

## Rescue Response Team: Getting Ready for a traumatic C-Spine Injury

By Kelly Pyke

The call came in early morning to the Rescue Response Team: “EMS has requested an assist to evacuate a girl who has fallen part way down a cliff. We don’t know how far she has fallen, but let’s get ready for a traumatic C-spine injury and make sure we have the litter ready.”

Matt, the Incident Command (IC), informed me that I would be the lead medic on this rescue, so I quickly checked over my medical evacuation pack to make sure it had the essential elements for this wilderness rescue: gloves, gauze, bandages, dressings, ACE, BP cuff and other items that I may need for the potential gamut of wounds and traumatic injuries we may encounter.



My mind raced with thoughts of all that we could be potentially dealing with as we drove to the location of the incident. I ran through my assessment plan in my head and stuck some tape on my pant leg so I would be ready to record the most important bits of information I would collect during the time I would be administering care to the patient. I have

learned during past wilderness rescues, when rain, wind and snow are ripping past me, that trying to record things on paper becomes problematic. Having tape attached to my leg was my preference.

When we arrived at the staging area, Matt delegated to the team where he wanted us, and then he, Diane (the other medic), and I grabbed our packs and headed toward the location of where the GPS coordinates were.

We hiked through brush and quickly came upon a stream from which we, while crossing, could see the location of the cliffs. We scrambled up through sections of boulders and loose rock and traversed around the cliff band from the side to come upon a rock outcropping that gave us a vantage point in which to survey the scene.

We immediately noticed the patient; she was laying on her right side on the edge of a precipice about 20 feet down from where we were standing. In my mind, I was thinking through the five main things to focus on during the “scene size-up:”

1. Scene safety – Was the scene safe to enter for me, my team and for any bystanders?

We would never want to turn a trained rescuer into another patient by entering into an unsafe scene. We had to count our own safety as the first priority.

2. Mechanism of Injury (MOI) – How did she end up where she was? How far did she fall? Did she hit her head? Could she have a potential spinal cord injury? Thinking through the MOI gave me many clues to what I may have to deal with later.



3. Body Substance Isolation (BSI) – I always need to protect myself from anything that the patient may have and vice versa. As a rescuer, I must assume that the patient is carrying something and thus must protect myself from their wounds, blood, body fluids, etc. Putting on gloves, mask, sunglasses, gore-tex jacket (when dealing with profuse amounts of blood) are all essentials to keep the patients germs on the patient and my germs on me.

4. Number of Patients – I need to scope the scene to make sure there were no other patients lying off in the bushes or behind big boulders that would be left alone. Because we were called in by the EMS, I was pretty confident that we just had one patient.

5. General Impression – I want to make an initial judgment of how this patient looks so I can prepare my mind for what is to come. Is the patient sitting there, crying and holding their ankle, or laying there unresponsive with no movement at all? Do I see them breathing or coughing or trying to breath, but struggling, or are they just laying there complaining about a stomach ache?



The scene was safe, but we knew that in order to reach her and work on her at the cliff edge, we would have to rope up to protect ourselves. Matt yelled to her to see if she was responding, but she did not. We scoped the scene for a few more seconds and saw a red smudge of blood atop the large rock above the patient. It looked as if she had

fallen backwards from the top boulder and hit her head on the rock and then rolled the rest of the way down to where she lay on the edge of the cliff. Matt told us to get geared up, and as I put my harness, helmet and other gear on, I was mentally anticipating not only a potential spinal cord injury, but a probable head injury as well. I knew that every minute would count in this evacuation if we were to save her life. In the wilderness setting, where we don't have access to an ambulance, oxygen, drugs, etc, there is little we can do for patients with head injuries. A patient who has a head injury needs oxygen because if the brain swells in the skull and there is nowhere for it to go, it gets squeezed and allows for less oxygen rich blood to flow through the vessels. When brain tissue does not get oxygen, it dies and the longer the patient is unresponsive, the more tissues death occurs. I knew that getting her to the hospital as quickly as possible would be essential.

Diane and I dropped down to the patient on our belay lines and as we approached, we saw blood at the back of her head, already matting down her hair at the site of the wound. We gloved up to take BSI precautions and I began to speak to the patient to assess her level of responsiveness (LOR) to evaluate how well her brain was functioning with the outside world. She did not respond to me when I introduced myself, so I yelled in her ear to give her verbal stimuli. There was no response. I then pinched the back of her arm to assert painful stimuli but again no response. I knew then that we were dealing with the worst-case scenario, a totally unresponsive patient.



I told Diane to control the spine by holding her hands on the patients' head and keeping it stable to prevent any further spinal damage as a result of movement. It was a bit more

also protect the spine. I checked the airway, which was open and clear and then checked her breathing. She was breathing rapidly and a bit erratic from the trauma, but seemed adequate at the moment. I moved on to circulation. I put the tips of my index and middle fingers down onto her neck and nestled them into the location to find the carotid pulse. She had a pulse that felt strong, but bounding, possibly from the potential head injury, and the brain swelling inside the skull as a result of the traumatic impact. I did a quick blood sweep and did not find any life threatening bleeds, only a few abrasions and contusions on her trunk and her extremities. Diane and I made the decision to commit to keeping a hold of her head for the long haul as a result of the MOI (20 foot tumble down boulders) and to protect her cervical spine manually until we could get her on a backboard and hauled out. We ensured that she was warm enough and then I relayed my initial findings to Matt. “The patient definitely has an MOI for a spinal cord injury, so I am going to need a backboard, a litter and a rapid evacuation.”

As I heard Matt on the radio with SAR Base, I moved into taking a baseline, or initial and foundational, set of vital signs. The vital signs give me a snapshot of what is going on inside the patient’s body in the most vital organs: brain, heart, lungs and skin. I knew that monitoring the trending, or changes over time, in her vital signs, and evaluating and reevaluating her LOR, was going to give us key information about whether the patient’s



condition was improving or deteriorating. Next, I did a head to toe exam, palpating each part of her body to see if I could feel anything out of alignment or could see anything that could be visibly fractured or injured. I found a few abrasions the size of golf balls on her right knee and ankle, and also a contusion the size of an orange on her left flank behind the kidney area. I also found abrasions on her right cheek. The most significant concern that we were dealing with was the potential skull fracture (and underlying head injury) on the back of the patient’s skull. We covered with a diffuse, bulky dressing in order to stop the bleeding and give it some cushion. We had to work very carefully in order to avoid



aggravating the potentially fractured bone fragments of her skull. In addition, knowing that if a patient has had a significant enough impact to have a skull fracture, they have definitely had a significant enough impact to have a spinal cord injury. Diane was aggressively protecting the c-spine by holding it steady through my whole patient assessment.

After we finished our initial assessment, did our baseline set of vitals, and head to toe exam, I relayed my findings to Matt. “We have finished our full patient assessment and we have a definitive moderate to severe head injury possibility and a cervical spinal cord injury, so we will need to get that backboard and litter up here as soon as possible and get her down to definitive medical care.” I knew that we were racing against the clock in order to save her life and her brain tissue and that every moment mattered.

We continued to monitor her as the rest of the Rescue Response Team worked hard to set up the high directional and tracking line that was going to be the system used to lower her from the cliff edge and over the creek to the ambulance. We took additional sets of vitals



every 5 minutes and tried to keep her as supported as possible, under the circumstances of being in a wilderness rescue situation. The team brought down the backboard and we beamed her up onto it and rolled her onto her back in order to secure her with straps. We started with her torso and then secured her feet and head. The litter was then lowered down on the main line to us. Diane, Matt and I lifted the patient and backboard into the litter and secured the litter for

lowering.

Diane clipped into the system with the litter and slowly backed off the cliff while the team manned the belay line and followed Matt's instructions to "LOWER." As I watched them slowly swing down over the rocks and out over the creek, I was thankful to see the local EMS there with their ambulance and to meet the patient with oxygen. They successfully got across the stream, and Diane helped to unclip the litter from the line. The patient was transferred into the hands of the paramedics.

As I watched them load the patient into the ambulance from the cliffs above, I was thankful for the opportunity to be a part of this team of rescuers. I heard the doors of the ambulance slam shut and then saw the lights begin to beam as they drove off through the brush towards the hospital. I had high hopes for the patient's survival.

