You Are the Rescuer

The next several pages contain scenarios that place you as the first OEC technician responding to the scene of an injury or illness. These scenarios are presented for your consideration and discussion. There are many "right" answers and appropriate solutions. Regardless of where the incident actually occurred—on a ski slope, in a river, or on a hiking trail—the assessment and basic emergency care remain essentially the same.

Carefully read these scenarios, each of which is based on an actual incident. Formulate your emergency care actions based on local area protocols.

To prepare yourself for the portion of the refresher that features *guided discussion* about these scenarios, jot down answers for the questions below as well as any notes that pertain to the discussion points and other thoughts that come to mind as you consider each scenario. Use additional paper as necessary and be sure to bring these answers and notes to the refresher.

Scenario I

It's early in the season and the snow-making guns are running at full capacity. You're summoned by radio to respond to an incident halfway down the face of a nearby intermediate slope. Upon arriving on the scene you find a young male snowboarder lying prone, with his head pointing downhill, his face in the snow and turned slightly to the left, and both arms down by his sides.

He speaks with hesitation when answering your initial assessment questions, and complains of a burning sensation in his hands and a complete lack of sensation in his feet. He is oriented to time and place and denies losing consciousness.

A quick history obtained from a witness reveals that the rider was attempting to jump a snow berm around a snowgun that was marked with bamboo poles, appeared to lose control, and catapulted 15 feet into the air. The witness reports that from an inverted position the snowboarder landed down the hill on the right side of his head and back right shoulder. He then slid and tumbled into the position in which you found him.

Your initial assessment (with the patient still prone) reveals palpable cervical muscle spasm and point tenderness in the mid portion of the cervical spine. The boarder has no sensation to firm touch in his arms and hands or in his thighs and legs, and he has no recognition of when you tap his boots. He is unable to move his arms or legs at all, and seems frustrated upon discovering this. There are no other obvious injuries.

Initial pulse is 72 and strong; respirations are 20 and shallow. You and fellow patrollers immobilize the young man with a C-collar and backboard, and transport him down the hill in a toboggan to a waiting ambulance. A follow-up assessment conducted when the patient is placed in the ambulance reveals some return of sensation to touch on his chest and

anterior left thigh, and a flicker of hand grasp bilaterally. He still reports a burning sensation in both palms, but still has no apparent motor activity or sensation in his feet.

QUESTIONS

1. What injury/injuries do you suspect in this scenario?
2. Do the assessment findings described in this scenario enable you to predict long-term outcomes for this patient? Why or why not?
3. Describe, in the order of priority, the emergency care you would provide for this patient. (Discussion points: emergency care, personnel, equipment, transport.)

NOTES

POINTS TO PONDER

The acute occurrence of a complete spinal cord transection produces a catastrophic outcome. The physical, emotional, and financial consequences of this permanent neurological condition can be overwhelming to the patient and his or her family. This is because the patient experiences complete motor paralysis and complete anesthesia below the level of the spinal injury. If the injury is in the cervical region, the loss is obviously devastating. Spinal shock usually accompanies complete spinal cord transection, and is recognized by the presence of acute hypothermia, lowered blood pressure, and the absence of a compensatory pulse increase.

Each year in the United States approximately 11,000 people suffer a spinal cord injury (SCI), and of that number roughly 2,000 involve complete cord transactions in the cervical area. Reports estimate that 8.9 percent of all spinal cord injuries occur during sports or recreation activities. The lifetime medical care and living cost estimates for a 25-year-old with a low quadriplegia (C5–C8) are estimated at $1.6 million. That figure does not include indirect costs such as loss of productivity, which, depending on the patient's educational background, could amount to between $500,000 and $2,000,000.[1]

The presence of quadriparesis (partial motor paralysis in all four limbs) and incomplete loss of sensation distal to the affected spinal level establishes the possibility that, with aggressive medical treatment, the patient *may in time* experience some partial functional neurological recovery. Frequently the compressive forces causing the spinal injury produce stellate fractures of the vertebral body or, when there are associated bending forces, vertebral body fractures with retropulsion of bone fragments back into the cord.

Both of these events may cause direct compression of the spinal cord by bone fragments, *but do not necessarily produce complete cord transection.* Prompt surgical decompression of the injury site—along with heavy doses of steroids to reduce cord swelling—may stimulate partial long-term functional recovery. The possibility that an incomplete injury to the spinal cord might have occurred compels you as OEC provider to

employ the utmost skill and caution as you offer emergency care for these patients.

1 Spinal Cord Injury Information Injury Network, "Facts and Figures at a Glance – June, 2006." Available at http://www.spinalcord.uab.edu/show.asp?durki=21446. Accessed February 19, 2006.

VITAL VOCABULARY

cervical muscle spasm Involuntary contraction of the muscles adjacent to the cervical spine, frequently produced by injury.

complete spinal cord transection Total severance of the spinal cord; usually traumatic.

neurogenic shock Circulatory failure caused by paralysis of the nerves that control the size of the blood vessels, leading to widespread dilation; seen in spinal cord injuries. Also known as spinal shock.

point tenderness Tenderness that is sharply localized at the site of an injury.

quadriparesis Incomplete muscle paralysis involving all four extremities.

quadriplegia Muscle paralysis affecting all four extremities. Also known as tetraplegia.

surgical decompression A surgical procedure designed to remove or relieve pressure on a specific body structure.

ONLINE OUTLOOK

Interested in a more in-depth review of spine injuries? Go to www.OECzone.com and click on the link to Chapter 26 in the Online Outlook section.

Scenario II

You and your friends, a group of experienced rafters and kayakers, have just finished running Rainie Falls, a challenging stretch of Class V rapids on Oregon's Rogue River. The team members who opted not to run the falls are coiling up their rescue ropes when they see two kayakers approach the falls without scouting.

To their horror, they watch as one of the kayakers takes the wrong approach. He flips, fails to roll upright again, and plunges down the wrong side of the falls, upside-down. The rope team alerts the rest of the group to the mishap, and the paddle raft in which you are riding pulls hard upstream to assist. The kayak washes out downstream.

It takes a moment to spot the kayaker, but he finally emerges in a downstream eddy. A member of the rope team hurls a throw-line toward the kayaker and shouts at him to grab hold of it, but he does not appear to hear. When your paddle raft reaches the eddy, you grab the kayaker by the life jacket and haul him into the raft. As he is dragged across the pontoon, he cries out in pain. You lay him down in the bottom of the raft and notice that he has an obvious open, right femur fracture. He is pale and shivering. The kayaker's helmet is gone, and he has a nasty gash across his forehead. Upon identifying yourself as an emergency care provider and attempting to ask him some questions, he only groans in pain. Initial pulse is 138 and bounding; respirations are 32 and shallow.

There is a hiking trail that runs the length of the Rogue River, and it's approximately four miles to the road from where you are. You have all of your paddling and camping gear as well as your aid belt stuffed into a dry bag.

QUESTIONS

1. What are the three primary injuries you are dealing with in this scenario?
2. Given that you are in a wilderness setting without easy EMS access, describe, in the order of priority, the emergency care you would provide for this patient. (Discussion points: emergency care, improvisation, emergency transport.)
3. If you're a ski patroller, the setting for this scenario may be unfamiliar to you. How would the care given this patient differ from care you might provide for similar injuries at a ski resort or nordic center?

NOTES

POINTS TO PONDER

Long-bone fractures and closed head injuries (with the possibility of an associated cervical spine injury) can be life-threatening under any circumstance, but having these occur in a remote wilderness setting certainly exacerbates the situation. Whether the injuries occur on a river, at a ski area, or on a mountain bike trail, the care provided for these patients is largely the same. Because the femur fracture is open and your setting puts you several hours away from definitive medical care, you have to perform a higher level of wound care than might otherwise be necessary. Rinse the open wound with fresh water to remove any dirt or debris.

Although a backboard and traction splint are not readily available to rescuers in this scenario, spinal immobilization and femur stabilization can be achieved by improvisation. Use your ingenuity and try creating makeshift spinal and femur immobilization devices from materials you might have with you on the river, or that you would find in the surrounding area. See the *OEC* text, pages 604–606, for some ideas.

Because this patient is suffering from mild immersion hypothermia, greater attention should be given to providing warmth for him. This can be accomplished by placing the patient on a ground pad with a sleeping bag under and over him, or, after immobilization of the femur and suspected cervical spine injury, inside the sleeping bag.

VITAL VOCABULARY

open femur fracture A femur fracture that is accompanied by a breach in the integrity of the overlying skin in the same anatomical segment; either due to a laceration overlying the fracture, or due to bone fragments protruding through the skin.

concussion A temporary loss or alteration of part or all of the brain's abilities to function without actual physical damage to the brain.

mild hypothermia A condition in which the core body temperature is 90°F–95°F

(32.2°C–35°C), usually as the result of prolonged exposure to cool or freezing temperatures. Hypothermia can also occur on warm days due to immersion in cold water.

ONLINE OUTLOOK

Interested in a more in-depth review of femur and head injuries? Go to www.OECzone.com and click on the links to Chapters 25 and 26 in the Online Outlook section.

Scenario III

It's 7 p.m. on the Saturday of a holiday weekend, and night-skiing is in full swing. The temperature is hovering in the low 20s and it's snowing. Over the radio, you hear a lift attendant call for patrol assistance at the top of Lift O, the only lift that services the summit of Peak One. The lift op reports that a large woman fell while exiting the lift and is now blocking the unloading ramp. He says she appears to be in a lot of pain and is unable to move.

Because you're nearby you alert the lift attendant and fellow patrollers that you're on your way, and as you approach the scene a few moments later you can hear a woman screaming. As you draw near you see a single patient lying partially on her right side. Both of her skis are off, and the lift attendant and a couple of skiers are standing near her.

The woman is, indeed, large and you estimate her weight at 350 pounds. Her left leg appears shorter than the right, with her left knee partially flexed and adducted and the left hip internally rotated. Her left arm is motionless on the snow, pinned at an awkward angle against the side of her body.

The woman's screams clue you in not only to her level of pain but also to the fact that her airway is clear and she's able to breathe. After you identify yourself and begin your assessment by taking her pulse, she calms down a bit and relates that she did not lose consciousness. She is oriented times three and complains of significant pain in the left hip and left wrist. Assessment reveals no obvious bleeding, the unusual positioning of her left leg as previously described, a dorsal deformity of her distal left radius, and tingling in the toes of her left foot. Her pulse is 124 and strong; respirations 24 and shallow. In the SAMPLE survey you discover that the woman is an insulin-dependent diabetic and last ate at 5:30 p.m., just before coming back on the hill.

QUESTIONS

1. Describe, in the order of priority, the emergency care you would provide for this patient. (Discussion points: emergency care, transportation of a large person, personnel, access to site.)
2. At your snowsports facility, how would you get OEC providers to the incident? Consider all possibilities, i.e., hill climb, snowmobile, snowcat, etc.
3. Where is the nearest emergency equipment located at your area? Do you have equipment at the peak? Do oxygen and suction need to be brought from another location? Consider the current location and entertain suggestions for a change of location.

4. At your area, how many patrollers make up the typical response team, and what are your options if more patrollers are needed? On any given shift how many trained emergency care providers are at your disposal?

NOTES

POINTS TO PONDER

The majority of hip dislocations are posterior. Since the hip is the largest joint in the body, the extreme pain and severe muscle spasm associated with this injury are significant. A posterior dislocation of the hip is occasionally complicated by a compression injury to the sciatic nerve, which is located directly behind the hip joint. This leads to decreased sensation and muscle weakness in the involved foot. Generally, only the dorsiflexors (the muscles that raise the foot and toes), are involved. The subsequent "foot drop" is characteristic of damage to the tibial portion of the sciatic nerve.

Because the blood supply to the head of the femur runs within the capsule of the hip joint, the stretching or tearing of the capsule that occurs with a dislocation may interrupt the blood supply to the femoral head. If the dislocation is not reduced promptly, aseptic necrosis (bone death) of the femoral head could occur as a long-term complication.

Injured outdoor enthusiasts with a dislocated hip commonly will be found lying supine or on the side opposite the injury, with the injured hip partially flexed, internally rotated, and adducted across the opposite thigh. The affected knee is usually flexed, and the hip appears as though it is "locked" in position. Any attempts you make to move the hip will be met with great resistance and cries of pain. Check for sciatic nerve injury by carefully assessing sensation and dorsiflexion of the foot. Sometimes the sciatic nerve function may appear to be normal at first and then slowly diminish.

Do not attempt to reduce a dislocated hip in the field; splint the dislocation in the position of the deformity and place the patient supine on a long backboard tilted up 20 to 30 degrees on the side opposite the injury. Support the affected limb with pillows and rolled blankets, particularly the void behind the flexed knee. Apply a short arm splint to the patient's left hand and forearm. Check CMS before and after application of the splint. Add a sling and swathe.

The major challenges in this scenario are the availability of emergency care equipment (since the lift has been stopped) and the hip stabilization/transport of this very large skier.

VITAL VOCABULARY

abduction Motion of a limb away from the midline.

adduction Motion of a limb toward the midline.
dorsiflexion Upward flexion of the foot.
femoral head The proximal end of the femur, articulating with the acetabulum to form the hip joint.
greater trochanter A bony prominence on the proximal lateral side of the thigh, just below the hip joint.
iliac crest The rim, or wing, of the pelvic bone.

ONLINE OUTLOOK

Interested in a more in-depth review of hip injuries? Go to www.OECzone.com and click on the link to Chapter 25 in the Online Outlook section.

Scenario IV

You and four friends are on an overnight hike in a high- desert region of Utah. It is mid-afternoon. As you round a bend in the trail, you encounter a woman who is hurrying toward you. She is flushed and gasping.

She tells you that her friend fell off a 20-foot cliff about three miles down the trail and appears to have badly injured her hip. When you inquire if the woman's friend hit her head or was knocked unconscious, she says no. You ask if she seemed to have all her faculties, and she indicates that she did.

She says the two of them had been hiking alone and that when her friend got hurt she decided to leave her with a bottle of water while she ran for help. Since you're out of cell phone range, you send two of your companions to walk out with the woman and get help. After getting further information on the injured hiker's location, you and your other two friends hurry down the trail.

After about 25 minutes, you find the injured woman. It appears that she had climbed to a lookout point, slipped, and fell onto the trail below.

As you approach the patient, you notice that she is lying on her back and her right leg is obviously shorter than her left and rolled outward. After letting her know you're trained in outdoor emergency care, you begin your assessment. You note that she is verbally responsive, but is not oriented to time or place. She answers your questions haltingly, but does not fully grasp her situation except to say that her right hip hurts. You estimate that she has been lying in the sun for over an hour. Her skin is flushed and hot to the touch. When you gently move her right leg, she lets out a painful cry so you do not attempt further movement. Her pulse is 120 and thready, and her respirations are 20 and shallow.

You're carrying basic camping gear, food, and water. Realizing that it will be at least four hours before help arrives, you're thankful that you remembered to stuff most of the contents of your patrol aid belt into your backpack before you and your friends set off for your overnight hike.

QUESTIONS

1. What are the two probable injuries/conditions portrayed in this scenario?
2. Describe, in the order of priority, the emergency care you would provide for this

patient. (Discussion points: emergency care, improvisation, transportation.)

NOTES

POINTS TO PONDER

Heatstroke (hyperthermia) is a very serious medical condition indicated by a core body temperature usually in excess of 101ºF. When the body is exposed to more heat energy than it can lose, or if the body's mechanisms to decrease heat are overwhelmed by high air temperatures or high humidity, then hyperthermia results.

Heatstroke is the least common but most serious of the heat illnesses. Many patients with this condition have hot, dry, flushed skin because their sweating mechanism has been overpowered; however, in as many as one-half of patients who suffer this condition, the skin may be moist or wet. Keep in mind that a patient can have heatstroke even if he or she is still sweating. The first sign of heatstroke is frequently a change in behavior, i.e., the patient becomes irrational or uncooperative. The patient soon becomes unresponsive; therefore, a change in mental status is the key to assessing this condition. The body temperature rises rapidly, and may reach 106ºF or more. Emergency care is directed toward moving the patient out of the sun, and attempting to rapidly cool him or her. Heatstroke is discussed in the fourth edition of *Outdoor Emergency Care* (pages 431–434). Remember, in a situation such as this, taking care of yourself and your partners is critical as well. Be sure you keep drinking water and avoid excessive sun exposure.

Hip fractures are not common in the outdoor environment, but they do occur more frequently than their counterpart, hip dislocations. Because those persons who engage in outdoor recreation (be it hiking, biking, or snowsports) are often younger than the geriatric population for whom hip fractures have a soft-bone component, the site of their hip fractures is different. Whereas fractures through and just below the trochanters of the upper femur are common among the aging population, hip fractures within the joint capsule (intracapsular) are seen most often in skiing or in younger populations. This type of fracture is usually caused by a fall directly onto the lateral hip and greater trochanter, and may be non-displaced. Because the fracture site is high, the classic external rotation and shortening deformity of the affected leg may not be seen.

In this scenario, because the woman fell from a height, the trauma was more violent, and thus her resultant injury was a fracture just below the trochanters. The latter produced the classic shortening of the injured leg and the external rotation position described in the scenario. To avoid exacerbating the hip injury, it's very important in injuries such as this one to keep the patient supine and immobile (see the chapter on "Assessment and Care of Bone and Joint Injuries" in the *OEC* text).

VITAL VOCABULARY

heat exhaustion A form of heat injury in which the body loses significant amounts of fluid and electrolytes because of heavy sweating; also called heat prostration or heat collapse.

heatstroke A life-threatening condition of severe hyperthermia caused by exposure to excessive natural or artificial heat, marked by warm, dry skin; severely altered mental status; and often irreversible coma.

intracapsular fracture of the hip A fracture of the hip that occurs within the hip capsule (femoral neck or sub-capital).

intertrochanteric hip fracture A hip fracture that occurs within the greater and lesser trochanters of the hip.

subtrochanteric hip fracture A hip fracture that occurs in the proximal femur, just below the trochanters.

mental status The patient's state of mind and function.

ONLINE OUTLOOK

Interested in a more in-depth review of heat injuries? Go to www.OECzone.com and click on the link to Chapter 15 in the Online Outlook section.

Other Important Cycle B Topics

The following are additional study pages offered as food for thought. Although you're not required to write down the emergency action you'd take (as you are for the "You Are the Rescuer" scenarios), this material is included to refresh your memory and stimulate your interest in other Cycle B subjects.

The Rapid Body Survey

Patient assessment is a crucial skill for all emergency care providers. Your assessment goals as an OEC technician are defined by the standard of training outlined in *Outdoor Emergency Care.* The rapid body survey is applied in the assessment of all unresponsive patients, in responsive trauma patients with a significant mechanism of injury, and in any patient with a poor general impression. The rapid body survey is performed after you have sized up the scene and executed your initial assessment, and provides you with information needed to immediately care for critical injuries in your patient (see the assessment algorithm below).

If your patient is unresponsive because of trauma or an unknown reason, always assume a spine injury and protect the cervical spine. If you are the first rescuer on scene and do not have the help needed to stabilize the cervical spine when repositioning an unresponsive patient, the rapid body survey should be performed with the patient in the position found (assuming the airway is open). Responsive trauma patients can be placed in the supine position for the rapid body survey, or, dictated by the circumstance, assessed as found.

As its name implies, the rapid body survey is a quick examination of the entire body, and, like all aspects of an assessment, it should be second nature. Performed as a hands-on evaluation on-site, the rapid body survey is intended to help you identify any

conditions that need immediate attention. Clothing is not usually cut away or removed, but may be adjusted or worked around to the extent possible.

Rapid body surveys are important because unresponsive patients provide you with little information, and a responsive patient may be overwhelmed by the discomfort of other injuries.

This component of assessment is usually performed in the following order: head, neck, chest, abdomen, pelvis, and thighs—looking for those conditions that will "kill you the most." While observing and palpating each anatomic area, and communicating verbally with those patients who are responsive, check for deformities, contusions, abrasions, punctures, penetrations, burns, bleeding, tenderness, lacerations, and swelling (DCAP-BTLS). In addition, you should then quickly assess and compare the extremities for distal circulation, motor function, and sensation (CMS). As always, the thoracic and lumbar regions of the spine of an unresponsive or critically injured patient are assessed while rolling the patient onto a backboard.

Any significant problems found during the rapid body survey should be addressed immediately before continuing. These "critical interventions" may be as varied as the injuries you encounter. The critical interventions of airway maintenance, breathing restoration, and CPR/AED are addressed in your initial assessment. Examples of other critical interventions include cervical-spine immobilization, control of major bleeding, stabilization of a penetrating object (e.g., a stick or a ski pole), treatment of a sucking chest wound or an abdominal evisceration, or assisting your patient with the administration of epinephrine by means of an EpiPen in the case of anaphylactic shock. Remember, the rapid body survey is a single component of the assessment process, and only provides you with part of the information you need in order to provide care.

Hypothermia and Cold Injury Management

Hypothermia, clinically defined as a core body temperature below 95ºF, is one of the oldest maladies known to man and one that continues to plague us. According to Dr. Liubov Ben-Noun, of Israel's Ben-Gurion University of the Negev, the earliest description of a person affected by hypothermia may be the biblical story of King David who "was old and stricken in years, and they covered him with clothes, but he gained no warmth." (The course of treatment—having a young virgin lay with him—apparently didn't work, and whether from hypothermia or other contributory causes he died at age 70. Dr. Ben-Noun attributes David's hypothermia not to environmental factors but to old age and immobility brought on by possible kidney or prostate cancer.)

Environmental factors did play a role in other historical accounts of hypothermia. As recounted in *Wilderness Medicine* (edited by Paul S. Auerbach), Carthaginian legionnaire Hannibal lost nearly half of his 46,000 troops to the cold when crossing the Italian Alps in 218 BC. And in 1812, when Napoleon Bonaparte lost thousands of soldiers to the harsh Russian winter, his chief surgeon Baron Larrey reported that those stricken soldiers who were placed closest to the campfire "mysteriously died," whereas many who survived had saved themselves by crawling inside the still-warm carcasses of dead horses. Cold injuries have also wreaked havoc in many other military campaigns, including both World Wars.

While almost every ski patroller, river guide, or mountaineer is well aware of the dangers of cold injury and how to minimize the chance of becoming a victim, hypothermia continues to claim many lives every year. At greatest risk are the urban poor, the very young, the very old and, some suggest, young male outdoor enthusiasts (who tend to take more risks in their pursuit of adventure). Thus it behooves rescuers to review the signs, symptoms, and treatment for cold-related injuries on a regular basis.

As mentioned, hypothermia is characterized by a drop in core body temperature below 95ºF. Risk factors for this condition include age, exposure, excess consumption of alcohol, exhaustion, inadequate nutrition, and inadequate housing or heating. Treatment is dictated by the severity of the condition. While rectal temperature readings can definitively determine the level of hypothermia, a simple visual observation can virtually establish the seriousness of the malady in any setting.

Hypothermia is essentially classified as mild or severe *by the presence or absence of shivering.* A patient with mild hypothermia (i.e., a core body temperature of 90ºF–95ºF) will be shivering, but does not suffer from a marked decrease in the level of responsiveness and is still able to speak and ambulate, albeit perhaps with slurred words or a drunken-like gait. In severe hypothermia, marked by a core temperature 90ºF and below, the patient no longer shivers. Moreover, he or she exhibits a marked decrease in the level of responsiveness or is unresponsive. It is important to differentiate between the two types of hypothermia because the treatments for each are quite different, and as Baron Larrey learned, improper field treatment of severe hypothermia is quite often fatal.

WHAT CAN YOU AS AN OEC PROVIDER DO?

Mild hypothermia is treated with rapid field rewarming. The patient should be removed from the cold environment and rewarmed as quickly as possibly by whatever safe means rescuers can employ. This might include the use of an electric heater and blankets, placing the patient in a warmed sleeping bag with hot water bottles or heat packs, building a shelter and a fire, and/or serving up plenty of hot food and drink. Most mildly hypothermic patients recover quickly without further ill effects, and rarely have to be transported to a medical facility.

The care of a patient with severe hypothermia is a bit trickier—largely because the physiological responses to hypothermia mimic many of those seen in shock. The human body needs two basic components to survive—oxygen and glucose—plus the ability to rid cells of waste. As the body temperature drops, the need for oxygen increases. The response of the body to conserve heat (e.g., shivering and shunting blood inward to the core) rapidly burns off glucose and oxygen stores. The body's reserves become diminished, waste products build up, and the normal internal chemical balance is disrupted. As body systems begin to fail secondary to acid changes in the blood, the heart and its conduction system grow increasingly susceptible to dangerous arrhythmias—most notably ventricular fibrillation and ventricular tachycardia, both of which can rapidly deteriorate into asystole and cause death. This is why a severely hypothermic patient who is warmed too rapidly, handled too roughly, or warmed without the ability to stabilize an unstable heart is at great risk.

Unlike the emergency care for mild hypothermia, severe hypothermic patients should be warmed slowly and carefully. Most sources suggest that, at best, severely hypothermic patients should be stabilized in the field (to avoid further heat loss), extricated gently but quickly, packaged for transport with insulated heat sources placed in the armpits and groin and against the trunk, and rapidly sent to a hospital for rewarming. Air transportation is recommended instead of rough ground evacuation, and, when used, the helicopter lifts should

be vertical not horizontal to avoid further stress on the acidotic heart.

In the long run, as every trained wilderness enthusiast knows, the best "cure" for hypothermia is preventing its occurrence in the first place.

ASK YOURSELF

1. What general populations are more susceptible to hypothermia?
2. How can I, as a rescuer, best prevent becoming hypothermic while working?
3. What warm-weather situations lend themselves to causing hypothermia?

FOR MORE INFORMATION

To review your knowledge of hypothermia, read Chapter 15 of *OEC* fourth edition. Also go to www.OECzone.com and click on the link to Chapter 15 in the Online Outlook section. Or, check out the video on hypothermia from the NSP's Lending Library.

Injuries to the Abdomen and Genitalia

Because they happen rarely, are often hard to pinpoint, and can be difficult to talk about, abdominal and genital injuries are among the most intimidating incidents emergency care providers may encounter. But don't despair; a little refresher help is here!

Always remember, the first priority with all patients is to ensure their ABCs and then survey for any other immediate care issues. When an OEC provider performs the rapid body survey and locates an abdominal or genital injury of concern, it's time to answer some key questions:

1. Is the injury open or closed (e.g., blunt trauma, a penetrating wound, an abdominal evisceration)?
2. What is the extent of damage?
3. What was the mechanism of injury?
4. Is the patient showing signs of shock?

It is also important to immediately start a baseline on the patient's vital signs as soon as you suspect an abdominal or genital injury. This information will assist subsequent medical care providers if the patient's vitals change as time progresses.

Because these injuries may be difficult or impossible to see, it is always wise to presume the worst and arrange for immediate transport of such patients to advanced medical care. One of the most commonly noted symptoms is pain, and the most frequent sign is the patient's desire to remain still, often with the knees bent and drawn up toward the core of the body. The patient may also complain of nausea. Often the signs of abdominal injury can be more easily observed than the symptoms identifying the injury.

Types	Signs	Evaluate	Aid
Open/Closed Blunt Penetrating Eviscerated	Tachycardia Vomiting Shock Distended abdomen Bruises	Assess, noting DCAP-BTLS: • Deformity • Contusions	Never remove impaled objects Dress open wounds Logroll into a supine position on a backboard Protect spine

	Guarding Entry/exit wound Altered vitals: • pulse and respirations • blood pressure • shallow respirations	• Abrasions • Penetration • Burns • Tenderness • Lacerations Swelling	Watch for vomiting Monitor vitals Watch for shock With shock, administer high-flow oxygen (10–15 lpm) Provide prompt transport

GENITOURINARY INJURIES

The genitourinary system contains both the reproductive organs and the waste discharge system. Injuries to the kidneys rarely occur alone because they are well protected. An injury to one or both most often occurs in conjunction with other trauma to the body. But be aware, kidney injury isn't always obvious. Signs of shock or blood in the urine may be the only early indicators of a kidney injury.

A pelvis fracture, blunt trauma, or a penetrating injury can all cause a ruptured bladder. A sign might be a clothing stain on the underwear or blood at the urethral opening. Urine from the ruptured bladder spills into the surrounding abdominal cavity. For both kidney and bladder injuries, treat for shock, monitor vitals, and transport as soon as possible.

Injuries to the external genitalia (male: penis, scrotum, urethra; female: vulva, clitoris, labia) tend to be very painful and bleed profusely, but are rarely life-threatening. Cover such wounds with a sterile, moist compress dressing, use direct pressure if necessary, and transport. Applying ice to injuries to the scrotum may also be helpful in relieving swelling and pain. The urgency of transport for these patients depends upon the severity of associated injuries, shock, the amount of blood loss, and the level of pain being experienced.

Internal injuries to the female genitalia (uterus, ovaries, and fallopian tubes) are rare because they are well protected by the pelvic cavity. An exception to this is the uterus during advanced stages of pregnancy when it grows beyond the pelvic rim. The uterus is then enriched with blood. Watch carefully for signs of shock and provide immediate transport. Advanced-stage pregnant patients should be transported on their left side (instead of supine), thereby avoiding additional pressure on the vena cava by the uterus. Backboarded patients, once secured, can be tilted slightly to the left.

WHAT CAN YOU AS AN OEC PROVIDER DO?

- Provide reassurance and comfort since these types of injuries are often painful and/or embarrassing.
- Apply moist, sterile compresses.
- Apply direct pressure to control bleeding.
- Never remove impaled objects.
- Never place anything in the vaginal opening.
- Try to save any avulsed part, sending it to the hospital with the patient.
- Save any voided urine, sending it to the hospital with the patient.

ASK YOURSELF

1. What is the most common symptom noted by abdominal patients?

2. What are four signs commonly seen in abdominal injury patients?
3. How would you prioritize care for an abdominal injury patient?
4. Is a genital injury typically life-threatening?
5. How would you prioritize care for a genitourinary injury patient?

FOR MORE INFORMATION

For a complete review of injuries to the abdomen and genitalia, please refer to Chapter 23 of *OEC* fourth edition. Also go to www.OECzone.com and click on the link to Chapter 23 in the Online Outlook section.

Mechanism of Injury Exercise

The following "Facts in Four" exercise can help boost your confidence in recognizing injuries and their related mechanisms of injury (MOI). For each of the following descriptions, provide four possible MOIs or ways in which the patient might have come to rest in that position or location. Use your imagination and write down your first impression. Then follow that with three other MOIs.

Snowboarder sitting up cradling right arm
MOI #1 (first impression): _____
MOI #2: _____
MOI #3: _____
MOI #4: _____

Skier lying prone on flat, snow-covered area under a chairlift
MOI #1 (first impression): _____
MOI #2: _____
MOI #3: _____
MOI #4: _____

Skier with both skis on, lying supine and unresponsive at the base of a steep face
MOI #1 (first impression): _____
MOI #2: _____
MOI #3: _____
MOI #4: _____

Skier lying on his right side below a tree
MOI #1 (first impression): _____
MOI #2: _____
MOI #3: _____
MOI #4: _____

Nordic skier lying in fetal position in the middle of a beginner's trail
MOI #1 (first impression): _____
MOI #2: _____
MOI #3: _____

MOI #4: _____