The **severity** of an attack may vary from mild to severe. Below is a rough guide to assessment **in a wilderness setting** to be used with the asthmatic's personalised action plan, including PEF readings.

Mild

- The patient may be anxious
- Annoying cough, especially at night
- Mild difficulty breathing
- Mild wheeze

The patient may carry on the activity once symptoms have settled

Moderate

- The patient is anxious and distressed
- Tightness in the chest that makes breathing out increasingly difficult. Starts to use chest/shoulder muscles to breathe
- The patient talks with difficulty, with gaps between sentences
- Wheezing becomes obvious and loud
- Rate of breathing slowly increases (over 20 breaths per minute)

The patient should not carry on the activity unless all symptoms resolve quickly and completely and the leader and victim agree to do so.

Severe

- The patient is very anxious and distressed, becoming confused
- Tires rapidly and may be sweating
- Pale with blue lips
- Speaks only in short bursts
- There is often no wheeze
- The patient is fighting to breathe, breathing rate may be increased (over 20 breaths per minute) or decreased (under 8 breaths per minute), and eventually breathing stops

The patient should be evacuated urgently even if symptoms start to resolve, as exacerbation is likely.

Protocol for short acting bronchodilator use in an acute attack

- Use **reliever** (blue or grey coloured) asthma spray (e.g. salbutamol) with a spacer to deliver:
 - 4 puffs (each separated by 4 breaths); re-assess grade for 4 minutes. If no improvement:
 - 4 puffs (each separated by 4 breaths); re-assess grade for 4 minutes. If no improvement:
 - 12 puffs (each separated by 4 breaths); re-assess grade for 20 minutes. If no improvement:
 - Continue with 12 puffs every 20 minutes until improvement occurs
- If improvement occurs at any point in the above protocol, give ongoing treatment as follows:
 - **Mild:** 4 puffs every hour
 - **Moderate:** 12 puffs every hour
 - **Severe:** 12 puffs every 20 minutes

Prednisolone

If the asthma attack is severe or not resolving give prednisolone (a steroid) by mouth, 50 mg at once and then 25 mg each morning for at least 3 days or until the patient can obtain medical advice.

Remember that High Altitude Pulmonary Edema (HAPE) must be suspected in a breathless asthmatic at altitude. If in doubt, treat for both and evacuate urgently.

Note that dexamethasone may be used as a substitute for prednisolone (dose 4mg 8hourly)

Evacuation

Seek medical help/evacuate urgently if:

- If the attack is severe
- Asthma is not controlled by the above protocol after two hours
- Or if the physical and emotional distress was severe
- Or if symptoms return within two hours of original episode