

# How To Prevent Heart Attack At High Altitude



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# What is high altitude ?

487 – 1946 m above sea level – low altitude

1946 – 2920 m above sea level – medium altitude

2920 – 4866 m above sea level – high altitude

4866 m and higher – extreme altitude



**Char Dham**

**Yamnotri, Gangotri, Kedarnath and Badrinath- all above 3000 m ( high altitude)**

# Problems at high altitude

- 1. Low oxygen levels**
- 2. Fluctuations in air temperature, humidity**
- 3. Ultra violet exposure**
- 4. Certain serious diseases [AMS, HAPE , HACE, CVD (HEART ATTACKS)]**

➤ **In 2024 out of over 50 lakh visitors to char dham 246 died ,mostly above 60 at Kedarnath and helicopter users**

# Triggers for high altitude diseases

- ✓ Rapid ascend without acclimatization
- ✓ Sudden heavy exertion
- ✓ Cold exposure
- ✓ Dehydration and fasting
- ✓ Mental and emotional stress
- ✓ Previous heart disease or risk factors



# Acute mountain sickness

➤ Occurs 6-24 hrs after reaching high altitude

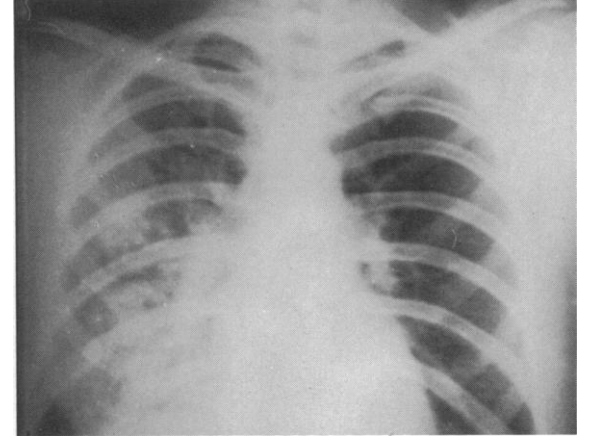
➤ Features :

- ✓ Severe headache
- ✓ Nausea/Vomitting
- ✓ Decrease appetite
- ✓ Fatigue, dizziness
- ✓ Poor sleep
- ✓ Can lead to HAPE , HACE
- ✓ Symptomatic treatment



# High altitude pulmonary edema

- Occurs above 2500- 3000 m
- Symptom start 1-4 days after reaching high altitude



- **Features :**

- ✓ severe breathlessness even at rest
- ✓ cough with blood stained sputum
- ✓ Chest discomfort
- ✓ Very low oxygen saturation
- ✓ Previous history
- ✓ Non hemodynamic pulmonary edema
- ✓ X- ray characteristic
- ✓ Needs immediate attention and descend. Portable hyperbaric chamber (Gamow bag).
- ✓ Can be prevented by gradual ascend, avoiding strenuous exercise and drugs acetazolamide



# Cardiovascular Problems At High Altitude

- ✓ Sudden Cardiac Death
  - ✓ Heart Attacks
  - ✓ Increase Blood Pressure
  - ✓ Arrhythmias
  - ✓ Worsening Heart Failure
  - ✓ Warning symptoms – chest pain, heaviness, severe burning, unusual breathlessness, sweating , dizziness , palpitation
- 
- ✓ Mostly in elderly / known heart disease
  - ✓ Over exertion



# Simple precautions

- ✓ Pre health check up
- ✓ Ascend gradually
- ✓ Stay 1-2 nights at lower medium altitude
- ✓ Avoid strenuous trekking
- ✓ Monitor hydration and light meals
- ✓ Avoid alcohol, smoking, stress
- ✓ Monitor health – pulse oximeter/BP/medicines
- ✓ Don't skip medicines
- ✓ Know warning symptoms, Nearest medical facility
- ✓ Chanting/meditation may help (aum namo shivay/vithal)



# Five golden rules for prevention of problems at high altitude

- ✓ Medical check up before travel
- ✓ Acclimatization/ Ascend gradually
- ✓ Avoid heavy exertion
- ✓ Know warning symptoms
- ✓ Descend if symptoms worsen



# Pre travel check up

1. Physical examination (BMI, BP, heart and lung disease)
2. Investigations (blood chemistry, ECG, echo, stress test)
3. Prepare physically and mentally – meditation
4. Carry essential medicines, oximeter, BP apparatus, Clothing, gear



# Conclusions

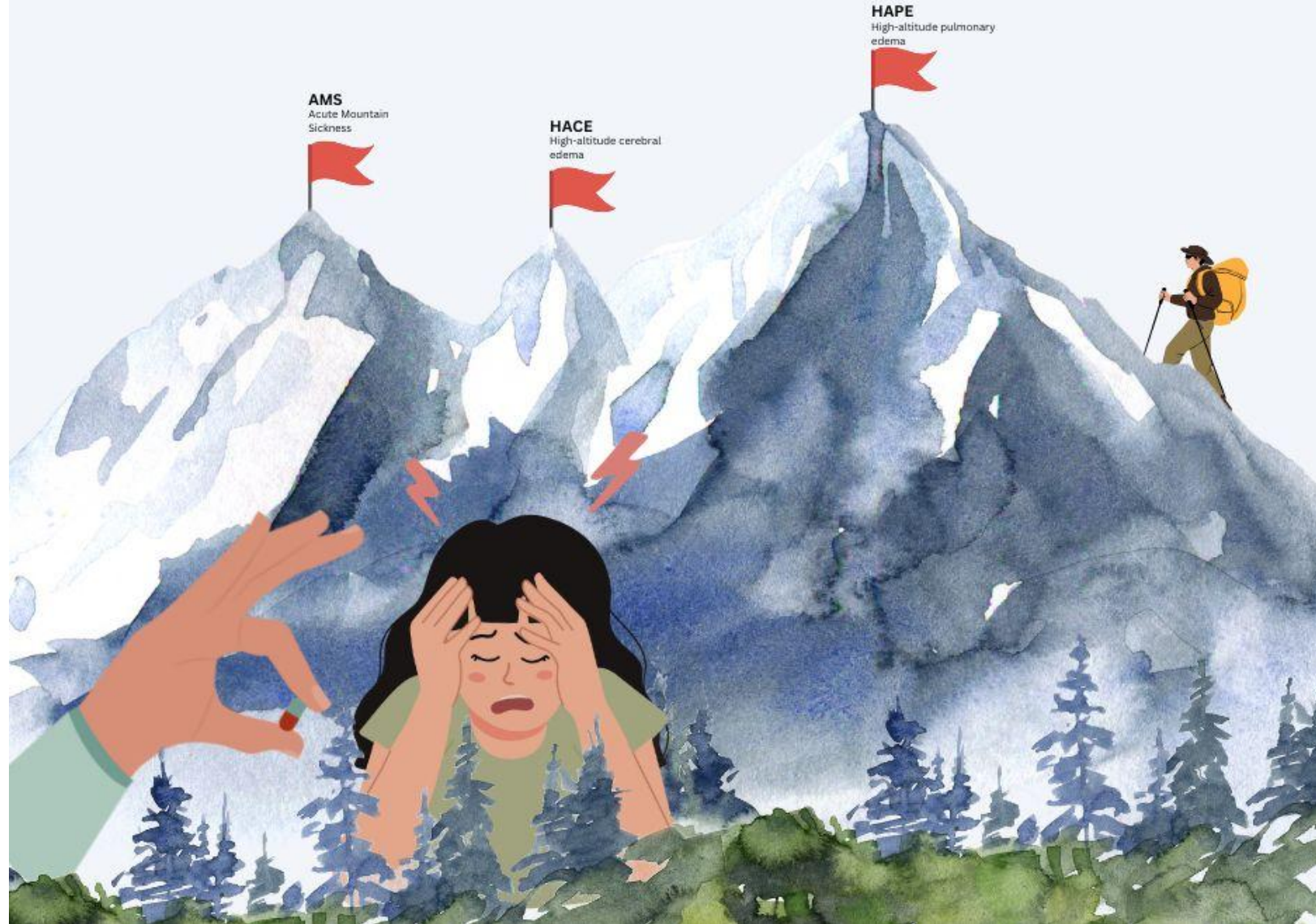
- ✓ Trip to high altitude (char dham) is very enjoyable and has great spiritual significance.
- ✓ However, there are some challenges at high altitude.
- ✓ Some people can develop high altitude illnesses like AMS, HAPE, HACE and heart attacks.
- ✓ However, taking few precautions like health check up, acclimatization, avoiding strenuous exercise, preventing cold exposure , proper hydration and knowing warning symptoms can prevent these illnesses.
- ✓ Follow these precautions and have a enjoyable trip.



**Thank you**

# AMS, HACE AND HAPE

50% of people as AMS, .5-1% of people as HACE, and 6% as HAPE  
(mostly in altitudes over 4,000 m)



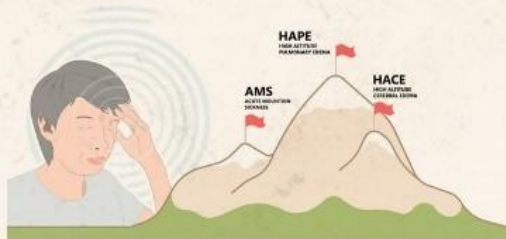


# HIGH ALTITUDE SICKNESS SYMPTOMS

www.footprintadventure.com

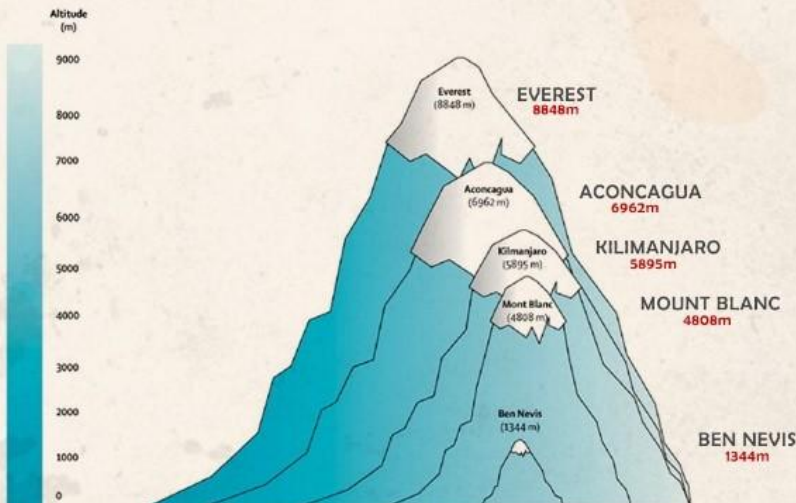


## ACUTE MOUNTAINS SICKNESS (AMS)



### Symptoms

- Nausea & Vomiting
- Dizziness
- Fatigue
- Loss of Appetite
- Insomnia
- Increase in Heart rate



## HACE

High Altitude Cerebral Edema

- Hallucination
- Loss of consciousness
- Fever
- Photophobia
- Confusion
- Inability to walk



## HAPE

High Altitude Pulmonary Edema

- Dry cough
- Nasal bleeding
- Shortness of breath
- Chest tightness
- Congestion
- Fainting
- Swelling

