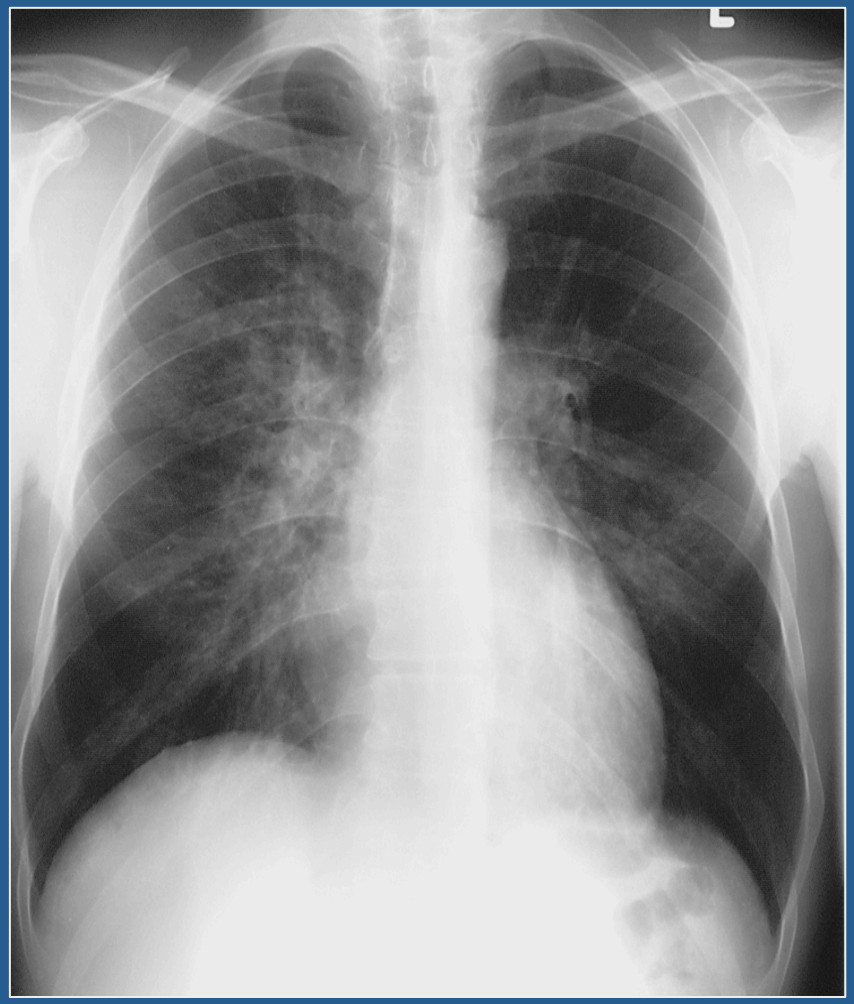
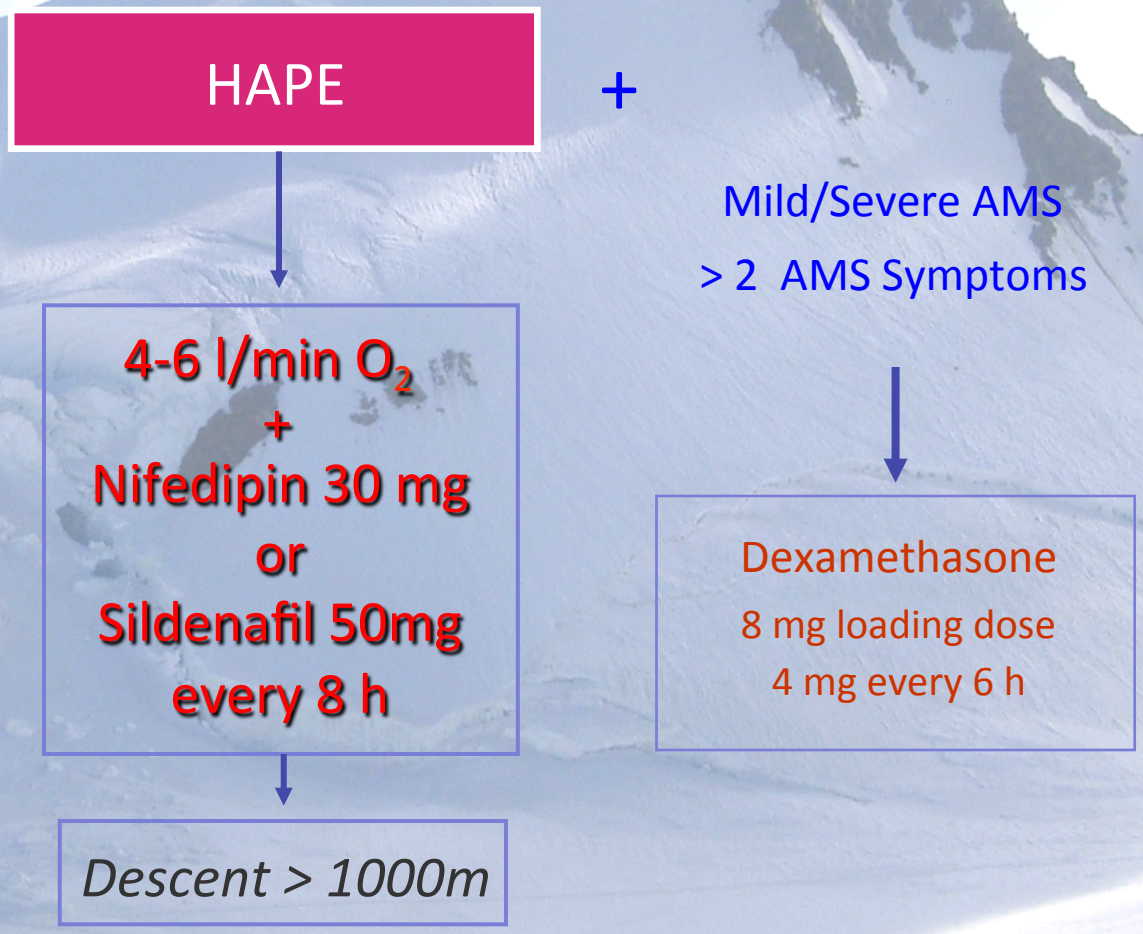
Be careful inflating pressure bags!

Treatment of High Altitude Pulmonary Edema

- Non medical treatment
- Bed rest
- Oxygen / Hyperbaric Bag
- Descent
- Medical treatment options
- Nifedipine 3 x 20mg sr
- Sildenafil 3 x 25 mg
- Tadalafil 1 x 20 mg
- Medical supportive treatment
- Dexamethasone 2 x 4 mg



Treatment of High Altitude Pulmonary Edema (HAPE)



If this 22 year old male with a history of HAPE wants to go to high altitude with you again, what do you recommend?

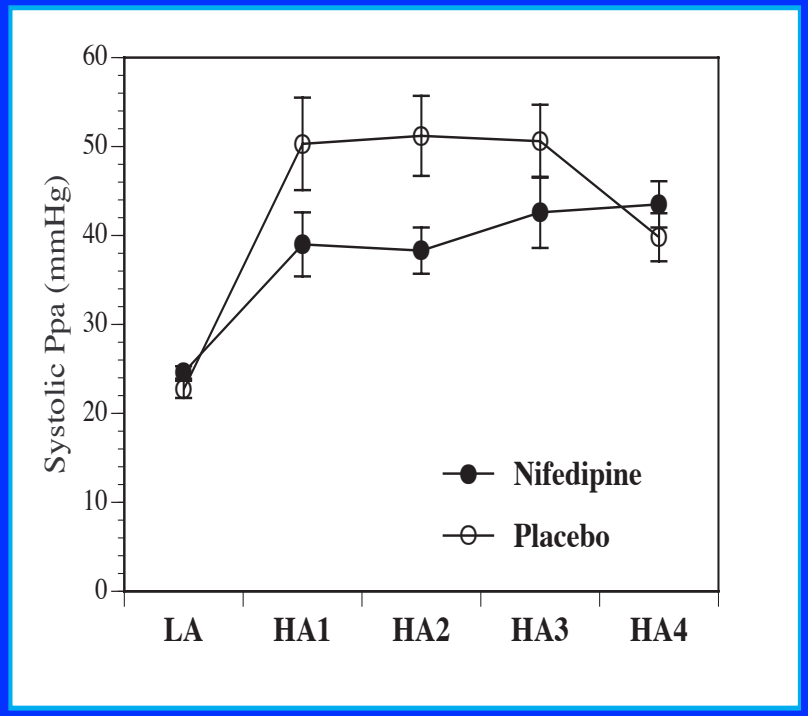
1. Get an evaluation from a wilderness medicine/altitude doctor
2. Ascend slower
3. Do a trial at a moderate altitude before going very high
4. Give him some of your Diamox
5. Give him some of your Cialis

Prevention of HAPE
WMS High Altitude Illness Guidelines

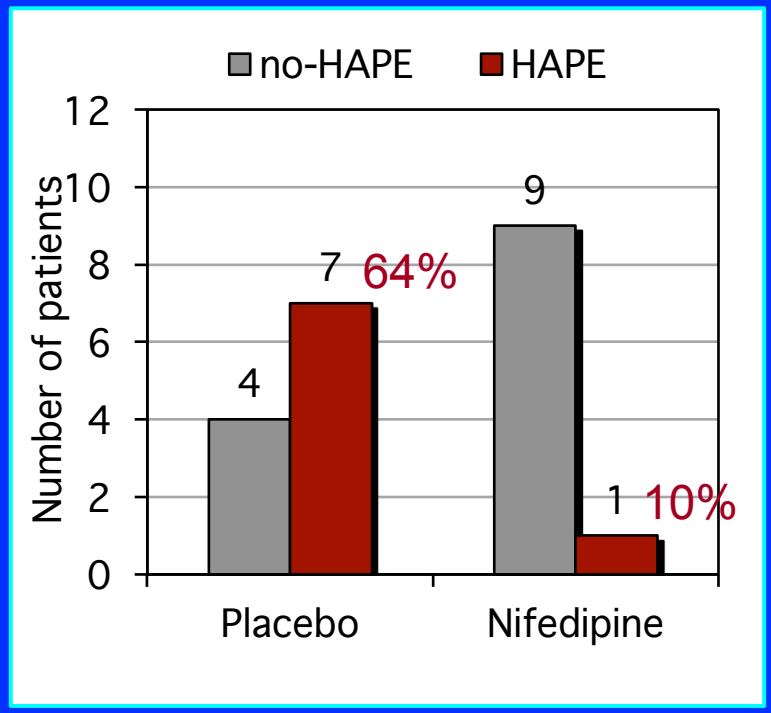
- Gradual ascent, acclimatization
- Pharmacologic prophylaxis for HAPE susceptible – how to define susceptible?

Prevention of high altitude pulmonary edema by nifedipine

Systolic pulmonary artery pressure



Incidence of HAPE

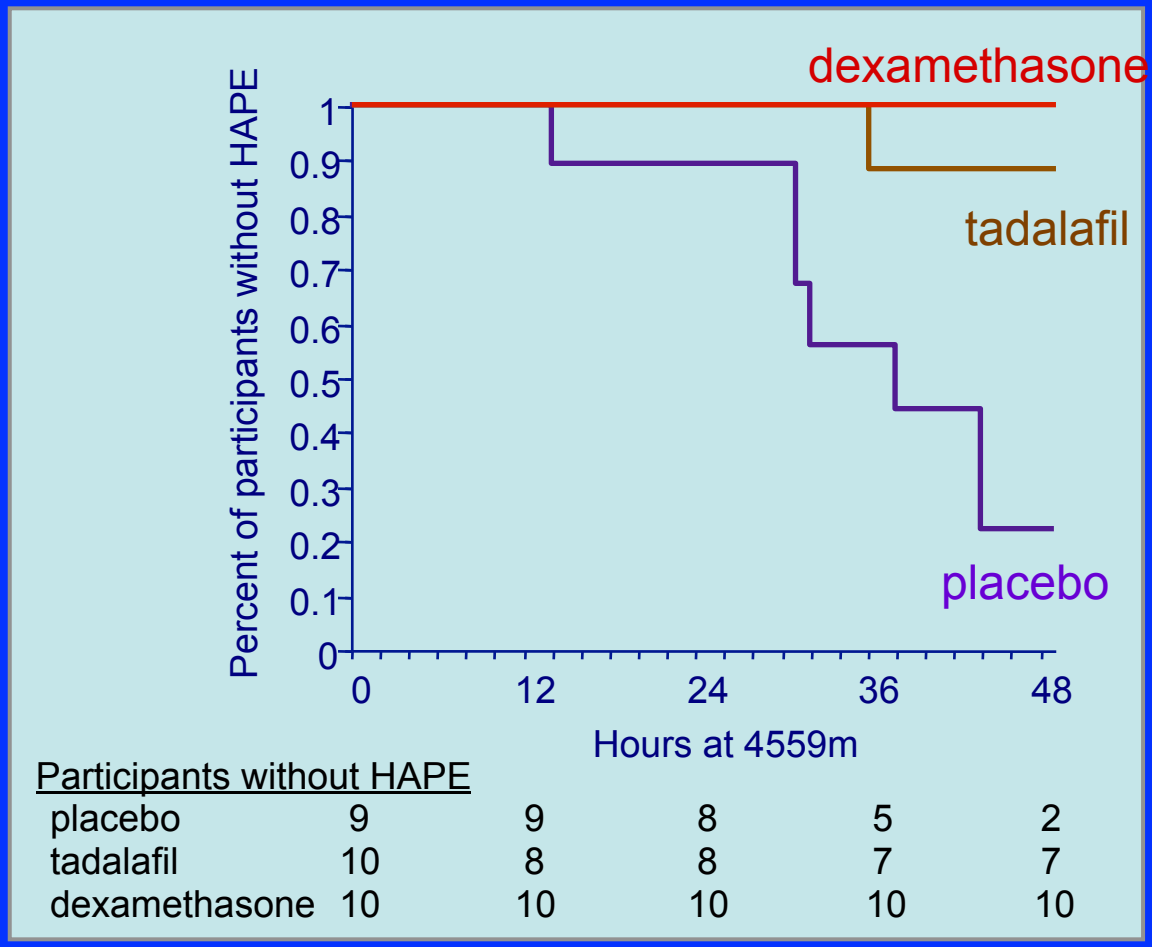


Bärtsch et al. NEJM 1991 325: 1284-9

Dexamethasone or tadalafil for HAPE prophylaxis during stay at 4559m

Double blind randomized controlled trial

- Dexamethasone 2 x 8 mg
- Tadalafil 2 x 10mg
- Placebo



Participants without HAPE					
placebo	9	9	8	5	2
tadalafil	10	8	8	7	7
dexamethasone	10	10	10	10	10

Maggiorini et et al.
Ann Inter Med
2006 145:497

A doctor might prescribe medication for HAPE Prophylaxis

- Nifedipine
- Salmeterol
- Dexamethasone
- Tadalafil (Cialis)
- Sildenafil (Viagra)
- OR acetazolamide (Diamox)

Prophylaxis of High Altitude Pulmonary Edema (HAPE)

HAPE

Trekking/climbing above 2500m

Slow ascent
300 m/day
+

Nifedipine
CR30-60 every 24 h
Start
24h before ascent

or

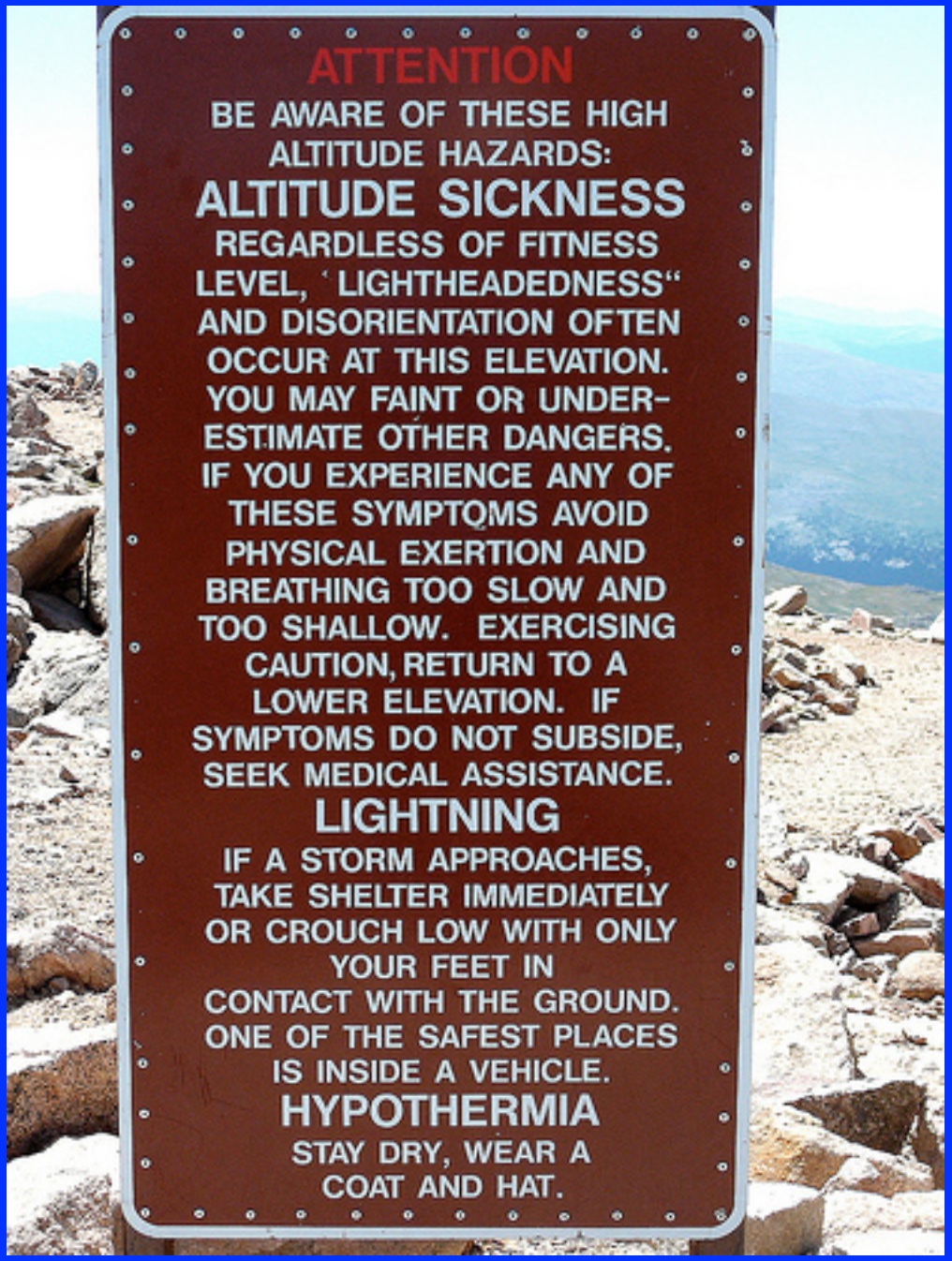
Tadalafil
20 mg every 24 h
Start
24h before ascent

HAPE & AMS

Fast trip above 2500m

Rapid ascent with a short sojourn
1000 m/day + < 5 days above 2500m

Dexamethasone
4-8mg every 12 h
Start
24 h before ascent


ATTENTION
BE AWARE OF THESE HIGH ALTITUDE HAZARDS:
ALTITUDE SICKNESS
REGARDLESS OF FITNESS LEVEL, ' LIGHTHEADEDNESS" AND DISORIENTATION OFTEN OCCUR AT THIS ELEVATION. YOU MAY FAINT OR UNDER-ESTIMATE OTHER DANGERS. IF YOU EXPERIENCE ANY OF THESE SYMPTOMS AVOID PHYSICAL EXERTION AND BREATHING TOO SLOW AND TOO SHALLOW. EXERCISING CAUTION, RETURN TO A LOWER ELEVATION. IF SYMPTOMS DO NOT SUBSIDE, SEEK MEDICAL ASSISTANCE.
LIGHTNING
IF A STORM APPROACHES, TAKE SHELTER IMMEDIATELY OR CROUCH LOW WITH ONLY YOUR FEET IN CONTACT WITH THE GROUND. ONE OF THE SAFEST PLACES IS INSIDE A VEHICLE.
HYPOTHERMIA
STAY DRY, WEAR A COAT AND HAT.

HAPE: Take home messages

- Prevalence is low, depends on individual susceptibility and rate of ascent
- Pathophysiologic: primarily high pressure in pulmonary blood vessels and capillaries with leak of fluid into air sacks
- Clinical hallmarks: weakness, decrease in exercise performance, dyspnea, tachycardia, low SpO2 for a given altitude
- Treatment: Oxygen, nifedipine or sildenafil, add dexamethasone in severe cases