Wilderness First Aid Scenario

ALTITUDE ILLNESS

Victim 1 (Kevin) and Victim 2 (Tim) – Acute Mountain Sickness (AMS)
Victim 1 (Kevin) – High-Altitude Pulmonary Edema (HAPE); develops on the third day of a three-day trek

SUMMARY

A crew of three adults and nine youth from Fresno, California, is backpacking on a summer trek in the state's Sierra Nevada mountains. The plan is to hike from the trailhead at the Horseshoe Meadow Campground (elevation 10,000 feet) to the summit of Mount Whitney (14,505 feet), then exit via the Whitney Portal. The youth range in age from 14 to 17. The weather has been sunny and warm with no rain in the forecast. Everyone has physically prepped for this trip by hiking near their home and occasionally in the Sierra Nevada foothills.

SCENARIO DETAIL

The crew has a copy of each participant's Annual Health and Medical Record (AHMR). They also have a small first-aid kit, and the three adults and one 15-year-old youth have been certified in WFA. All have completed CPR training. They are carrying a satellite phone and a global positioning system (GPS) device. Many have cell phones with them but there is no service in the area.

Day 1—The crew drives from the Central Valley (elevation 308 feet) in one day and camps for one night at the trek trailhead (elevation 10,000 feet) before starting.

Everyone is healthy when they leave the Central Valley. The crew has dinner after setting up camp, and they are all in their tents by 9 p.m. (dusk).

About midnight, two of the youth—14-year-old Kevin and 15-year-old Tim—get out of their tents, throw up their dinner, complain of headaches, and state they have been unable to sleep. The vehicles that dropped the crew off at the trailhead have already headed back to the Central Valley.

STUDENT RESPONSE

1. Scene safety:

   Ensure that the scene safety assessment is completed. For this scenario, make sure that personal protective equipment is used (nonlatex disposable medical gloves).

2. Primary assessment:

   Both victims are alert and oriented but with complaints of headache and nausea.

3. Secondary assessment:
   a. Physical exam: For both victims, abdomen is soft but not tender.
   b. Vital signs:

      LOC: A&Ox4

      Heart rate: 90

      Respirations: 16 (regular)

      Skin: Normal

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c. **SAMPLE:**

S – As above

A – No known allergies

M – Kevin: Claritin; Tim: None

P – Kevin: Seasonal allergies; Tim: None

L – Beef stew at 7 p.m.

E – Camping at 10,000 feet

Students should determine that this is likely acute mountain sickness. Treatment for AMS is:

- Fluids
- Rest
- Ibuprofen if not contraindicated and with authorization from parent, guardian, or health-care professional

Day 2—The next morning, the two ill crew members feel much better, but both state they are not "perfect." They are both able to take liquids and tolerate their breakfast without any problems. The rest of the crew is fine and no one has any complaints.

The crew decides to rest at the trailhead an extra day to acclimate to the altitude, which will delay their trek for 24 hours. They all spend the rest of the day in camp.

Day 3—In the morning, everyone feels healthy and the crew leaves for the trail. All tolerate their breakfast and are well-hydrated before beginning.

After hiking all day, the crew reaches their campsite, which is over a ridge at an elevation of 12,400 feet. Fifteen minutes after arriving at the campsite, Kevin begins complaining of shortness of breath and feeling weak. No one else in the crew has any complaints. Kevin sits down on a rock and says that he doesn't feel well. He develops a cough that is unproductive.

1. Scene safety:

   Ensure that the scene safety assessment is completed. For this scenario, make sure that personal protective equipment is used (nonlatex disposable medical gloves).

2. Primary assessment:

   Kevin is awake and alert, complaining of shortness of breath, and has developed an unproductive cough in the last few minutes.

3. Secondary assessment:

   a. Physical exam: No wounds, abdomen soft.

   b. Vital signs:

      LOC: A&Ox4

      Heart rate: 120

      Respirations: 24 with unproductive cough

      Skin: Cool and moist (clammy)

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c. **SAMPLE:**

S – As above; only feels comfortable sitting upright

A – No known allergies

M – Claritin

P – Seasonal allergies

L – Tortilla with packaged tuna; trail mix; water throughout the day

E – Backpacking at high altitude; possible AMS two days ago

POST-SCENARIO DEBRIEF

The responders should immediately decide to get Kevin to a lower elevation and contact help. Kevin should be transported by EMS. This is a medical emergency.

- How do they decide who will transport the victim?

  Determining who should accompany the victim is a very important decision. It will depend on the strength of the group and their abilities. WFA training, physical abilities, and youth protection all need to be part of the equation.

- Why was it so important for the crew to get Kevin to a lower elevation? Could they have waited to see if he got better after taking a nap? How long did it take for the group to decide he should be evacuated?
- How did they call for help? Who did they call?

  Communication is a crucial part of this scenario. This is a medical emergency. The satellite text device the crew is carrying is the first and best option.

- What happened to Victim 2 (Tim)? Explain why Tim was OK.

  Tim was cleared of acute mountain sickness with extra time to acclimate and hydrate.

- What caused the symptoms that Kevin and Tim experienced?

  Discuss the difference between AMS, high-altitude pulmonary edema (HAPE), and high-altitude cerebral edema (HACE). Be sure to include that AMS is a first-aid condition, and that HAPE and HACE are serious, acute medical conditions.

  —Acute mountain sickness: Administer first aid and monitor the victim. Stop ascending.

  —High-altitude pulmonary edema: Descend 1,000–3,000 feet and seek emergency medical attention.

  —High-altitude cerebral edema: Descend 1,000–3,000 feet and seek emergency medical attention.

See the Emergency Care & Safety Institute's *Wilderness First Aid: Emergency Care in Remote Locations* (5th edition), Chapter 22—Altitude Illness.