



Wilderness First Aid Scenario

LIGHTNING

Victim 1 (Erich) and Victim 2 (Dan) – Lightning strike

SUMMARY

Your group of eight Scouts and three adult leaders are backpacking at Philmont. It is midafternoon. The crew is at about 10,000 feet elevation and walking through a lightly wooded area. You notice dark clouds on the horizon and see lightning flashes in the clouds, but you do not hear thunder. Others notice it, too, but because it appears to be several miles away, they insist on continuing backpacking rather than seeking shelter. Five minutes later, it begins to rain; you see lightning and hear thunder about 15 seconds later. Everyone begins to shelter against the thunderstorm. Just then, you see a flash of lightning and immediately hear thunder. You notice that Dan, a 16-year-old Scout, and Erich, a 45-year-old adult leader, are lying motionless on the ground. The thunderstorm has not ended. How do you proceed?

SCENARIO DETAIL

Everyone in the crew has CPR training. Both you and Toby, one of the adult leaders, are WFA-certified, and you both have cellphones. You have the AHMRs of all the crew members in your backpack, as well as a first aid kit with the supplies recommended in the *Philmont Guidebook to Adventure – Advisors Edition*.

STUDENT RESPONSE

1. Scene safety:

Ensure that the scene safety assessment is completed. Is it safe for you or others to help Dan and Erich?

2. Primary assessment:

You are closest to Erich; Toby is closest to Dan. You tell Toby to go to Dan and you will go to Erich. Remember to use the ABCDE method.

Erich (Victim 1) is not breathing (A and B) and you can't find a heartbeat (C). He is not responding to your tapping on his shoulders and calling his name. Because it appears he is in cardiac arrest, you do not assess for any disabilities (D). The thunderstorm has not ended (E).

You begin CPR on Erich. You must also get help. Because of the thunderstorm, you have to decide how best to do so: use a cellphone (signal strength and battery charge could be factors) or send Scouts to the nearest staffed camp.

Dan (Victim 2) is lying on his back, is breathing (A and B), has a heartbeat (C) but is unresponsive. He does not have any obvious disabilities, but because he is unresponsive, Toby must assume he may have an injury (D). The thunderstorm has not ended (E).

3. Secondary assessment:

In this scenario, it is fortunate that two crew members are WFA-certified. This enables both victims to be treated simultaneously.

Erich (Victim 1): You do not perform a secondary assessment. This is because he does not have a pulse, is not breathing, and is unconscious, so CPR is prioritized.

Dan (Victim 2): The primary assessment suggests that Dan does not have any immediate, life-threatening injuries, although he is unresponsive. Therefore, Toby continuously monitors the victim's vital signs and maintains an open airway while performing a secondary assessment

- Physical exam: Toby performs a head-to-toe hands-on physical exam of Dan. Because Dan is unable to respond to questions, Toby feels for any deformities or asymmetries. He notices that Dan's left pant leg is melted and the underlying skin is burned.



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b. Vital signs:

Level of Consciousness (LOC): unresponsive

Heart rate (HR): 95 bpm

Respiratory rate (RR): 20/minute

Skin color, temperature, and moisture (SCTM): wet and cool to touch, but Toby suspects this is because it is raining

c. SAMPLE (Dan is unable to respond to any questions. However, Toby and you reviewed the AHMRs prior to leaving for Philmont and again while in base camp before beginning the trek.):

S: Signs and Symptoms – unresponsive; burn on left leg just above outside of ankle.

A: Allergies – no allergies (Toby knows this by having read his AHMR in base camp).

M: Medications – none (from his AHMR).

P: Pertinent past medical history – appears to have been struck by lightning; appeared healthy before that.

L: Last intake and output – ate lunch about 2 hours ago; Toby does not know when he last voided.

E: Events leading to the injury – Hiking at altitude, caught in thunderstorm, exposed and wet.

POST-SCENARIO DEBRIEF

- Could this situation have been prevented?

Potentially. Recall that an important aspect of wilderness first aid is prevention (taking actions to reduce the likelihood of needing to use first aid). In this case, the crew should have followed the guidelines outlined in the Hazardous Weather Training and Guide to Safe Scouting. As soon as they heard the thunder, they should have begun to prepare for inclement weather rather than continuing their hike. The area they were in was “lightly wooded,” so the crew should have attempted to find as safe an area as possible, away from trees—especially tall, isolated trees—as well as away from open or high ground. They should have spread out as far away from each other as possible, ideally 100 feet, and assumed the “lightning position.” The lightning position entails squatting down like a baseball catcher, with heels touching, hands over ears, and looking down. Ideally, this also includes squatting on a surface or sleeping pad that reduces ground contact, such as a backpack or sleeping pad.

- How did your responses to Dan and Erich differ? Why?

It was fortunate that there were two crew members who were WFA-trained, as there were multiple victims. It was important to quickly triage their injuries as part of the initial assessment. Erich’s injuries were clearly life-threatening, while Dan’s appeared not to be life-threatening.

Erich: Responding to Erich’s injuries was a higher priority. Beginning CPR was the highest priority, so you did not do a focused assessment to determine if he had other injuries, such as fractures or burns.

Dan: The primary assessment of Dan allowed for a secondary assessment. That is why Toby could do a more thorough secondary assessment. As part of the head-to-toe exam, Toby was looking for DOTS (deformity, open wounds, tenderness, swelling), although he couldn’t assess tenderness since Dan was unresponsive. Based on Toby’s assessment, Dan’s leg wound needed to be treated—probably as a burn injury, based on what happened. However, spinal injuries and fractures can occur with lightning strikes, so precautions should be taken to stabilize the spine. Because of the weather, Dan is probably wet; precautions need to also be taken to reduce the risk for hypothermia. He should also be treated for shock, but because of the potential for fractures/spinal injuries, the extremities should not be raised. Because he is already supine, it is best to leave him in that position but protect him with coats, sleeping bags, etc., to prevent heat loss. Logrolling to protect the head/neck/spine should be utilized to place items under the victim.



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- How would your responses have differed if you were the only person certified in WFA? Or the only person who knew CPR? **Being the only WFA-trained crew member or the only person who knows CPR complicates this situation considerably, since there are two victims. This is why it is best to have multiple crew members trained. In this situation, it would have been good planning to know beforehand which crew members have some first-aid training (e.g., having earned the First Aid merit badge). Knowing this would have enabled you to delegate responsibilities, such as telling a first-aid-trained crew member to check on Dan while you began CPR on Erich.**

But if no one in the crew could help you, then you have to ascertain who is more critical. Both victims were motionless and unresponsive, but Erich was not breathing and was without a pulse, while Dan was breathing and had a pulse. Thus, Erich was the higher priority.

- What would you have done if Erich developed a pulse—meaning a heartbeat—and began breathing? **In this case, you could do a secondary assessment on Erich to determine if he has other injuries. Depending on what you find, you can then treat them. Continue to monitor breathing and maintain an open airway. However, as described above for Dan, you must treat Erich as if he has a spinal injury and shock, and keep him warm and dry to reduce the risk of hypothermia. This is in addition to treating him for any other injuries that you find.**
If Erich did not resume a pulse or breathing, then you should continue performing CPR as long as you can. Stopping CPR may occur when you become too exhausted to continue; someone takes CPR over for you; the person is revived, begins to breathe, and there is a return of a heartbeat; rescuers are in danger; advanced emergency personnel arrive and begin to care for the victim; or a physician tells you to stop.
- What would you have done if Dan did become responsive? **If Dan became responsive, you could reassess him for DOTS, including determining if he may have a spinal injury. This includes asking him about back pain, leg numbness or tingling, as well as assessing for sensation and movement in all four extremities. If he has any of these issues, then suspect a spinal injury. In that case, he should not be moved, and his spine would need to be stabilized. Regardless of these injuries, all lightning victims need to be evacuated rapidly.**
- Should you wait until the thunderstorm has ended before going to their aid? **No. However, consideration of the conditions created by the thunderstorm might affect decision-making. For example: Instructions to the remainder of the crew might include not bunching together at either victim. Only those directly involved in resuscitation/ongoing care and essential should be in proximity to the victim/each other until the threat of lightning abates. Also, cool and wet weather needs to be considered in order to prevent hypothermia.**
- What other injuries did Dan or Erich have? How do you prioritize the order of treatment? **Prioritization begins with the ABCDE assessment, which is part of the primary assessment, which prioritizes life-threatening injuries. This is followed by the secondary assessment with attention to other injuries or conditions.**
Erich's injuries were life-threatening and required CPR. This takes precedence over Dan's injuries, which, while significant, did not appear to be life-threatening. Dan had a burn to his left leg, which, while requiring first aid, is not as high a priority. Lightning burn-related injuries may appear similar to cigarette burns, although they can also be "feathering" or linear burns. The burn may also be due to his pants melting. Treat it as a burn injury: Ascertain if it is a first-, second-, or third-degree burn and respond accordingly. Internal injuries also commonly occur with lightning strikes. Be aware that burns may have an entrance and exit point with internal injuries occurring along that path.
- Should Dan or Erich be evacuated? Why or why not? If they should be evacuated, is a rapid evacuation indicated? **Anyone who has been struck by lightning needs to be evacuated rapidly, even if they appear to have recovered. Serious medical problems can develop later.**
- Suppose there is only one crew member who is WFA-certified. How would you prioritize responding to Erich and Dan? **Because Erich's injuries are life-threatening and Dan's are not, Erich should be prioritized for treatment. You can ask one of the other crew members to monitor Dan's vital signs and stabilize his head, neck, and spine to minimize movement.**