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Case Study

Hypothermia on a Wet Smokies Backpacking Trip



You are leading a four-day backpacking trip just outside Great Smoky Mountains National Park in early November. The forecast calls for temperatures in the mid 40s°F to low 50s°F (7°C to 12°C), periods of steady rain, and moderate wind. All looked good at the trailhead, however, several hours of intermittent drizzle, uphill hiking, and perspiration have left everyone damp from their baselayers to their outer layers. As the afternoon progresses, one member of the group begins falling behind. He says he is "just tired" and asks to stop for a break. He is shivering and having difficulty opening the buckles on his pack.

What's next?

The Situation

You are leading a four-day backpacking trip just outside Great Smoky Mountains National Park in early November. The forecast calls for temperatures in the mid 40s°F to low 50s°F (7°C to 12°C), periods of steady rain, and moderate wind. The forecast looked manageable at the trailhead, and everyone started out wearing appropriate rain gear. However, several hours of intermittent drizzle, uphill hiking, and perspiration have left everyone damp from their baselayers to their outer layers.

As the afternoon progresses, Daniel begins falling behind the group. He says he is "just tired" and asks to stop for a break. He is shivering noticeably and having difficulty opening the buckles on his pack. His rain jacket and pants are on, but he complains that the clothing underneath is "more than a little damp." His leather gloves appear to be

soaked. He answers questions appropriately but is quieter and more withdrawn than usual.

You recall playing the role of patient in a training scenario at your last wilderness first responder recertification where similar conditions were present outside the classroom. Remembering how cold and uncomfortable you were in that moment, you decide it makes sense to turn on WFR mode and check Daniel out, just to be safe.

SOAP Report

Subjective

Daniel is a 34-year-old male who is reporting that he is cold and tired. He says he has been shivering for "a while" and that his hands feel numb and clumsy. He denies any recent injuries or any recent illnesses. He is currently Awake + Oriented x 4 (person, place, time, and events).

Objective

The patient is found messing with the straps on his backpack, alert but more quiet than usual. While the physical exam is unremarkable for obvious injuries, he is shivering noticeably. His skin is pale, cool to the touch, and wet. He has difficulty with fine motor tasks, including manipulating the buckles and zippers on his pack and jacket. He is able to walk independently but is slower and appears somewhat unsteady on his feet. No obvious traumatic injuries are noted.

Vital signs

TIME	1645
LOR	A+Ox4
HR	88, strong and regular
RR	18, regular, unlabored
SCTM	Pale, cool, wet
B.P.	radial pulse present
Pupils	PERRL
T°	Not taken/no thermometer

History

Symptoms:	Cold, persistent shivering, fatigue, numb/clumsy hands and difficulty with manual tasks (aka, "the umbles"), slower and somewhat unsteady walking
Allergies:	Denies any known allergies
Medications:	None, takes a multivitamin periodically, reports he hasn't taken recently
Pertinent Hx:	No significant medical history
Last in/out:	~1 L water, small lunch because he "wasn't really hungry for what we brought," last urination several hours ago, reports a normal bowel movement this morning
Events:	Patient has spent several hours hiking in steady rain. His clothes have become increasingly wet, with moderate wind and no significant opportunity to warm or dry. He reports that he hasn't "felt this cold in a long time."

Assessment

- Possible hypothermia associated with prolonged cold, wet, and wind exposure.
- Possible effects of fatigue, dehydration, inadequate caloric intake, and continued environmental exposure contributing.

Plan

- Stop travel and shelter from the rain and wind.
- Remove wet clothing as practical and replace it with dry insulating layers, ensuring new layers stay as dry as possible.
- Insulate from the ground and environment.
- Warm, calorie-containing fluids and food if he remains alert and able to swallow.
- Reassess vital signs, mental status, shivering, coordination, and overall condition.
- Determine whether Daniel improves enough to continue, and whether the group can realistically keep him warm and dry if travel continues.
- Evacuate if he fails to improve, worsens, develops altered mental status, or has increasing coordination problems.

Anticipated Problems

- Continued heat loss while stopped
- Difficulty getting fully dry
- Insufficient dry clothing or insulation
- Worsening coordination or mental status
- Inability to rewarm
- Other group members being impacted by the cold
- Continued rain and wind making it difficult to maintain rewarming once travel resumes
- Daniel minimizing symptoms because he does not want to affect the group's plans

What Happened?

The group stops traveling and moves off the exposed trail to the shelter of a rocky outcropping, out of the wind and rain. Daniel is helped out of his wet clothing and into his dry insulating layers. His wet gloves and outer clothing are replaced, and his sleeping pad is used to insulate him from the ground. Hot water bottles wrapped in clothing are then placed against his trunk, under his puffy layers and near his armpits to provide additional external heat, being careful to not go directly onto skin to avoid possible burns.

Daniel is given a warm drink of hot cocoa and some high-calorie snacks. Over the next 30–45 minutes, his shivering becomes less intense and his coordination improves. He is able to manipulate the buckles on his pack and reports feeling warmer and "a whole lot better than before."

You reassess Daniel and discuss the situation with him. He feels significantly better, but the group still has several hours of travel remaining and the rain has not let up. You consider whether there is enough dry clothing, insulation, and shelter available to keep him warm if he starts losing heat again.

Because Daniel is improving with shelter, dry clothing, insulation, food, and warming measures, you decide that evacuation is not necessary at this time. However, you also decide that continuing toward the original destination does not make sense. The group will need to modify the plan to reduce Daniel's exposure and give everyone a better opportunity to stay warm and dry.

You decide to camp nearby rather than continue toward the original campsite. The group settles in, focuses on keeping clothing dry, maintaining warmth, keeping spirits up with a lively card game, and you continue to monitor Daniel.

Daniel continues to improve over the next several hours. His mental status remains normal, and he is eating, drinking, and moving around camp. The group discusses the weather and the next day's route and modifies the remainder of the trip based on the forecast and the group's ability to stay warm and dry.

Comments

Hypothermia does not require snow, sub-freezing temperatures, or a winter environment. Cool temperatures combined with rain, wind, wet clothing, fatigue, and inadequate caloric intake are the perfect recipe for significant heat loss.

Pay attention to function. Signs like persistent shivering, fatigue, clumsiness, and changes in coordination, sometimes referred to as "the umbles" for the numerous words that rhyme and can be observed in hypothermia, deserve assessment when someone has been exposed to cold and wet conditions for an extended period.

Strong expedition behavior can sometimes mask the problem. Participants may not want to acknowledge that they are cold, may believe they are simply tired, or may be reluctant to slow the group. Daniel's initial description of himself as "just tired" is worth noticing, particularly when his behavior and physical findings suggest something more is going on.

Environmental conditions are an ever-changing part of assessment in the field. Rain, wind, wet clothing, and limited opportunities to dry can make a manageable problem progressively harder to manage. The question is not simply whether Daniel can warm up while sitting in camp; it is whether the group can keep him warm once they start moving again.

The field decision is not necessarily "evacuate or continue." Stop the exposure, begin warming, reassess the patient, and then reassess operational decisions based on the patient's response and the group's ability to maintain a safe environment. Sometimes the appropriate decision is to change the objective rather than the obvious binary choices of evacuate or keep going.

Regular reviews of your medical knowledge prior to leaving the trailhead and refreshing your training through regular wilderness first responder recertification courses can help keep useful skills accessible. A NOLS Wilderness Medicine Field Guide can provide additional information about hypothermia, cold-related emergencies, and all sorts of other conditions you may encounter in the field.