Appalachian Search and Rescue Conference Field Team Leader (FTL) Test Questions

Scenario A

It is late August and you have responded to a search in a state forest to look for a four year old girl who has been missing for approximately 3 hours. In addition to the description of the girl, you were also given a description of an individual that was scene in the area of the PLS (Point Last Seen) about the time the girl was reported missing and is consider “someone of interest” by law enforcement. You are the leader of a field team consisting of 2 FTM (Field Team Members) and 2 CQs (Callout Qualifieds). You are an ASRC FTL but not a law enforcement officer; none of your team members are LEOs.

Question 1

Your team has been asked to perform a sweep search of a high priority area. Once your team has arrived at your tasked area you realize that the area is quite dense with vegetation. As you begin to approach a large stream you happen upon a trail that leads back in the direction you just come from. At the stream you notice some plastic piping that has been placed on the ground to divert water from the stream. You also notice some empty bags of fertilizer and pesticides. Upon examining a nearby plant, one of your CQs indicates the stream. You also notice some empty bags of fertilizer and pesticides. Upon examining a nearby plant, one of your CQs indicates

a. Radio back to base for further instructions,
b. Continue to carefully search the area knowing that there is a high possibility that the missing girl is in this area.
c. Have you team immediately leave the area following the same path they used to enter the area.
d. Have you team immediately leave along the trail which provides the quickest means of escape.

Question 2

Your team has been asked to perform a hasty search along an old forest road that was initially considered a low priority area. As your team rounds a corner you observe a man throwing a filled heavy garbage bag over the hill. The man roughly fits the description of the “someone of interest”. Upon seeing your team, the man becomes very nervous and starts running for his vehicle. What do you do?

a. Allow the man to leave the area, noting a description of the vehicle and the license plate number.
b. Ask the man to stop so that you can question him.
c. Tackle the man before he can reach his vehicle and physically restrain him until you contact base or law enforcement.
d. Attempt to block the road to prevent the man from driving away.

Question 3

It is late in the day with only a few hours of daylight left. Your team has been asked to search a high priority area that is approximately a 2 mile hike from the base. Upon arriving at the trailhead in which you are to begin your search you realize that you have lost the map. You recall looking at your map about ¼ of a mile from your current position. One member of your team has a GPS, but the reception has been intermittent. What should you do?

a. Send two team members back along the trail to look for the map.
b. Begin to search the area making the most out of the remaining daylight.
c. Turn the entire team around and return to base.
d. Radio base requesting that someone bring you a new map and send 2 team members back along the trail to meet them.

Scenario B

You have ASRC FTL certification, and have completed an EMT-Basic class and a Wilderness First Responder class, but your EMT-B certification has lapsed. You are on a moderate-urgency search in a rural/wooded portion of Virginia’s Coastal Plain, a mixture of fairly open woodland and open overgrown fields with meandering small streams. It is an early spring morning, a clear day with temperature now about 45 degrees F but looks to be warming up fairly quickly. You are leading a sweep task of six people, including two CQs who look to be fairly experienced in the outdoors but not in SAR, and 3 solid FTM. Your team all have small field packs as this is expected to be a few-hour task, heading back to base when done. Comms are questionable at best; you are in and out of shallow ravines and the portable repeater’s not up yet.

After a brief drive and a 1.6 mile hike, your team arrives at the assigned grid segment, but you find that a new beaver-dam has flooded half of your assigned segment. There are wide-spaced trees through most of the flooded area, and it doesn’t look that deep, but you won’t be able to search the few non-flooded hummocks without some splashing or wading through the water.

You are about 3 miles from Base, and when you try to call in on the radio, you can’t get through to Base or even another team. Everyone checks their cellphones – only one person can even see a single bar of signal strength, and the person who has one bar can’t actually get a call through.

Question 1

Given Scenario B, you should:

a. Head back toward Base, at least until you can contact them by radio or cellphone.
b. Search the unflooded portion of your segment, then head back to base.
c. Send the two CQs back to base to give a report and get more instructions, and use your remaining FTMs to search the unflooded portion of your segment.

d. Send a CQ and a FTM back to base to give a report and get more instructions, and use your remaining FTMs to search the unflooded portion of your segment.

e. Search the unflooded portion of your segment, then use your team to try to search the flooded area, with the CQs staying along the edge of the water as guides, and with the FTMs actually splashing/wading through the water to search the unflooded hummocks.

Question 2

One of your CQs tripped and fell in the water and is now soaking wet, although uninjured except for her dignity, Given Scenario B, and this additional information, you should:

a. Have the CQ and a FTM head back to base to keep the CQ warm while walking and to get the CQ dry clothes.

b. Take the entire team back to base.

c. Do a quick check of the teams’ packs for extra items of clothing to offer to the CQ to put on, have the CQ eat a bit of food and drink some water, and then continue with the task in a way that involves continued exercise (walking) without any stops for the next hour or so.

d. Check the CQ and reassess her (i) likely physical endurance, (ii) status as far as nutrition and fatigue, and (iii) status as far as warm-when-wet and extra warm clothing, with the choice among the above options (a-c) depending on the results of your assessment.

Question 3

Jerry, one of the FTMs fell and injured his right wrist. He says it doesn’t hurt that bad and that he just needs to take some Tylenol from his pack and he will be fine. You look at the wrist and it’s a little bit swollen but other than that looks fine. However, you note that he tries to pick up his pack with the right hand and he is unable to do so, he has to pick it up with his left hand. He insists he is fine to carry out the task and that he will get it checked when he gets back to Base and head back to Base.

given the Scenario B and this additional information (but not the additional information from any other question), you should:

a. Continue with the task and do as Jerry suggests.

b. Insist that Jerry use your SamSplint and elastic bandage to splint the wrist, but allow him to continue the task as he suggests.

c. Abort the task and head back to Base.

d. Continue with the task, but keep trying to contact Base to contact someone with higher medical qualifications or the Operations Section Chief to help make a better decision.

Scenario C

You are an ASRC FTL. You are at Base, and get assigned a team to take out on an 8 hour search task in one of the wilder areas of Shenandoah National Park, called Hazel Country.

It’s a nice sunny spring day, and the forecast is for good weather. The terrain is bit rugged – actually fairly benign for Shenandoah National Park – but there are no major cliffs or streams. The search is of relatively low urgency, for a solo hiker who hasn’t returned to his car as planned.

Your task is a hasty search along the Hannah Run Trail, the Catlett Mountain Trail, and the Hazel River Trail, then a sweep task up the ravine of the Hazel River (easily crossed without wading) up to the sag between Hazel Mountain and the main Blue Ridge.

You are assigned four FTMs and a CQ. Three of the FTMs are from your Group ("Group A"), and are solid performers you know quite well. The other FTM and the CQ ("George") are from another ASRC Group ("Group B"). You’ve never met them.

As you receive your briefing, the Briefing Officer, who is from Group B, tells you the following: “George is a pretty new member of Group B. He said he was a team leader with Tacoma Mountain Rescue Unit before he moved to this area, and even asked if he could challenge the FTM and FTL tests. We told him that the ASRC Training Standards require a certain amount of training and experience at the CQ level before he can become an FTL. He was pretty unhappy about that. He certainly has a lot of gear that he brought to our last few training sessions, but a lot of it looks pretty new. One our other members said ‘this guy is a real whacker, watch him real carefully’ and I thought I’d pass this on to you just in case.”

You have what’s basically a nice stroll along the Hannah Run and Catlett Mountain trails (downhill a bit, then pretty level) and then steeply down the Hazel River trail to the actual Hazel River. As you dip into the ravine of the Hazel River, you lose radio and cellphone contact.

Once at the bottom, you brief the team on the plan which you had previously discussed with the Briefing Officer, which is to sweep up the left side of the ravine, guiding off the stream, then once at the sag, sweep down the other side of the stream until you reach the Hazel River Trail again.

However, George says “Don’t you think it would be better to do the task all at once? We could put three on one side and three on the other side and sweep up the ravine, both sides. The woods are open, visibility’s good as the brush hasn’t sprouted yet, and we’ve got good light. That way, we’d finish the task faster, be closer to Skyline Drive when we finish, and be ready for something else if needed. I could go on one side and you on the other and that way we’ve got someone with a lot of experience on each side.”

Question 1

Given Scenario C, you should:

a. Head back toward Base, at least until you can contact them by radio or cellphone, to see if it’s OK with Base for you to do this.
b. Agree and say “That’s a good idea. Let’s do it.”

c. Hit George on the head with a flat rock and then carry him out.

d. Say “George, that’s a pretty good idea, but the people at Base are expecting a certain degree of coverage on either side of the stream, and are expecting us to complete the task as given, unless there are extenuating circumstances. But thanks for the thought. Now, let’s go over how we’ll do this sweep…”

Question 2

Additional information: As your team is sweeping up one side of the ravine, Bill, one of the FTMs twists his ankle, hears a “pop.” He says the pain is severe. You and Amy, a Wilderness EMT FTM, examine the ankle. The skin is intact; there is considerable swelling on the outside of the ankle. There is no deformity, and distal neurovascular status is intact. There is tenderness in front of the outside bump on the ankle (the “lateral malleolus”) but not elsewhere. However, Bill cannot bear any weight on the ankle at all. You check for radio and cellphone coverage and get no signal on either. George immediately pipes up with “I’ll take one of the FTMs and hike up the hill to where we can get cellphone or radio coverage and see if we can get a litter and some more people in here to carry him out.” Given Scenario C and this additional information, you should:

a. Say, “OK, that sounds great.”

b. Say, “Hang on for a second. Let’s ask Amy what she thinks about this.”

c. Hit George on the head with a flat rock and then carry him out.

d. Start an improvised evacuation, using a piggyback-style with a webbing sling harness to carry Bill.

Question 3

Additional information: Amy says, “When I took my Wilderness EMT course, I heard of the Ottawa ankle criteria that they use in the ED, and if Bill could walk six steps on ankle, he wouldn’t need an X-ray. And if he doesn’t need an X-ray, he doesn’t have a bad fracture, and he can walk on it, especially if I tape it like I was taught. Why don’t we give him some ibuprofen and wait for 45 minutes to see if he can hobble on it?”

Given Scenario C and this additional information, you should:

a. Hit George on the head with a flat rock and then carry both him and Bill out.

b. Make George carry Bill out all by himself.

c. Do exactly as Amy advises.

d. Send a couple of members to the top of the ravine to try to make contact with Base and get orders.

Wilderness EMT Scenarios

These are taken verbatim from the Wilderness EMS Institute 1997 Practical Skills Manual, for training WEMTs. For each scenario, give recommendations for what Wilderness EMTs should do. Do so both in terms of how WEMTs should be trained to manage such situations, and how you would deal with this as a WEMT call to you for medical direction. In many cases, the instructor’s notes are included. Please review and see if you agree or disagree, but be ready to back up your assertions. (The Practical Skills Manual has a lot more detail on each, with student checklists, but this is enough for discussion.)

1. Tyrolean Traverse

The patient is a 22 year old black male climber with a tibia/fibula fracture and mild hypothermia, but no other current or past medical problems. A complete examination has been done by another Wilderness EMT, but who gets something in his eye, and has to drop out of the evacuation.

As part of the evacuation down from the bottom of the cliffs of Massanutten Mountain and across Passage Creek at Blue Hole gorge, the patient must go across a Tyrolean Traverse (highline), and you must accompany the patient. The patient is talking to you and comfortable, but nauseated from the pain. Halfway across, the patient starts vomiting. You must invert the litter to prevent aspiration.

2. Runaway

The patient is a 23 year old oriental female. She was camping with her boyfriend at a Laurel Hill State Park. A few hours before, she and her boyfriend had an argument, and she ran off into the woods. She has a history of depression, but no history of suicide attempts. She has no other past medical history.

When she didn’t return, the state park rangers began a hasty search for her, and one found her along one of the trails. This ranger has no medical training. He sent back a message that she was hurt with another hiker that passed by. Since your search and rescue team (or rescue squad) was practicing technical rescue on the nearby cliffs, the ranger at the ranger station drove up and asked your team to respond.

You follow the ranger along an easy trail for a mile. When you arrive with ropes, Stokes litter, and medical gear, you find a tearful oriental female cradling her right wrist.

History:

She says she fell and landed on her outstretched right hand because she was running. She denies other injury, and specifically denies any neck pain or head trauma or loss of consciousness.

If students ask, she convincingly denies any suicidal ideation or intent; she was just running away for a while to “cool off.”

Physical exam: Tender in the anatomic snuffbox at the right wrist, but nowhere else. No other extremity tenderness. NVI distally. Axial compression on the thumb causes increasing pain. Otherwise normal physical exam.
Important points for students:

1. Ask students at this point if they need to immobilize the cervical spine; do they even need to clear the cervical spine? No. There is no reason to suspect cervical spine injury in this patient. Examining the cervical spine as part of a quick screening exam is appropriate, however. Have the students do their standard “screening” physical exam, and review their choice of exam items for this.


3. Does she need to be carried out? Certainly not. Walk her out with assistance, and have her boyfriend take her to the nearest Emergency Department. Though in most cases an ambulance is available, an ambulance is not truly needed for this transport, and the WEMT student can tell Base that ambulance transport is not needed, freeing any EMS personnel at Base to return to duty. Local EMS personnel will usually want to transport anyway, but should not be permitted to charge the patient for such a service if the patient, after discussion with the WEMT, agrees that ambulance transport isn’t needed. Use this as an opportunity to discuss the issue of level of care for wilderness search patients: does everyone who’s been lost, even for an hour, need an ambulance ride to the hospital?

3. Ankle Injury

The patient is a 25 year old white female with no medical history, a member of your Field Team. During a search task, she slips and falls. You didn’t see her fall, but ran over to her a few seconds later.

History:
She says she bumped her head slightly on a tree trunk, but she had no loss of consciousness and denies any neurological or visual symptoms or neck pain. Her chief complaint is of pain in the right ankle; she twisted (inverted) it, which is what caused her fall. She is not pregnant or breastfeeding, and has no other past medical history.

Pertinent physical exam:
HEENT-- Small abrasion on the right forehead. PERL, EOMI, ears nose and throat clear, no other signs of trauma.
Extr-- Tender under and just anterior to the lateral right malleolus, and directly over the base of the fifth metatarsal, but nowhere else. No other extremity tenderness. NVI distally. Drawer test is stable and nontender. Stress of the anterior talofibular ligament causes increasing pain, stress of other ligaments causes no pain.

Important points for students:
Ask students at this point if they need to immobilize the cervical spine, or simply to ask the patient to keep her head still until the exam is done. The latter is a good choice. There is nothing wrong with having the patient or an assistant stabilize the neck until the exam is done. If an assistant tries to immobilize the neck, the patient becomes mildly irritated and says “Listen, dummy, I can tell I don’t have a C-spine injury, I just have a bump on the head and a sprained ankle. GET YOUR HANDS OFF MY HEAD!”

Ask students if the ankle injury should be considered a distracting injury. The answer is that you can’t tell until you talk to the patient and find out how much it hurts.

Make sure the students perform the “Clearing the C-Spine” protocol in the correct order, at least as far as checking for a distracting injury, assessing for alertness and for intoxication, and asking history questions before examining the neck for range of motion.

Have the students do their standard “screening” physical exam, and review their choice of exam items for this.

Can the students definitely rule out an ankle fracture with their exam? No. Can they rule out a large fracture, and conclude that it’s likely a sprain? Yes. Review the role of an Ace wrap (elastic bandage), Aircast Airstirrup ankle brace and similar devices, good climbing/hiking boots, and ankle taping.

Is a fifth metatarsal base fracture a reason to keep the person from walking? No, unless the pain is very severe with walking. However, it will probably prevent a person from continuing with the task and may require some help in hobbling out.

Have the students tape the ankle in an attempt to get the patient to walk out. Teach proper taping technique (see text).

Does the person need a splint, or can you just have the patient walk out with improvised crutches or with assistance? It depends on the amount of pain. In this case, the patient says the pain is fine unless she bears weight, even if the ankle is taped. Therefore, she doesn’t need a splint, she just needs a carry-out. Have the students demonstrate the proper way to rig a 2” sling backpack carry, and carry the patient a short distance.

When patient gets back to Base and an Aircast is applied, she says she can hobble around OK. She’d like to stay at Base helping out with operations, then go to a local ED for X-rays later. Is this OK? (Yes.)

4. Plane Crash

You are members of a rescue team that is going in to a known plane crash site. A small plane carrying three passengers has gone down in steep hills in the Laurel Mountains of SW Pennsylvania near the town of Ligonier. By radio report from the plane to the Flight Service radio station at a nearby airport, you know that there are three people on board, and one is seriously injured. The other two say they have minor injuries that are not a serious problem and were able to operate the still-functional radio. They state the plane is badly damaged: the wings are ripped off, but they landed on a ridgetop trail that was somewhat open when they developed engine problems.

Your team does not have an aircraft-band radio so you cannot talk directly to the scene, however, you have an ELT locator and are using it to guide your team a distance of about a mile to the crash site further down the ridgetop from a highway crossing.

It is early spring, and the weather is foggy and rainy. The temperature is in the 30’s at night and 40’s in the day. There is a low cloud ceiling making helicopter evacuation not possible.

(Instructor: if time and radio traffic permit, you may want to do some of this briefing over the radio before the student team approaches your position.)
Your team leader has assigned responsibilities for the team ahead of time: your most experienced medic will attend the seriously ill patient, and the other personnel will check the two others over quickly for any significant injury then help the primary medic. (Instructor: The two patients with minor injuries can have their cervical spines cleared, a quick physical exam shows nothing, their minor scrapes can essentially be ignored and then they can walk out with the evacuation team. The third person is the subject of the remainder of the exercise.)

The patient is lying on the ground beside the plane. The two minor-injury people at the scene say they removed him with the best attention to cervical immobilization they could provide, and have covered him with some spare clothing.

History:
The prime patient is the pilot. According to those at the scene, they think he hit his head and chest on the wheel, and was unconscious for about 5-10 minutes. He doesn’t remember anything about the accident. His left arm, left chest, and both ankles hurt.

Physical Examination:

Primary Survey-- Moderate difficulty in breathing with patent airway; no visible bleeding, radial pulse slightly weak.

General-- middle-aged white male in moderate distress, holding onto his chest and breathing with obvious pain.

Vital Signs-- BP 96/62, P 104, R 26 (and shallow), rectal temperature is 98°F (36.7°C).

HEENT-- No obvious skull fracture, slight hematoma left forehead. Ears without blood. PERL, EOMI.

NECK-- No deformity, mild tenderness on palpation (complains of pain on flexion and refuses to move it further if students ask him to move it but does not become paraplegic), no JVD noted.

LUNGS/CHEST-- Absent breath sounds on upper left, diminished on the lower left, right side clear; patient complains of pain on palpation and students can feel some crepitance on the left mid-chest with slight subcutaneous emphysema. Trachea in midline.

HEART-- normal heart sounds.

ABDOMEN-- soft and nontender when palpated, including the area of the spleen and liver. Normal bowel sounds.

EXTREMITIES-- Left humerus fracture with obvious deformity and crepitus. No wrist drop or other weakness. Pulse, motor, and sensory intact distally. Capillary refill is 3 seconds. Bruising noted down the patients left side (arm, trunk, and leg) but basically nontender in the leg except for the ankle. Tenderness in both ankles with significant swelling in both ankles. Pulse, motor, and sensory intact distally with capillary refill of 2 seconds.

Important Points for Students:

1. Students can clear the first two patients with minor injuries and then essentially ignore them.

2. Students can’t clear the main patient who has distracting injuries and neck tenderness.

3. Non-tension pneumothorax, decompress if needed during evacuation, especially if no O2 available.

4. splint fractures, IV for shock and meds

5. fully immobilize

6. Foley urinary catheter for comfort and to follow urine output during evacuation?

5. Another Ankle Injury (hey, they’re common)

You are a member of a search field team, spontaneously assembled from hikers (including yourselves and the search subject’s hiking partners) and a few local EMS/Fire-Rescue personnel at the scene; no base or wilderness EMS medical command is set up yet, and the local EMS personnel cannot reach their medical command with the radios. You are looking for a day hiker who had been overdue for four hours before being reported missing at the parking lot at the south edge of the Otter Creek Wilderness Area, Monongahela National Forest, West Virginia. You find the patient sitting alongside the trail two miles from the parking area.

The terrain is steep hills. The weather is sunny, in the seventies, clear and dry, though the sun will set soon. The evacuation time is one to two hours.

History:
The hiker says she was taking up the rear on the way out of the wilderness area after a three-day hiking trip. She slipped on tree root. She fell, twisting her ankle, and hitting her head on a log. She denies loss of consciousness. She states that she was “knocked silly for a few minutes.” She is not pregnant or breastfeeding and has no other complaints, no other past medical history. She says she tried to walk on the ankle and can’t because it hurts too much to walk on. She says it doesn’t hurt much as long as she keeps it elevated like it is right now.

Physical Examination:

Primary Survey-- No obvious immediately life-threatening problems.

General-- Young female, appears to be in her early twenties, sitting on a log, alert and oriented.

Vital Signs-- BP 120/80, P 80, R 18.

HEENT-- Slight hematoma on the right occipital area. PERL. EOMI. Ears/nose/throat unremarkable to exam.

NECK-- No deformity, no tenderness when palpated. Full range of motion if students ask her to do it.

LUNGS/CHEST-- Lungs clear, chest nontender to palpation.

HEART-- Normal heart sounds.

ABDOMEN-- Soft and nontender when palpated.

EXTREMITIES-- On inspection, there is slight angulation of the lateral malleolus, with severe tenderness and slight crepitus there; in the medial ankle, there is less swelling but some significant
tenderness. There is swelling from the toes to above the ankle. Capillary refill is present at just over two seconds. Motor and sensory are intact distally.

Important points for students:

Can the student clear the cervical spine? Is this ankle fracture a distracting injury? Difficult decision.

Consider weather, terrain, time of day, length of tie to obtain proper immobilization, patient’s status. Since this is a short scenario, spend most of the time discussing two items:
1. ankle/foot injuries and the decision to walk out, walk out with assistance, carry out, or continue on task.
2. criteria and procedure and philosophy behind clearing the cervical spine in the wilderness.

6. Hypoglycemia

You are involved in a now 48-hour-old search for a hiker lost in the Cades Cove area of the Smoky Mountains National Park. You have been looking for a lost 24 year old female. The fall weather is clear, with lows in the 40s at night and highs in the 60s during the day. The patient's friends state that she has a history of diabetes but no other known past medical history; they are not sure if she is on any medications or not.

The patient was just found, by a search team with no medical personnel, approximately two miles off the trail. They say that she is responsive only to painful stimuli with meaning, and you can't get much more useful information about her over the radio. Your team is only about half an hour's hike/run away, so you respond directly to their location. Your team has a standard WEMSI Personal MedKit and usual search gear but no other medical supplies. A team can reach your location from Base with a Stokes litter and whatever medical gear you need in about an hour and a half; the Stokes is already en route, and two other fast hikers are waiting at Base for word from you on what medical gear they should run in to you.

The weather has been pleasantly warm and sunny for the late fall, but over the past hour or two clouds have been moving in from the west, and now there is a stiff chill breeze from the west. It is 5:30 PM and getting dark. The forecast is for a major storm with high winds and freezing rain. The one helicopter at the search base in Cades Cove has left due to the impending weather and Base tells you no helicopters are available, not that there is a LZ anywhere near the patient.

History:

Patient unable to provide any additional history.

Physical Examination:

Primary Survey-- No obvious life-threatening problems.*

General-- Young white female, on a sleeping bag, responds to painful stimuli with purposeful movements. Patient pale and diaphoretic.

Vital Signs-- BP 96/68, P 110, R 20 T 96°F (35.6°C) rectal

HEENT-- no obvious injury, PERL.

Important Points for Students:

Is there any reason to suspect anything other than hypoglycemia? No.

2. Discuss the treatment of suspected hypoglycemia in such a patient without having injectable glucose.

3. Discuss the lack of danger from aspiration of small sips of fluids such as Gatorade: essentially none in such a situation as this.

7. Lost Boxing Coach

Setting:

You have been participating in a 6-day long search for a lost man. He is a 72-year old white man who just retired as a high school boxing coach, and is in excellent health. He and his wife were day-hiking in Virginia’s Mount Rogers Wilderness Area on a very foggy day. They became separated looking for the trail back to the parking area; rangers found his wife soon thereafter, but found no sign of him. A search team without medical training finds him on the sixth day after he was lost. You hear that he is "pretty badly banged up," is "cold," "confused," and is in a swampy area near the base of Mount Rogers, about two miles from the nearest road. Your team is only a half-mile from the scene and responds there on foot.

When you arrive, you find the team members clustered around an elderly man. They have placed him on a foam pad and wrapped parkas around him. They have given him a liter of water to drink, have started a stove, and are fixing a freeze-dried dinner for him. They say that he was wandering around in the swamp without his shoes when the found him. You look at his feet, covered only with very dirty socks, and they are masses of small cuts and abrasions, though with no major signs of infection. He is alert, and not particularly agitated, but what he is saying to the team members makes no sense at all.

History:
Pitt WEMS Discussion Scenarios

His answers to questions make a slight bit of sense but don’t really answer the question. However, when asked “did you fall?” or “did you hurt your head or neck?” he answers “no,” and seems to be very sure of this. He goes on to tell students all about his dog, who he seems to think is right there with him though students can see no dog. (Instructor: tell the students at this point there is no dog visible, nor any dog tracks in the swampy ground, and there was nothing about a dog being with him in your search briefing.)

Physical Examination:

Primary Survey-- No obvious immediately life-threatening problems.

General-- Older white male, sitting on foam pad; very dirty and disheveled.

Vital Signs-- BP 120/60, P 110, R 22, rectal temperature is 95°F (35°C). When he gets up to have another pad placed underneath him, he complains of being dizzy; you find his standing pulse to be 140 and BP to be 90/40.

HEENT-- No obvious injury. PERL. EOMI. Ears/nose/throat unremarkable to exam.

NECK-- No deformity, no tenderness when palpated. Full range of motion if students ask him to do it.

LUNGS/ CHEST-- Clear, nontender.

HEART-- Normal heart sounds.

ABDOMEN-- Soft and nontender when palpated.

EXTREMITIES-- The arms and legs appear atraumatic (without signs of trauma) except for numerous small scrapes and abrasions on both legs.

NEUROLOGICAL--

Mental Status: Oriented to person, year but not month, and knows he’s near Mount Rogers.

Cranial Nerves: counts fingers with both eyes, EOMI, facial movement and sensation are normal, hearing is fair and similar in both ears, tongue protrudes in the midline, and shoulder elevation is strong bilaterally.

Sensory: Normal light touch in all extremities.

Motor: Normal strength in all extremities.


Cerebellar: Fairly good finger-to-nose bilaterally.

Case Development: as the students examine the patient, he becomes more oriented, and by the end of the exam, he is making perfect sense and appears to be a good historian, though a bit slow in his answers.

Important points for students:

1. Can students use their protocol to clear the cervical spine? No. Do they need to suspect cervical spine injury? Not particularly, but it makes sense to examine the neck as part of a general physical exam.

8. A Backpacker Falls

Setting:

You are one of the instructors at a summer weeklong WEMT class offered by the Eastern Region, National Cave Rescue Commission at Dailey, West Virginia. About the middle of this exceedingly hot and humid week, a call comes in for a real rescue. As with most wilderness search and rescue situations, information comes in filtered through multiple channels: paramedic at the scene to the ambulance, ambulance to the base, base dispatcher by phone to a phone near the NCRC site, NCRC radio from the phone to the training site. The initial request comes through as a “need help for a technical rescue with medical problems, way up Red Creek at Dolly Sods Wilderness Area.” There were enough instructors to keep the class going pending the report of the initial team. You and five others are dispatched.

The temperature is 95°F (35°C) and the humidity is 95 percent. The trail up Red Creek isn’t steep until about two miles up the trail, at which point there is a narrow gorge with cliffs and waterfalls. Your team responds to the bottom of the Red Creek Trail, at the Laneville Forest Service Ranger Cabin, where local fire and EMS personnel confirm their request for your assistance. A Wilderness Command Physician has accompanied you to the cabin and with one other instructor sets up medical command and a communications center. You are told by those at the scene that the patient’s hiking party had gotten off the trail and she fell, tumbling about ten feet. The paramedic had reported she may have a femur fracture and a cervical spine injury; her legs are apparently paralyzed, and she had neck and right hip pain. Her vital signs are stable. The local rescuers have immobilized her on a backboard in a Stokes litter, but haven’t yet started an IV. They want you at the scene.
They are about two miles up the Red Creek trail. They have moved
the patient to a trail, and no special technical expertise is needed for
the rescue. No cliffs are involved. They are going to move her to the
other side of the river, out of the sun. They might need a rope for the
evacuation, though. You arrive at the scene after a sweaty hour up the
trail, and get report from the local paramedic. The local medic can’t
reach his medical command facility on his handheld, but you can
reach your Wilderness Command Physician easily on your handheld.
You and the local paramedic agree that the patient would be best
served by your handling medical care under your physicians’
direction and the local paramedic helping you.

History:
She denied hitting her head or any loss of consciousness or visual
symptoms. She was primarily complaining of pain in the right hip
area, but did have some mild pain in the neck. She had slight tingling
in the hands bilaterally, numbness in the right leg, and didn’t think
she could move her toes.

Physical Examination:
Primary Survey-- no obvious life-threatening problems.

General-- Patient is immobilized in a Stokes litter, she was alert,
oriented, in mild distress, and occasionally even smiling.

Vital Signs-- BP 110/70 R 12 and normal, P 84. Skin temperature is
normal.

HEENT-- minor nontender contusions, a few very superficial
abrasions. PERL, EOMI, nose and throat clear.

NECK-- immobilized, mild left lower strap muscle but not midline
tenderness. No ecchymosis or deformity.

CHEST: stable to AP and lateral compression, nontender, lungs clear
bilaterally. Heart: normal sounds.

LUNGS-- decreased sounds bilaterally due to shallow respirations,
but no râles, rhonchi, wheezing.

HEART-- soft but otherwise normal heart sounds.

ABDOMEN-- soft and nontender throughout, with normal to slightly
decreased bowel sounds.

BACK-- couldn’t examine well due to immobilization, but no distinct
lumbar tenderness.

PELVIS-- stable to inward and outward compression on the anterior
superior iliac spines, with slight local tenderness of the right anterior
superior iliac spine. Stable to AP compression of the pelvis.

Moderate tenderness in the right sciatic notch area.

EXTREMITIES-- a few scratches, no significant tenderness anywhere
in any extremity, full range of motion at elbows and wrists, and
normal rotation at bilateral hips; couldn’t test other range of motion
due to immobilization. In particular, no femur or right hip joint
tenderness and full rotation there without pain.

NEUROLOGICAL--
Mental Status: Alert and oriented. Cranial Nerves: normal.

Sensory: Markedly decreased sensation in the entire lateral right leg,
but intact in the medial leg. Sensation intact in the left leg. Normal
light touch in all extremities.

Motor: Strength 5/5 in both arms. Strength initially not detectable in
either foot, but with encouragement, patient able to show 4+/5
strength of foot plantar flexion bilaterally and of left dorsiflexion;
right dorsiflexion remains just detectable, perhaps due to pain in the
right pelvic area with attempts.

Deep Tendon Reflexes: Normal.

Cerebellar: Good finger-to-nose bilaterally.

Important points for students:
1. As soon as you arrive, the local paramedic tells you he’s worried
about a femur fracture and cervical spine fracture and wants you to
have your Base call for a helicopter. It is a relatively easy two mile
evacuation down the trail to the cabin, and you now have about 20
people at the scene for a litter team. It is afternoon, and there are
scattered thunderstorms moving across the area, and as has been the
case every afternoon of the week, they are getting numerous and the
wind is picking up and is gusty. There is a potential LZ about a half
mile up the river, on a gravel bar in the middle of the river. Should
you call for the helicopter?

2. Can you clear the cervical spine?

3. What do you think are the patient’s real injuries? Do you think a
cervical spine injury is likely?

The patient is evaluated in the Emergency Department at West
Virginia University, where her neurological and musculoskeletal
examinations are unimpressive. She has cervical spine, chest, pelvis,
and right knee X-rays, all of which are negative. She is observed
overnight on the pediatric surgery service and released the next day
with the diagnosis of no significant injury.

9. A Climber Falls

Setting:
You are the sole Wilderness EMT with a wilderness search and rescue
team that is hiking in about two miles to the local climbing rocks for a
vertical practice session. You have a Stokes litter and full rescue gear,
and a full standard WEMSI personal MedKit.

Just as you arrive, about 1000 hours, you see a member of a nearby
rescue squad getting ready to rappel off a small (20 foot) cliff. It
seems that he didn’t tie in properly, because the next thing you see is
him and his rope all at the bottom of this small cliff. He stands up
and is cursing. Temperature is 60°F (15°C), it is foggy and there a
light mist is starting to fall.

History:
You rush over and he says "I’m OK, I’m OK, I just sprained my
ankle." He denies any medical problems or past medical history.
When pressed for details, he states his left heel is only mildly painful
now, but hurts a lot whenever he tried to put any weight on it.

Physical Examination:
**Primary Survey--** No obvious immediately life-threatening problems.

**General--** Young black male, obviously angry at himself but in only mild distress otherwise. Shivering slightly, as it seems to be getting colder.

**Vital Signs--** BP 110/70, P 96, R 22, he refuses rectal temperature, but oral temperature is 98.4°F (36.9°C).

**HEENT--** Superficial scrape on the left cheek, but no bony deformity. PERL. EOMI. Ears/nose/throat unremarkable to exam.

**NECK--** No deformity, no tenderness when palpated. Full range of motion if students ask him to do it.

**LUNGS/CHEST--** Clear, nontender.

**HEART--** Normal heart sounds.

**ABDOMEN--** Soft and nontender when palpated.

**PELVIS--** Pressure inwards and outwards on the iliac wings, and pressure on the symphisis pubis, all cause no pain.

**EXTREMITIES--** The arms and legs appear atraumatic (without signs of trauma) except for very significant tenderness on both sides of the left heel; the ankle and rest of the foot are nontender. Unable to bear weight on the left foot due to pain.

**NEUROLOGICAL--**

- **Mental Status:** Alert and oriented.

- **Cranial Nerves:** counts fingers with both eyes, EOMI, facial movement and sensation are normal, hearing is normal and similar in both ears, tongue protrudes in the midline, and shoulder elevation is strong bilaterally.

- **Sensory:** Normal light touch in all extremities.

- **Motor:** Normal strength in all extremities.

- **Deep Tendon Reflexes:** Normal. Toes downgoing bilaterally.

- **Cerebellar:** Good finger-to-nose bilaterally.

**Important points for students:**

1. Does an oral temperature of 98.4°F (36.9°C) rule out significant hypothermia? Yes. Does he need some warm clothing anyway? Yes.
2. Does he have an ankle sprain, as he contests? No, it looks more like a heel fracture. Should he walk with this? No.
3. Can you clear the cervical spine? It depends. A heel fracture might or might not be a "distracting" injury. When questioned about the pain, this patient says "well, it hurts, but not too bad." Therefore, it is probably reasonable to clear the cervical spine in this particular case.

10. **Another Climber Falls**

**History:**

You are the sole Wilderness EMT with a group of search and rescue team members and friends who are at White Rocks, a favorite climbing area on Laurel Hill about a mile from the nearest road. You have climbing gear, a standard WEMSI personal MedKit, and your normal daypack contents, but no rescue gear.

It is a pleasant, sunny summer day. Some other people who are all wearing black and have black equipment are practicing "repelling" as they call it. You assume that they are members of a SWAT team, but you don't talk to them at all.

About 1500 hours, you hear a commotion from the SWAT team's area of the cliff. You wander over, and see one of the members of their group at the bottom of a small (10 foot) drop, part of the normal scrambling route to get from the top to the bottom of the cliff. He is lying on the ground, moaning. One of the SWAT team members says "He was going back up to the top and he just slipped!"

**History:**

He groans and tells you "I think I broke my butt. I landed right on my butt, and damn but it hurts." He emphatically denies hitting his head or any injury except for his rear end, and denies any past medical history, medications, allergies.

**Physical Examination:**

**Primary Survey--** No obvious immediately life-threatening problems.

**General--** Young white male, moderate distress, pale.

**Vital Signs--** BP 110/70, P 120, R 22.

**HEENT--** Moderately deep scrape on the left cheek (patient is surprised and says he doesn't remember hitting his cheek), but no bony deformity. PERL. EOMI. Ears/nose/throat unremarkable to exam.

**NECK--** No deformity, no tenderness when palpated. If students ask him to perform range of motion, complains of severe pain on movement of the neck to the right, and starts screaming about spasm in his neck. (Instructors: he does NOT become paraplegic!)

**LUNGS/CHEST--** Clear, nontender.

**HEART--** Normal heart sounds.

**ABDOMEN--** Soft and nontender when palpated.

**PELVIS--** Pressure inwards and outwards on the iliac wings, and pressure on the symphisis pubis, all cause markedly increasing pain.

**RECTAL EXAM--** Nontender, prostate in normal position, no blood. (Students may ask for the results of the rectal and the genital exam without simulating.)

**GENITAL EXAM--** No evidence of trauma; no blood at urethra. (Students may ask for the results of the rectal and the genital exam without simulating.)

**EXTREMITIES--** The arms and legs appear atraumatic (without signs of trauma). Range of motion at the hips causes pain in the pelvis.

**NEUROLOGICAL--**

- **Mental Status:** Alert and oriented.

- **Cranial Nerves:** counts fingers with both eyes, EOMI, facial movement and sensation are normal, hearing is normal and similar in both ears, shoulder elevation is strong bilaterally, and tongue protrudes in the midline.
Sensory: Normal light touch in all extremities.

Motor: Normal strength in all extremities.


Cerebellar: Good finger-to-nose bilaterally.

Important points for students:

Can you clear the cervical spine? No. A pelvis fracture is a significantly painful distracting injury.

11: Shoulder Dislocation

Setting:

You are a member of a cave rescue team. You are called in to treat and evacuate a 43 year old male who is three quarters of a mile back in Crossroads Cave in Bath County, Virginia.

The patient is on the far end of a one to one and a half foot wide canyon. The estimated carry out is two to two and one half days, and will require some complex rigging. Walk out time is estimated to be less than one day, but will still require some complex rigging. The patient is in a very small hole, at the end of a very narrow canyon, and the nearest place with sufficient room for a complete examination is about a quarter of a mile back toward the entrance.

The temperature for the cave is 56°F (13°C); it is wet and dark.

His friends gave him two extra-strength acetaminophen tablets and some food and water. Local EMTs have splinted the shoulder in the position it was found, and said neurovascular status is intact; they are hypothermic and members of your team escort them out of the cave.

History:

The 43 year old patient fell down an eight foot drop, pivoting on his foot ascender when his chest ascender came loose, striking his shoulder from the rear. He didn't hit his head, has no neck pain, has no medical problems and no past medical history of significance. He is feeling moderate pain to significant pain only, he says, and feels no medical problems and no past medical history of significance.

The patient is in mild pain to moderate pain only, he says, and feels no medical problems and no past medical history of significance.

Sensory: Normal light touch in all extremities.

Motor: Normal strength in all extremities.


Cerebellar: Good finger-to-nose bilaterally.

Important points for students:

Can you clear the cervical spine? No. A pelvis fracture is a significantly painful distracting injury.

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His friends gave him two extra-strength acetaminophen tablets and some food and water. Local EMTs have splinted the shoulder in the position it was found, and said neurovascular status is intact; they are hypothermic and members of your team escort them out of the cave.

History:

The 43 year old patient fell down an eight foot drop, pivoting on his foot ascender when his chest ascender came loose, striking his shoulder from the rear. He didn’t hit his head, has no neck pain, has no medical problems and no past medical history of significance. The patient is in mild pain to moderate pain only, he says, and feels capable of assisting with his own rescue.

Physical Examination:

Primary Survey-- No obvious immediately life-threatening problems.

General-- You find a white male, who denies loss of consciousness or any injury except the left shoulder. He looks reasonable comfortable but is in significant pain when he moves despite the splints on the arm.

Vital Signs-- BP 140/92, P 96, R 24 96°F (35.5°C) oral.

HEENT-- No obvious injury.

NECK-- supple, nontender, full range of motion causes some pain in the shoulder only (but not in the neck) with flexion to the right (away from the left shoulder). No JVD noted.

LUNGS/CHEST-- bilateral breath sounds clear, nontender, normal heart sounds

ABDOMEN-- soft, nontender

EXTREMITIES-- The patient complains of pain of the left shoulder with any movement. Pulse, motor, and sensory intact distally. Some swelling and deformity noted in the area of the left shoulder with limited range of motion. Left scapula and collar bone intact. Can't really check range of motion due to the constricted area.

Important points for students:

1. Can they clear the cervical spine? Not by protocol, certainly: the shoulder dislocation is a distracting injury. Discuss the requirements for this, and the various considerations that go into clearing the cervical spine in the wilderness (costs vs. risks). Also discuss whether contact with a physician will be helpful in making a possible decision to forgo cervical immobilization due to the difficulty of the rescue and risks of exposure.

2. Immobilize and medicate as needed. IV or saline lock for meds and fluids. Reduce dislocation if possible, and treat for hypothermia.

12. Heat Exposure

Setting:

You are a member of a search field team which has been out since 8 AM; the time is now 3 PM. You are looking for a 2 year old who presumably wandered away in the foothills of the Blue Ridge Mountains near Shenandoah National Park in central Virginia.

The terrain is steep hills with thick woods. The summer weather is hot and humid with the temperature in the mid 80's. The time to base is 4-5 hours. One of your team members, a twenty year old woman, passed out for approximately 1-2 minutes when the team was separated for a wide-spaced sweep. The two persons nearest her have no medical training.

By the time you and the other medical personnel get there she is awake.

History:

The patient agrees with the other team members; she had been feeling nauseated since before lunch; didn't eat much then, she says. She started feeling lightheaded and more nauseated about an hour ago. Just after going up the edge of a steep ravine, she passed out. She remembers gradually falling and is sure she didn't get hurt on the way down. She's now laying on some soft moss and leaves.

She is a WEMT and without prompting gives you the history that she isn't pregnant, has no medical history, is on no medications, has no allergies, and has had no chest pain, abdominal pain, or shortness of breath. She says the team members with her observed no seizure activity nor was she incontinent nor did she bite her tongue. She now has a slight diffuse headache, and is still nauseated, but isn't lightheaded lying down with her feet propped up.

Physical Examination:

Primary Survey-- No obvious immediately life-threatening problems.

General-- alert and oriented, mild to moderate distress, pale, diaphoretic. The skin is cool and clammy.

Vital Signs-- BP 100/58, P 104 weak, R 20 shallow, temp 101.4°F (38.6°C) oral.
HEENT-- No injury.  PERL.  EOMI.  Ears/nose/throat unremarkable to exam.

NECK-- No deformity, no tenderness when palpated.

LUNGS/CHEST-- Clear, nontender.  Respirations quick and shallow.

HEART-- Normal heart sounds.

ABDOMEN-- Soft and nontender when palpated.

EXTREMITIES-- The arms and legs appear atraumatic (without signs of trauma).  Pulse motor and sensory intact in all extremities.

NEUROLOGICAL--

Mental Status: Alert and oriented.

Cranial Nerves: counts fingers with both eyes, EOMI, facial strength and sensation are normal, hearing is normal and similar in both ears, tongue protrudes in the midline, and shoulder elevation is strong bilaterally.

Sensory: Normal light touch in all extremities.

Motor: Normal strength in all extremities.


Cerebellar: Good finger-to-nose bilaterally.

Important points for students:

1. Should check the patient for orthostatic changes, at least after giving fluids.  If check for this before hydration, patient, faints with some very slight twitching suggestive of a seizure but as soon as she lays flat, wakes up again.  (Explain some slight twitching in such a situation shouldn't be classed as a seizure.)

2. Should you give oral?  If you give oral fluids and she vomits once, should you stop oral fluids and call for another team to respond with IV fluids, or should you try oral fluids again?

3. How much does the patient need to be cooled?

4. Can she walk out?  Does it depend on the terrain between the patient and the nearest road?  What would be the criteria for letting her walk out?  (Temperature, state of hydration as judged by urine output and orthostatic BP and CNS changes.)

13. Hypothermia

Setting:

Your are the WEMT of a team setting out to search for a hunter overdue after an unexpected fall snowstorm.  He was hunting in north-central Pennsylvania, in the area of the Susquehannock Trail.  He had indicated he was going to follow the Susquehannock Trail from the Cherry Springs Fire Tower down into Hogback Hollow and then return to his car at the fire tower.  Those who know the area say the trail is very rugged and steeply down the first mile from the fire tower, but after that is relatively level and in good condition down about four miles to where it turns into a jeep trail about a mile above the road at the village of Short Run.

The hunter has been missing for 24 hours.  Last night there was 6” of new snow.  Temperature is now in the 20s, there is low cloud cover with some occasional snow showers.  Your large first-in team will search down the hollow and send off small field teams up each of the three small hollows you will pass en route to the jeep trail.  A local four-wheel drive ambulance will meet you and the remains of your team at the jeep trail.  You will have radio contact with all of your subsidiary teams, and a local Wilderness Command Physician will be at the vehicles at fire tower and able to talk to you in about an hour.

Your team is planning to carry six heat packs, a stove, a tent, and a sleeping bag.  You have a standard WEMSI personal medical kit, a HeatPac WEMSI team medical kit.  What items are important for you select from the team medical kit?

You hike, or really mostly slide, the first mile down to the level part of the trail, which is much easier going.  Before you reach the first of the hollows, your team finds the patient lying next to the trail, huddled up against a log with leaves and branches pulled over him.

Because of and despite the snow, you estimate it will truly take about ten hours to get a Stokes here and get him down to the jeep trail, and then about an hour via ambulance to a medical center.

History:

According to your briefing, the patient has no known past medical history.

Physical Examination:

Primary Survey-- other than the cold, no obvious life-threatening problems.

General-- middle-aged male, only slightly if at all responsive to pain.

Vital Signs-- BP 94/50 R 8 and shallow, P 48 and palpable only at the carotid.  Rectal temperature is 86°F (30°C).

HEENT-- no visible injury.  Pupils dilated; you can see no response to light.

LUNGS-- decreased sounds bilaterally due to shallow respirations, but no râles, rhonchi, wheezing.

HEART-- soft but otherwise normal heart sounds.

ABDOMEN-- soft and nontender when palpated.

EXTREMITIES-- normal except the right leg which has a large amount of swelling just above the ankle.  There are no palpable pulses in any extremity.  All joints are stiff with cold but seem to have a near-normal passive range of motion.  Skin is all soft, no signs of deep frostbite.

Important points for students:

1. Should you insulate?

2. How much heat should you add?

3. Should you try to start an IV?  Assume you have someone on the team capable of it.

4. Should you ask the team coming in to bring the doctor (assuming he or she can safely travel to the patient and back out) and the central line kit from the team kit?
5. Should you give bretylium prior to starting the evac?

14. Head Injury and Hemothorax

Setting:

You are medic of a wilderness search team. You know from your briefings that a 31 year old backpacker with a history of epilepsy, well-controlled on phenytoin (e.g., Dilantin® 300 mg daily, with no seizures the last year, became lost while hiking on the Laurel Highlands Trail in SW Pennsylvania. The season is spring, with temperatures from the 30’s (0-5°C) at night to the 60’s (15-20°C) during the day. Except for a rare shower or two, no rain has been reported. After two days of intensive searching, the subject was found, by another search team, at the base of a 20’ (7-meter) cliff, right next to a small stream. The team does not have an EMT; the team’s report to base was that the patient was “delirious” but awake, and has an obvious injury to the right ankle. They have provided her with a sleeping bag and a cup of warm tea. You arrive about half an hour later with your search team. You have a small personal medical kit, and a blood pressure cuff and stethoscope, but no other medical supplies. You estimate a 14 hour evac and it will take a team 6 hours to get here with a litter and backboard.

Physical Examination:

Primary Survey-- No obvious life-threatening problems.

General-- Slightly lethargic patient in no acute distress, but intermittently slightly anxious and agitated.

Vital Signs-- BP 108/68, P 64 and reg., RR 16 and unlabored, Rectal temp. 92°F (33.3°C).

HEENT-- no obvious injury, except one small bruise in the right occipital area. Nose, throat, and ears clear. Bones intact to palpation with slight tenderness over bruise.

NECK-- supple, no deformity or tenderness.

LUNGS/ CHEST-- clear except for slightly and diffusely decreased breath sounds on the right. Tender over the right anterior-lateral ribs, but with no crepitance. Slight decreased percussion note on the right.

HEART-- normal sounds.

ABDOMEN-- normal inspection; soft, nontender, bowel sounds present, no masses.

EXTREMITIES-- pulses and sensation intact in all extremities. decreased strength and movement in right wrist and right ankle secondary to pain. Obvious swelling and ecchymosis of right ankle with both medial and lateral tenderness but stable ankle, and at right wrist. Swelling, but no gross deformity with either injury, but tenderness enough to suggest fracture. Distal NVI in both extremities.

NEUROLOGIC EXAM--

Mental Status: Alert, but tends to laps into somnolence. Oriented to place (off Laurel Highlands Trail) but not to year or month, although he knows it’s the fall. Memory appears poor. . . keeps asking for EMT’s name, seemingly forgetting that it’s been asked for previously.

Cranial Nerves: PERL EOMI; face shows questionable droop of left side of mouth. No other abnormalities.

Sensory: intact to light touch everywhere.

Motor: normal except for deficit from trauma; proximal strength on right is good.

DTRs: hyperreflexia and upgoing toe on left.

Cerebellar: finger to nose only fair.

Important points for students

1. The right hemothorax is present but not causing the patient problems and is not a priority now.

2. Hypothermia is mild, but patient needs insulation and heat as soon as possible.

3. Main problem is head injury. Cannot clear C-spine because patient is not completely alert. Evacuate patient ASAP, but with spinal immobilization. Watch neurological status carefully. If patient deteriorates before litter arrives, start improvised evac. Ask for IV and PO phenytoin (e.g., Dilantin) to be sent in with the litter and backboard. If field teams are carrying PO phenytoin (e.g., Dilantin) to give to the patient if found, should they give it? If so, how much? (Yes, if patient appears able to swallow; answer is to ask medical command about the dosage; most Wilderness Command Physicians would give 1000 mg spaced out over several hours.)

4. Have students use fiberglass or plaster or a SamSplint to splint the ankle and wrist.

5. Use this as an opportunity to review neurological exam, and to reinforce the importance of repeated exams.

15. Hypothermia/Knee Fracture or Dislocation

Setting:

You are the medic of a wilderness search team. You know from your briefing that the patient is a sixteen-year old white male who has been missing for 12 hours after wandering away from the picnic area on top of Laurel Hill. He was in good health according to his friends. The season is spring, with temperatures from the 30’s at night to the 60’s during the day. Except for a rare shower or two, no rain has been reported. Your team makes the find, where the patient is lying at the base of a short slope with some skid marks. Estimate is for the litter and litter team to arrive in about 2 to 3 hours, with a charcoal warming vest, but you cannot make contact with medic command for unknown reasons. Estimate of an 8 hour evacuation.”

History:

Patient unable to give history and no other information available. He points to his left leg but otherwise seems unable to communicate except for head shakes or short answers to simple yes or no questions. Becomes combative if WEMT students continue questioning.

Physical Examination:

Primary Survey-- No obvious life-threatening problems.
General-- Young white male, alert but disoriented, lying on left side.

Vital Signs-- BP 102/40, pulse 134, weak and thready; respirations 34 and shallow; rectal temperature 89°F (31°C).


NECK-- supple, nontender, full range of motion without pain if WEMT students ask patient to attempt.*

LUNGS/CHEST-- clear, nontender, normal heart sounds

ABDOMEN-- soft, nontender

EXTREMITIES-- Normal except for left leg. Left leg is twisted under the patient and deformed at the knee. There are no pulses distally and the leg is cold and blue (more so than the other extremities).

NEUROLOGICAL-- normal, as far as can be determined, except for inability to answer questions; patient cooperates if asked to follow simple commands for the neurological exam.

Important points for students:

1. Priorities: Severe hypothermia. Discuss advisability of using charcoal warming vest, especially since can't contact medic command. STRAIGHTEN LEG ASAP; attempt reduction of knee dislocation if present. Discuss importance of trying to reduce ANY dislocation with a cold distal limb, regardless of where. Dehydration. Start IV ASAP if possible.

2. Does patient meet criteria for clearing the C-spine, or should he be immobilized? Patient is not totally alert due to hypothermia. So, C-spine can't be cleared by the official criteria. However, in this scenario, he has no pain or neurological symptoms with range of motion of the neck. Also, he becomes quite alert and oriented after a little insulation and rewarming, and then the C-spine can be cleared.

3. IF he's hypothermic, why is his pulse so fast? Why does he look so dehydrated if he's only been lost 12 hours? Is the patient shocky? (If you wish, you can have the patient develop ecchymosis along the right flank while waiting for the litter, showing retroperitoneal bleeding.)

4. Can the patient take PO fluids if IV fluid is not available, or if they can't start an IV? Yes, especially since the patient is realistically at least 12 hours from surgery.

5. Review the management of knee fractures or dislocations, and what to do if you can't tell which it is. (In this case, there is neurovascular compromise, to the answer is to reduce, even though you don't know which it is; the answer would be the same on the street.)

16. Anaphylaxis

Setting:

You are a member of a field team on a lost person search in eastern West Virginia, near Blackwater Falls State Park and Dolly Sods wilderness area. This is a particularly remote area with virtually no road access.

It is early summer, temperatures in the 60s at night and in the 80s during the day. Your team consists of four people, and you have a single standard WEMSI Personal MedKit, including both search and advanced modules.

It is late afternoon, and your team has been on a search task since before dawn. It is two miles to the nearest jeep trail bordering Canaan Valley State Park. One team member, a 26 year old woman, is stung by five bees as the team passes a nest. Everyone else gets one sting, and boy does it hurt.

History:

The patient complains of severe pain at stings on her arms and back. She denies any lip swelling, hoarseness, or shortness of breath. She demands the Sting-Eeze from the MedKit, now.

She denies any history of beesting allergy, past medical history, medications, or pregnancy. Again she demands the Sting-Eeze now, at least partially in a joking manner, and is physically threatening you because you're using the Sting-Eeze on your own sting.

Physical Examination:

General-- small well-appearing but slightly antagonistic white female in moderate distress.

Primary Survey-- normal.

Vital Signs-- BP 110/70 R 24 P 120

LUNGS-- clear, no râles, rhonchi, wheezing.

HEART-- normal heart sounds.

ABDOMEN-- soft and nontender when palpated.

SKIN-- in addition to the obvious stings, she is starting to develop some hives on her face and arms.

Important points for students:

1. Development: the patient suddenly stops being antagonistic, her respiratory rate increases markedly, and she says in a very serious tone and a slightly hoarse voice "I think I'm having an anaphylactic reaction" and sits down abruptly, looking pale under her rapidly-expanding hives. She then develops some stridorous sounds and starts clutching her chest and throat. Unless students administer epinephrine within about 45 seconds (i.e., if they delay longer than this to examine her further or obtain vital signs), her blood pressure and pulse and respiration all drop, she becomes cyanotic, and seizures and dies. If the give the epi, her vital signs normalize, and her hives get better.

2. What other medications does she need?

3. Does she need to be evacuated? Can she walk out?

17. Asthma Exacerbation

Setting:

You are the medic of a minimally equipped search team. The subject is a 22 year old white male with a learning disability and asthma who is on Theodur, which he often forgets to take. He is "slow" but "stable," according to his family. He lives nearby, at the base of Laurel Mountain. He had an argument with his girlfriend, and walked away mad some 8 hours ago.
The season is spring, with temperatures from the 30's at night to the 60's during the day. Except for a rare shower or two, no rain has been reported. A rough estimate is that it will take 6 hours to get the litter and medical kit here. You have a standard WEMSI personal MedKit, and another team member has a stove with some coffee, hot cocoa, and food.

Your team finds the subject. Your team's radio cannot reach base camp, so two team members are hiking out a higher place to radio in the find and request a litter and medical kit.

History:
The patient is generally uncommunicative; when asked open-ended questions, just looks confused. Answers simple questions appropriately. When asked, does complain of shortness of breath.

Physical Examination:
Primary Survey-- No obvious life-threatening problems.
General-- Young white male, alert and oriented, but in marked respiratory distress, sitting under a tree.
Vital Signs-- BP 152/80, P 118, R 28, T 97°F (36°C)
HEENT-- No obvious injury. Skin turgor good. Mouth dry. Lips slightly cyanotic.
NECK-- Supple, nontender, some jugular vein distension.
LUNGS/CHEST-- Expiration takes 5 times inspiration, with diffuse wheezing in all fields. No areas of consolidation to auscultation and percussion. Some nostril flaring and retraction in intercostal areas.
HEART-- heart sounds inaudible secondary to lung sounds.
ABDOMEN-- soft and nontender.
EXTREMITIES-- No evidence of trauma. Fingernail beds dusky.

Important points for students:
1. Mild hypothermia if any.
2. Acute asthma attack. Students should check medical kit for albuterol inhaler, prednisone or other steroids, and for pseudoephedrine (e.g., Sudafed), and should consider brewing some very strong coffee for the patient while waiting. Good time to review the treatment of asthma/COPD, including the emphasis on steroids.
3. Check patient pockets and pack for any medications

18. Cerebral Vascular Accident (CVA, stroke)

Setting:
A large youth group with several adult leaders was conducting a multiple-day open-canoe trip down the Greenbrier River in mid-eastern West Virginia. In the morning of the third of four planned days (upon rising) fellow party members had been unable to wake him. The group is camped in an area that is particularly difficult to reach by foot or by vehicle. You arrive via canoe, in the evening of the same day, as night is falling. From what you've heard and a quick look at the situation even as you're heading to the patient's tent, you acquire the following size-up information.

There is no safe helicopter landing zone, and the clouds are lowering and rain is starting. The river downstream is only class II, but is shallow enough so that boats can't navigate up it. You hear someone on the radio someone is still working on getting a hovercraft to be available to come up the river from Cass, but you heard it has to be flown from Washington, DC, and then driven to Cass, and you don't put much stock in it being available before you can get the patient out yourself.

You figure an evacuation to the town of Cass via canoe sounds the best. By looking at people's gear and the shivering of many of the young teenagers along on the trip, many of them are not prepared for the coming cold/wet weather that you've heard about. You feel responsible for the entire group and worry about the possibility of other injury or death due to hypothermia or hypothermia-induced injury.

You had radio contact with a Wilderness Command Physician at a Base up until the last mile of your canoe trip down the gorge to the patient's location, but now you can't get out with your handheld.

You estimate that evacuation will take about four hours, from the time you start packing the group up, to when you arrive at the road bridge at Cass. Unless the patient seems to be very sick, you consider the possibility of bivouacking overnight and going downriver with first light.

History:
One of the other adult leaders, who seems a competent sort, tells you the patient has a history of hypertension and has been on a medication called Tenormin (atenolol), which is a beta-blocker, and has been taking his medication during the trip. He shows you the bottle. He says the patient has no other medical history, and shows you a standard health form for the group's leaders that really says little else.

Physical Examination:
Primary Survey-- No obvious immediately life-threatening problems.
General-- White male in his mid-forties, lying in a sleeping bag. He is unresponsive except for moaning and moving his left arm and leg purposefully on response to pain.
Vital Signs-- BP 180/100, P 70, R slightly Cheyne-Stokes at 20, T 98.4°F (36.9°C).
HEENT-- No deformities. Pupils equal, constricted and slowly reactive.
NECK-- No deformity, no tenderness when palpated.
LUNGS/CHEST-- Clear, nontender.
HEART-- Normal heart sounds.
ABDOMEN-- Soft and nontender when palpated.
EXTREMITIES-- The arms and legs appear atraumatic (without signs of trauma).
NEUROLOGICAL--

Mental Status: Patient withdraws from pain.

Cranial Nerves: can’t really assess, but his face doesn’t appear to have any drooping on either side.

Sensory: withdraws to pain.

Motor: Weaker on the right side when withdrawing from pain.

Deep Tendon Reflexes: Hyperactive (three beats of clonus) in the right knee and right biceps (elbow) and brachioradialis (forearm), normal on the other side. You can’t get an ankle jerk on either side but you suspect this is simply your technique and not related to the patient’s problem. Toes are downgoing on the left, and definitely upgoing on the right.

Cerebellar: Patient won’t follow commands so can’t assess.

Important points for students:
1. Can you clear the cervical spine? Do you need to? Is there any mechanism for injury?
2. Consider the patient's neurological deficit and vital signs. Do you want to treat with any medications in your standard WEMSI Team Medical Kit? Will treating the hypertension help or hurt the patient?
3. Would giving aspirin (e.g., an improvised rectal suppository) or the blood thinner heparin help or hurt? Review the difference between hemorrhagic stroke (bleeding into the brain) and thrombotic stroke (blood clot in a cerebral artery). What if you don’t know? (Send two people up to the edge of the inner gorge to try to make radio contact.)
4. Do you want to try a night canoe trip? Or bivouac overnight?
5. Use oxygen if you have it. Transport in the recovery (coma) position.

19. Burns

Setting:
You are a member of a Mountain Rescue Association team called in to the southern Presidential Range of New Hampshire to evacuate a 20 year old male hiker whose stove exploded, setting his parka, sleeping bag and tent on fire. It is fall, temperatures are 30s at night, mid-60s during the day in the area the patient is in. It is overcast with light rain, estimated 8-12 hour evacuation. You are taken to the summit of Mt. Washington by car (it is much colder up there, about 20 degrees colder, and there is a 70-MPH breeze), then hike down some eight miles to the patient with members of the Appalachian Mountain Club hut crew search and rescue team.

History:
The history comes from the three friends who were backpacking with him; two had come out for help and one had stayed with him. On the way in the two who are returning to the site with the evacuation team tell you that he was the only one in the tent at the time. He was complaining of severe pain from burns on his face, arms and hands, and chest, and a raw feeling in his throat, but on questioning they don’t think he was hoarse or short of breath. They said that he had no medical history, and was on no medications. They didn’t know about when his last tetanus shot was. They left him in the other (unburnt) tent.

Physical Examination:

General-- very ill-appearing young white male, coughing and moaning in pain; obvious first and second degree burns of face.

Primary Survey-- Airway is grossly open but the patient has a stridorous cough and cannot speak when you ask him questions: he goes into paroxysms of coughing. Lips appear mildly cyanotic. Radial pulses are weak and thready at 110.

Vital Signs-- BP unavailable due to severe second degree burns on the right arm and third-degree burns all around the left arm. R 34 and shallow, temp 94°F (34°C) oral.

HEENT-- first degree burns all over face with a few scattered blisters, facial hair burned away, no burns inside mouth, swollen and cracked lips, hearing intact. Eyes: eyelids so swollen that can’t examine eyes but patient says they don’t hurt or feel there is any foreign material in them.

LUNGS-- clear, no râles, rhonchi, wheezing

CHEST-- first degree burns all across chest, second degree burns in area the size of two hands.

HEART-- normal heart sounds.

ABDOMEN-- soft and nontender when palpated.

EXTREMITIES--

Right Arm: second degree burns distal to elbow, first degree proximal to elbow. Pulse and capillary refill intact, sensation intact.

Left Arm: circumferential third degree burn in mid-forearm with surrounding second and first degree burns. No pulse palpable.

NEUROLOGICAL-- (if tested) mental status normal; cranial nerves normal except can’t check vision or EOM due to swelling; motor and sensory intact except for decreased sensation distal to the circumferential burn.

Important points for students:
1. Hypothermia?
2. Fluid status?
3. Foley to monitor output? Color of urine (myoglobinuria?)
4. Needs escharotomy?
5. (development: if adequate fluids given, then pulses get stronger and urine output increases.)
6. (optional development: respirations increase to 60 then decrease to 4 with decrease in level of consciousness.)

20. Old Rag Operation

Setting:
The patient is a 16 year old white male. He has a history of many injuries from wilderness related trauma. He was on a hike with several of his friends, on Old Rag Mountain in Shenandoah National Park. At the summit, he elected to “bushwhack” to the bottom and meet his friends there. They waited at the bottom, but he didn’t show up by dark.

The usual circuit hike follows the Ridge Trail across a rugged ridge strewn with boulders, cliffs, and ledges. After crossing the summit, the trail runs down to the saddle between Old Rag and the main Blue Ridge Mountains, then back to the start of the Ridge Trail. At the summit, there are broken 500-foot cliffs, and a very steep, broken cliff-and-forest slope down to the Old Rag/Blue Ridge saddle.

The Park Rangers searched for him that night and the next day. Search and rescue teams arrived the following day, and as dusk was falling, he was found. As the cold front was coming through, and as freezing rain started to fall, a searcher on the end of a 200-foot roped spotted him on a narrow ledge halfway down one of the 500-foot summit cliffs, unconscious. Estimate is for about a 12-hour evacuation to a fire road, due to the ruggedness of the terrain and the bad weather. (Though one local EMS person untrained at mountain rescue estimated 2-3 hours, experienced SAR personnel there laughed at this.)

You, the most experienced medic at the summit, rappel down with some other WEMTs to provide medical care. You arrive at the patient and tie in to a safety line for security before assessing the patient.

History:
Patient unable to speak. Patient's only response is moaning to pain.

Physical Examination:

Primary Survey-- No obvious immediately life-threatening problems. Radial pulse is present but very weak and thready.

General-- Young white male, lying in twisted position on narrow ledge. Obvious lacerations and abrasions on left side of head, and open right tibia-fibula fracture with pus draining out of it. You can smell and see that the patient has been incontinent of urine and stool.

Vital Signs-- BP 90/50, P 55, R 8, rectal temperature is 80°F (27°C).

HEENT-- No obvious open skull fracture, but considerable bruising, abrasions, and small lacerations of the left side of the head with much clotted blood; causes lots of moaning when palpated. Ears without blood, but there is a large contusion (Battle sign) behind the left ear. PERL.

NECK-- No deformity, no moaning when palpated.

LUNGS/CHEST-- Decreased breath sounds on right; some crepitance of the ribs on the right with some slight subcutaneous emphysema. Trachea in midline.

HEART-- normal heart sounds.

ABDOMEN-- soft and no moaning when palpated.

EXTREMITIES-- The arms and left leg appear atraumatic (without signs of trauma) except for a few small scrapes. Palpation reveals no deformity or obvious tenderness. Passive range of motion is full at all joints. The right leg, however, has considerable swelling and some angulation in the mid-thigh, and there is a very angulated open fracture of the right tibia-fibula with bone ends sticking out, with dirt on them and pus coming out of the wound. Capillary refill is fair distally (3 seconds), and slightly longer than you find on the uninjured leg (2 seconds).

NEUROLOGICAL--

Mental Status: Only response is moaning to pain, with semi-purposeful movements.

Cranial Nerves: cannot check vision, eye movements, or hearing. Moans to a pinch on the right face but not on the left. Involuntary movements of the face show equal motor strength on both sides. Cannot test other cranial nerves.

Sensory: appears to respond to pain in all extremities except for the right leg, even above the injury site.

Motor: moves left extremities in response to pain, but not right extremities.

Deep Tendon Reflexes: unable to find on the left, hyperactive (2+) on the right. Toe upgoing on the right, no response on the left.

Cerebellar: unable to test.

Important points for students:
Discuss the role of careful palpation and passive range of motion in checking for musculoskeletal injuries in semiconscious or unconscious patients.

What are priorities in managing this patient?

1. ¬the pneumothorax is not a tension pneumothorax, and is not a treatment priority, but might develop into a tension during the evacuation. Is it legitimate to place a chest decompression catheter? Yes, but with a flutter valve.

2. Hypothermia could be life-threatening; another few degrees of drifting down could result in ventricular fibrillation. Ask students how they would handle and evacuation patient down the cliff and then the very steep slope at the bottom.

3. Can students clear the cervical spine? No.

4. Should students straighten the fractured leg? Yes, to attempt to improve distal circulation and allow adequate splinting. Should they clean the bone ends off first? Yes, because the evacuation time will be long. Should they give antibiotics? Yes; if only pills are available, they should give them rectally (grind them up and mix them with some surgical lubricant or some food).

5. Does the patient need IV fluids? Yes. (If necessary, review the need for adequate brain perfusion pressure in head injury.)

6. Should students “add heat” even in light of the obvious head injury? Yes. Point out the role of hypothermia in making further bleeding inside the head more likely, and that rewarming will correct this bleeding tendency from hypothermia.
21. Cardiac

Setting:

You are involved in a search for two children lost in Rocky Gap State Park in western Maryland. Your team is called to check a fifty year old volunteer "searcher down, with chest pain." He is a member of a team that just split off from your team three minutes ago. Both teams are approximately two hours' hike up a steep, roadless valley. It is fall, clear, cool, no precipitation in the forecast. Temperature is in the mid 50s. Your team has a standard WEMSI Personal MedKit, including the search module, and a radio, but no other medical or rescue equipment.

History:

Patient complains of difficulty breathing and severe chest pain, 7 on a 1-10 scale,

Patient states he has a history of angina in the remote past, but no history of myocardial infarction. Had nitroglycerine tablets with him but now can’t find them in his pack; has been frantically searching for them despite efforts of his team members to get him to sit down and rest. He takes an aspirin a day, but forgot to take one this morning. He has no other medications, and no other medical problems.

Physical Examination:

Primary Survey-- no obvious life-threatening problems.

General--

The man is pale, diaphoretic, and in moderate distress.

Vital Signs-- BP 132/88, P 90 strong, R 20 shallow, temp 99°F (37.2°C) oral.

NECK-- supple, no jugular venous distension.

LUNGS/ CHEST-- Clear, nontender. Respirations normal.

HEART-- Normal heart sounds.

ABDOMEN-- Soft and nontender when palpated.

EXTREMITIES-- No cyanosis, no edema

Important points for students:

1. Are there any medications in the standard WEMSI personal medical kit, or similar kits, that students can use to treat this?
2. What if his pain goes away after administering the medication?
3. What if his pain doesn’t go away after administering the medication?
4. Should this patient (a) continue with the task, (b) walk out with assistance, or (c) be carried out? Would what the patient was doing when the chest pain struck make a difference in your choice (i.e., sitting and resting vs. charging up this steep valley)?
5. What other equipment or supplies might you want to ask for?