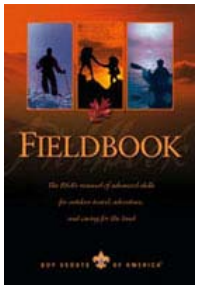
Managing Risk

An injury that doesn't happen needs no treatment. An emergency that doesn't occur requires no response. An illness that doesn't develop demands no remedy. The best way to stay safe in the outdoors is to avoid getting into trouble in the first place. That requires planning, training, leadership, good judgment, and accepting responsibility—in short, risk management.

We manage risk in almost every aspect of our lives. There is risk involved in stepping out of our homes in the morning, but we go anyway. There are risks in crossing a street, catching a bus, and taking part in sports, but we find ways to minimize these risks and maximize our safety and well-being.



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Risk management is so much a part of outdoor adventures that often we hardly notice we are doing it. When we fill bottles with water from streams and lakes, we deal with the risk of parasites by treating the water with a filter or chemicals, or by boiling it. When we share the outdoors with bears, we protect them and ourselves by hanging our food out of their reach, eliminating odors from our sleeping areas, and keeping campsites spotless. When foul weather blows in, routes become uncomfortably exposed, streams swell, or snow loads make avalanches a possibility, we consider all the available information and then make decisions that keep risks at acceptable levels.

Perceived risk can energize outdoor activities by bringing to them an immediacy that is sharper than what we normally experience. The actual risk on a well-managed ropes course, for example, is relatively low, but participants experiencing the events of the course might perceive that the risk is much higher than it actually is. That heightened awareness can take them beyond their usual comfort levels and encourage them to accept challenges that will stretch their abilities and build their confidence.

The only way to eliminate risk completely in the out-of-doors is to give up the pleasures, challenges, and satisfaction of taking part in an adventure. Rather than attempting to do away with it, group members and leaders can manage risk by identifying its sources, understanding its boundaries, and tailoring their behavior to minimize exposure to danger.

Shared Management of Risks

Many outdoors-oriented organizations have guidelines to address certain hazards they believe to be of particular concern to their members. This chapter, for example, will discuss hypothermia, lightning, and several other potential risks of great interest to the Boy Scouts of America. A truly effective approach to risk management, though, is found not just in the details, but also in the willingness of everyone in a group to take an active role in maximizing his or her own safety and the safety of others.

A leader who empowers group members with resources, training, and responsibilities for conducting successful treks often will find that they also can be trusted to do their part to manage risk. When each person has a part to play in the success of a trek, everyone has a stake in risk management. Group members are far better prepared to deal with illnesses or injuries if they are versed in response plans and if they know where they are, what resources are at their disposal, and what skills they can draw upon. On the other hand, leaders who expect group members simply to obey rules and instructions—to be followers rather than thinkers and

Risk Management

Here are three keys to effective risk management:

- Everyone in the group commits to having a safe experience.
- Everyone understands and follows group

problem solvers—might discover that their groups aren't able to deal effectively with the changing nature of risk.

- Stay in good shape so you are ready for the physical demands of a trek.
- Know where you are going and what to expect.
- Adjust clothing layers to match changing conditions.
- Drink plenty of water.
- Protect yourself from exposure to the sun, biting insects, and poisonous plants.
- Take care of your gear.

guidelines established to minimize risk.

- Everyone has a say in recognizing and dealing with risks that arise during a trek.

A critical aspect of risk management is letting others know when you are having difficulties or are aware of a concern that might affect you or the group. Many people have a tendency to keep things to themselves. They don't want to slow down the group, or are worried about what others will think of them. But stopping for a few moments to deal with a hot spot on a heel can help avoid bringing the group to a long halt later in the day when blisters break out. Voicing concern about changing weather or questionable route decisions can bring important matters to the attention of the rest of your group.

Outdoor-Oriented First Aid

We often go to remote areas to get away from it all, but among the things we are getting away from is quick access to emergency support and care. If someone has an accident in an American city, dial 911 and an emergency team will probably be on the scene in minutes, ready to treat injuries and to provide transport to a medical center.

Take care of yourself, and you will be far less likely to have trouble on the trail. You also will be much better able to help others deal with difficult situations.

The farther that group members are from medical facilities, the more important is their ability to deal with emergencies on their own. Responding to incidents during trek adventures can involve not only immediate treatment, but also evacuating ill or injured persons to the frontcountry, or stabilizing them and maintaining their safety for hours or even days until medical assistance arrives.

Those who intend to travel in the backcountry should prepare themselves with first-aid training, ideally including training in caring for injured and ill persons in remote settings. Among the training courses available in various parts of the country are Red Cross Wilderness First Aid Basic, Wilderness First Responder, Wilderness Emergency Medical Technician, and Mountaineering Oriented First Aid.

Preparing a Group to Manage Risk

Risks associated with the outdoors can involve rain, wind, heat, cold, avalanche, water, wildlife, vegetation, and falling. Human elements affecting risk include lack of physical preparation, improper training, poor judgment, and unreasonable expectations by group members, leaders, parents, and others. Many of these concerns can be addressed by leaders helping group members decide upon activities that are appropriate to their skills, experience level, and interests. Preparing a group to manage risk also involves a certain amount of pretrip paperwork and development of an emergency response plan.

Rescue team professionals and trained volunteers responding to backcountry calls can be exposed to considerable risk. Never hesitate to summon help when you need it, but minimize the need for assistance by preparing well and doing your best to proceed in ways that maximize your safety and that of others.

For more on matching groups with appropriate activities, see the chapters titled "Organizing for Adventures," "Outdoor Leadership," and "Planning a Trek."

Paperwork

The policies of a given organization will determine the paperwork that must be completed before a trek begins—releases for medical treatment, for example, proof of health insurance, tour permits, and any forms required by land management agencies. Leaders also should be fully informed in writing if a group member requires medications, has any medical issues, or deals with allergies. Always prepare a written itinerary of where you plan to be on each day and night of a trek. Leave copies with several responsible people who will take appropriate action if you haven't returned according to schedule.

Emergency Response Plan

Developing a written emergency response plan requires group members to figure out the steps to be taken during trek emergencies and to write down contact information for agency personnel, law enforcement authorities, and medical response networks. The plan should outline strategies for contacting help, if help is needed. Along with your group's roster, itinerary, intended route, and expected time of return, give copies of the emergency response plan to support persons in the frontcountry.

For more on itineraries and emergency response plans, see the chapter titled "Planning a Trek."

Wireless Telephones and Risk Management

Global positioning system (GPS) receivers allow travelers to pinpoint locations, but they are no substitute for mastering the use of maps and compasses. Likewise, wireless telephones can be a convenient means for groups to contact emergency response personnel, but phones are useless if they malfunction, the batteries are exhausted, or distance and terrain prevent clear reception of signals.

Frivolous use of wireless phones can seriously diminish solitude, independence, and challenge in the outdoors. If you carry a portable telephone, stow it deep in your pack and bring it out only for emergency calls. Most of all, never assume that having a portable telephone grants you any protection to attempt activities beyond your levels of skill and experience, especially if you are far from emergency support.

Managing Risk in the Field

The degree of risk in a situation depends on a host of factors that can change from one moment to the next. Take, for example, a log that, a few feet above a stream, offers an inviting route for hikers to reach the far bank. On a warm day in a BSA local council camp, the risk involved in walking across the log might be very low. Even if you fall, it's not far to the water. If you get wet, you can go to your tent and change clothes. If you sprain your ankle, you are close to medical assistance. Do you walk over the log? Probably.

During a backpacking trip, you come upon a similar log lying across a stream, but this one is located miles up a trail and the day is windy and cold. If you slip off the log, you have only the clothing you are carrying to replace wet garments. If your pack is submerged, the clothes, food, and gear stowed in it could become soaked. If you hurt your ankle, you might be stranded miles from a road. Do you use the log to cross the stream? Perhaps, but you might decide to lessen the risk by straddling the log and scooting across in a sitting position, or you might wade if the stream is calm and shallow, or you might seek out a better place to cross. Each option will take longer than walking the log, but not nearly as long as dealing with the possible results of a fall.

Managing risk often is a matter of considering the "what if" of a situation. What if I fall? What if I lose my pack? What if I sprain my ankle? Other considerations that might be factors are the time of day, your group's level of fatigue, hunger, or anxiety, and the amount of experience you've had with similar situations.

Put lots of faith in your gut feeling about a situation. If it doesn't seem right but you're not sure why, your instincts might be telling you something you need to know, but have not yet fully understood. Take plenty of time to consider your options.

Anyone in a group should feel empowered to call a halt to group activities whenever he or she perceives a risk that should be addressed. In turn, group leaders and other members must respect those concerns and give them full consideration.

While the tone of a group is best when it is upbeat and members strive to see the positive in every situation, it's good to be a pessimist about hazards, erring on the side of too much caution rather than not enough. The risk management portion of your brain should be focused on what could go wrong so that you can act in ways that increase the likelihood of things going right.

Incident Response

Risk management is not built on a list of rules, but rather on good judgment and a willingness to accept responsibility for one's own safety and that of others. Incident response is what happens when an injury or illness has occurred during a trek and a group must decide how to handle it.

Accounts of injuries and illnesses in the outdoors often try to pinpoint a specific cause. Hypothermia, for example, often is blamed on chilly weather, cotton clothing, and precipitation. Of course, the steps that led to poorly dressed travelers shivering in the rain can be traced back to decisions that might easily have prevented that dangerous situation from occurring at all. With qualified leadership, personal responsibility, and effective planning, those travelers would have had warm clothing and rain gear. They would have been well-hydrated and have had energy food in their packs. They would have kept an eye on the weather and made timely decisions about where to go, when to camp, and whether to turn around and go home.

The following pages discuss ways to prepare for and manage certain risks, and also the basics of how groups can respond to incidents brought about by these concerns. (Watercraft adventures and some other trek activities present specific risk management issues that will be addressed in the chapters discussing those activities.)

Dehydration

Water is essential for nearly every bodily function, including brain activity and temperature control. We lose moisture through breathing, sweating, digestion, and urination. A person who gives off more water than he or she takes in risks becoming dehydrated. The first sign of dehydration usually is dark urine. Other signs can include weariness, headache and body aches, and confusion.

Dehydration can play a significant role in a number of maladies including heat exhaustion, heatstroke, hypothermia, and frostbite.

Help keep your body in balance by eating enough throughout the day. The importance of drinking plenty of fluids cannot be overemphasized. Don't wait until you feel thirsty—that's an indication that you are already becoming a bit dehydrated. Replenish your water supplies at every opportunity and drink often in warm weather and cold alike.

Incident Response for Dehydration

A person showing any indications of dehydration should rest in the shade and sip water until the symptoms subside.

Heat Exhaustion

Heat exhaustion can be brought on by a combination of dehydration and a warm environment. The condition is not uncommon during sports activities and trek adventures conducted in hot weather, especially if participants are not fully acclimated to the conditions. Symptoms can include the following:

- Skin that is pale and clammy from heavy sweating
- Nausea and tiredness
- Dizziness and fainting
- Headache, muscle cramps, and weakness

Incident Response for Heat Exhaustion

To treat heat exhaustion, have the victim lie in a cool, shady place with the feet raised. Remove excess clothing. Cool the victim by applying cool, wet cloths to his or her body and by fanning. If the victim is fully alert, let him or her sip from a glass of water and take bites of salted food, such as nuts. Recovery should be rapid. If symptoms persist, call for medical help.

Heatstroke

Heatstroke occurs when a person's core temperature rises to a life-threatening level (above 105 degrees). Causal factors include dehydration and over exertion in hot environments. Symptoms can include hot, red skin that can be either dry or sweaty; confusion; and a rapid pulse.

Incident Response for Heatstroke

A heatstroke victim must be cooled immediately. He or she is in danger of dying. To quickly lower the body temperature and begin restoring hydration, move the victim to a cool, shady spot and cool him or her any way you can. Keep the victim lying down and comfortable, with head and shoulders slightly raised. Remove outer clothing and sponge the victim with cold water. Cover the victim with wet towels, wet clothing, or whatever else is handy, and fan him or her. Place the victim in a stream, in a tub filled with cool (not ice-cold) water, or in front of an air conditioner running full blast in a house or car. Use combinations of all available treatments.

Get emergency medical help as soon as possible. The victim's temperature might go up again, or he or she might vomit or require rescue breathing.

For more on conducting trek adventures when temperatures are warm, see the chapter titled "Hot-Weather Travel and Camping."

Hypothermia

Hypothermia occurs when a person's body is losing more heat than it can generate. It is a danger for anyone who is not dressed warmly enough, though simple exposure to cold is seldom the only cause. Dehydration is a common factor. Wind, damp clothing, hunger, and exhaustion can further compound the danger. The temperature doesn't have to be below freezing, either—a lightly dressed hiker caught in a cool, windy rain shower can be at great risk. So is a swimmer too far out in chilly water or immersed too long.

A group that knows how to treat hypothermia should be well enough aware of the risk that its own members will seldom, if ever, need to be treated for it.

A person experiencing hypothermia might feel cold and numb; become tired, anxious, irritable, and increasingly clumsy; have slurred speech; shiver uncontrollably; make bad decisions; and lose consciousness.

Incident Response for Hypothermia

Treat a victim of hypothermia by preventing him or her from getting colder and, if necessary, by using any or all of the following methods to help the body warm again to its normal temperature.

1. If the person is fully conscious and can drink, offer plenty of warm liquids (cocoa, soup, fruit juices, water).
2. Move the person into the shelter of a building or a tent and get him or her into dry, warm clothes.
3. Zip the person into a dry sleeping bag. Cover the head with a warm hat or sleeping bag hood.
4. Provide water bottles filled with warm fluid to hold in the armpit and groin areas.
5. If hypothermia is advanced, help the person to breathe warm, moist air to aid in rewarming.
6. Monitor closely and be ready to administer other first aid.
7. Seek medical care.

While one person is being treated for hypothermia, the rest of a group also might be at risk. Protect yourself and others by taking shelter, putting on layers of dry, warm clothing, and having something to eat and drink. Look after one another.

Frostbite

Flesh exposed to low temperatures or cold wind can freeze. Far from the warmth of the body's core, toes and fingers are especially vulnerable, as are the nose, ears, and cheeks. A frostbite victim might complain that his or her ears, nose, fingers, or feet feel painful and then numb, but some victims won't notice anything. Grayish-white patches on the skin are signs of frostbite. Since dehydration increases

the danger of frostbite, cold-weather travelers must be every bit as diligent about drinking fluids as they are when the temperature is high.

Incident Response for Frostbite

Only superficial frostbite—frostnip—can be treated in the field. If you suspect that frostbite is deep (extending below skin level), wrap the injured area in a dry blanket and get the victim under the care of a physician as soon as possible. Don't rub the injury.

To treat frostnip, move the victim into a tent or building, then warm the injured area and keep it warm. If an ear or cheek is frozen, remove a glove and warm the injury with the palm of your hand. Slip a frostnipped hand under your clothing and tuck it beneath an armpit. Treat frostnipped toes by putting the victim's bare feet against the warm skin of your belly.

For more on conducting trek adventures in chilly conditions, see the chapter titled "Cold-Weather Travel and Camping."

Sunburn

Although skin appears to recover from sunburn, damage to its cellular structure accumulates. That can lead to premature wrinkling and is a primary cause of skin cancer. Use sunscreen to protect exposed skin, giving special attention to your face, ears, nose, and neck. To be effective, sunscreen should have a sun protection factor (SPF) of at least 15. Apply it liberally before sunlight exposure, and reapply if you are sweating and after immersion in water. Hats with large brims, long-sleeved shirts, and long pants will provide further protection.

Sunlight reflected by water or snow can intensify the damaging effects of solar radiation. Zinc oxide offers total blockage of the sun's rays, and might be what you need for your face and ears during watercraft adventures and treks at high altitudes or on snow. Wear sunglasses to prevent eyestrain, and shield your lips against chapping and sun injury by applying a lip balm with an SPF of 15 or higher.

Incident Response for Sunburn

Prevent further injury by getting out of the sun, either by seeking shade or by putting on a hat and clothing that affords protection. Treat painful sunburn with damp cloths. Remedies containing aloe vera also might provide relief.

Lightning

Open water, mountaintops, the crests of ridges, the bases of tall or solitary trees, and large meadows can be hazardous places during lightning storms. Plan to be off peaks and other exposed locations before afternoon when thunderstorms are more prevalent. If you are caught in a dangerous area, quickly move to shore or descend to a lower elevation, ideally away from the direction of the approaching storm. A dense forest located in a depression offers the greatest protection. Stay clear of shallow caves and overhanging cliffs—ground currents might arc across them. Avoid bodies of water and metal fences, too, and anything else that might conduct electricity. In a tent, stay as far as you can from metal tent poles.

If a lightning storm catches your group in the open, spread out so that people are at least 30 feet from one another. Further minimize your risk by crouching low with only the soles of your shoes touching the ground. You can use your sleeping pad for insulation by folding it and crouching upon it.

Incident Response for Lightning Strikes

Persons struck by lightning might suffer varying degrees of burns. Of more immediate concern is the likelihood that their hearts have stopped beating and they are no longer breathing. Treat by checking their circulation and respiration; if necessary, perform CPR (cardiopulmonary resuscitation). Once they are stabilized, attend to burns or other injuries, treat for shock, and closely monitor their vital signs until they are under a physician's care.

For more on lightning and its causes, see the chapter titled "Monitoring Weather."

Flash Floods

In arid regions of the country, dry streambeds and small creeks can become raging rivers in just a few minutes. The rains causing the flood might be falling right where you are, or they could be coming down miles upstream of your location. When traveling in areas where flash floods are possible, make it a point to always know how to reach the safety of higher ground. Pitch your tents above the high-water marks of past floods. In flowing streams, watch for an increase in the speed or volume of current and for other indicators of imminent flooding. Moving water can be extremely powerful; stay clear of areas that have become flooded.

Incident Response for Flash Floods

If you are caught in a flood, assume a position with your feet aimed downstream, then use them to absorb impact against objects. Should you manage to get to an island or into the branches of a tree, stay calm and wait for assistance.

For more on surviving a fall into moving water, see the chapter titled "Watercraft Adventure Safety." For more on safely crossing streams, see the chapter titled "Mountain Travel."

Avalanches

Avalanches are a serious concern for all travelers whose outings take them into snowy, mountainous regions. An avalanche occurs when snow breaks loose on a slope, or when a cornice of snow collapses and tumbles down. Large avalanches can carry away trees and tents, and even a small snowslide can bury a person caught in its path.

Your greatest protection against avalanches is knowing where, how, and when they are likely to happen and then planning routes that take you elsewhere. Indicators of danger include the following:

- Signs of previous avalanches—conditions that were right for past avalanches might well come together again to cause future snowslides.
- Steep terrain—avalanches usually happen on slopes of 40 to 60 degrees.
- Accumulations of new snow—it takes a while for fresh snowfall to consolidate enough to stabilize.
- Variations in the quality of snow layers, especially if one or more layers are airy, granular, or in slabs—a weak layer in the snowpack can allow layers above to break loose and slide.
- Air temperature rising to near or above freezing, causing changes in snowpack stability.
- Sounds that suggest cracking or settling of the snowpack.

Falling rocks pose a danger to unwary backcountry travelers. Loose stones at the base of a cliff might indicate a likelihood of rockfall. If you hear a rock clattering down, or if you accidentally kick one loose, shout "Rock!" to warn those below to take cover.

Travel in areas with significant risk of avalanche is beyond the scope of this book and calls for more specialized training.

As with any trek adventure risks, don't be reluctant to change your plans or postpone a trip when avalanche danger is high. The mountains will still be there for you after conditions have improved.

In addition to understanding the basics of avoiding avalanche zones, the following steps will help you prepare for travel in steep, snowy terrain:

- Complete an avalanche-safety training course taught by qualified experts.
- Check local avalanche-forecasting networks (operated by weather bureaus and land management agencies) before setting out. The most useful networks are updated at least once a day.
- Choose travel companions who understand the danger of avalanches and will do their part to manage the risk.
- Carry avalanche safety equipment and know how to use it. Battery-powered beacons worn by each group member emit a radio signal that can be picked up by the beacons of others.

Incident Response for Avalanches

If, despite your preparations and judgment, you see an avalanche roaring toward you and you can't get out of its path, jettison your pack. Get rid of skis, too, if you are wearing them. When the snow hits,

move your arms and legs in a swimming motion to keep yourself upright, and try to keep your head above the surface. As the avalanche slows and begins to settle, push away any accumulation of snow from your face to form an air pocket that will allow you to breathe.

Should others in your party be caught in an avalanche, keep your eye on them as long as you can, and note the exact place you saw them last. Hopefully, they'll be wearing avalanche beacons so that you can recover them quickly. If not, listen for their voices, probe the area with ski poles from which you've removed the baskets, and don't give up hope. Sturdy short-handled shovels made of plastic or metal can prove invaluable for freeing avalanche victims. People have survived under the snow for 30 minutes before being rescued. Treat avalanche victims for shock and hypothermia. For more on snow shovels, see the chapter titled "Cold-Weather Travel and Camping."

Poisonous Plants

Vegetation greatly enriches outdoor experiences, but there are a few species of plants that outdoor travelers will want to avoid. Poison ivy, poison oak, poison sumac, and nettles can cause skin inflammation and itching. Don't eat wild plants, including mushrooms, unless you are positive that you can identify them and know that they are safe for human consumption. For more on vegetation, see the chapter titled "Plants."

Incident Response for Exposure to Poisonous Plants

The irritants in poison ivy, poison oak, and poison sumac can take up to 10 minutes to bond with the skin. Thoroughly washing with soap and water, or with water alone, soon after exposure to these plants can minimize their effects. The same is true of nettles. Hydrocortisone cream might reduce itching. Avoid scratching affected skin, as that can increase the size of the irritated area.

If someone has ingested poisonous plants, induce vomiting. Save some of the vomit in a plastic bag for medical analysis, and get the person to a physician.

Anaphylactic Shock

In rare cases, stings or bites of insects can cause anaphylactic shock, a condition that restricts breathing passages and requires immediate treatment by a physician or a person trained in emergency first aid. People who are allergic to peanuts, shellfish, and certain other foods can have similar reactions if they ingest those items.

Travelers who know they are susceptible to anaphylactic reactions (and anyone dealing with asthma) should consult with their physicians to prepare themselves for the outdoors with strategies and treatment kits, and should share that information with the leaders of their groups. For example, the emergency kits carried by people who know they might suffer from anaphylactic shock often include an EpiPen® for injecting a measured dose of epinephrine.

Asthma

The symptoms of an asthma attack can be similar to those of a person suffering anaphylactic shock—a constriction of the throat and increasing difficulty in breathing. Conditions that might trigger an asthma attack include dust, physical exertion, changes in humidity, and changes in elevation. Many people coping with asthma use inhalers and other forms of medication to treat asthma episodes. Before a trek begins, they should fully inform group leaders of their health histories, treatment regimens, medications, and the locations of those medications.

Animals

Seeing animals in their natural habitat is always a pleasure, but it's wise to remember that they are the permanent residents of the backcountry while we humans are the visitors. Treat animals with respect, give them enough space so they won't feel threatened by your presence, and properly manage your food storage, and they seldom will present a risk to your safety.

When it comes to insects, accept the fact that there are lots more of them than there are of us, and that some will be delighted to take a bite out of you. Reduce the likelihood of that happening by applying repellents or by wearing long pants, long-sleeved shirts, and head nets.

For more on wildlife, see the "Leaving No Trace" section of this book, and the chapters titled "Observing Nature" and "Wildlife." For more on insect repellents, see the chapter titled "Hot-Weather Travel and Camping."

Incident Response for Animal-Caused Injuries

In the event that you are scratched or bitten by an animal, seek medical attention; a physician must determine whether antibiotic, rabies, or other treatment will be necessary.

Bears

For guidelines on managing risk in bear country, see the chapter titled "Traveling and Camping in Special Environments."

Bee and Wasp Stings

Scrape away a bee stinger with the edge of a knife blade, but don't squeeze the sac attached to the stinger—that might force more venom into the skin. An ice pack or cool compress might reduce pain and swelling. Watch for any indications of anaphylactic shock.

Tick Bites

Ticks are small bloodsucking arthropods that bury their heads in the flesh of their hosts. Protect yourself whenever you are in tick-infested woodlands and fields by wearing long pants and a long-sleeved shirt with snug cuffs and collar. Button your collar and tuck the cuffs of your pants into your boots or socks. Inspect yourself and other group members daily, especially the hairy parts of the body, and immediately remove any ticks you find.

If a tick has attached itself, grasp it with tweezers close to the skin and gently pull until it comes loose. Don't squeeze, twist, or jerk the tick, as that might leave its mouthparts in the skin. Wash the wound with soap and water, and apply antibiotic ointment. After dealing with a tick, thoroughly wash your hands. If a tick has been embedded more than a day or poses difficulties in removal, see a physician.

Lyme disease is an illness carried by some ticks. A red ringlike rash might appear around the bite. A victim might feel lethargic and have flulike symptoms, fever, a sore throat, and muscle aches. Anyone experiencing these symptoms in the days and weeks following a trek adventure, especially activities in areas where ticks are known to carry Lyme disease, should be checked by a physician.

Chigger Bites

Almost invisible, chiggers burrow into skin pores where they cause small welts and itching. Try not to scratch chigger bites. You might find some relief by covering chigger bites with hydrocortisone cream or by dabbing them with clear fingernail polish.

Spider Bites

The bite of a female black widow spider can cause redness and sharp pain at the wound site. The victim might suffer sweating, nausea and vomiting, stomach pain and cramps, severe muscle pain and spasms, and shock; breathing might become difficult.

The bite of a brown recluse spider might not hurt right away, but within two to eight hours there can be pain, redness, and swelling at the wound. An open sore is likely to develop. The victim might suffer fever, chills, nausea, vomiting, joint pain, and a faint rash.

Victims of spider bites should be seen by a physician as soon as possible.

Scorpion Stings

Scorpions might startle you if you find them underneath your tent or ground cloth, or shake them out of your boots first thing in the morning. They usually are more imposing than they are dangerous, and scorpions that can cause humans serious injury are uncommon. Ordinary scorpion stings usually are not as dangerous as bee stings; they can cause severe, sharp pain, swelling, and discoloration, but

generally have no lasting ill effects. If you are stung, cool the wound area with cold water or ice and seek medical attention.

Snakebites

Snakes are found in many parts of the country, but bites from them are rare. Snakes try to avoid humans, usually striking only when cornered or surprised. Use a hiking stick to poke among stones and brush ahead of you when you walk through areas where snakes are common. Watch where you put your hands as you collect firewood or climb over rocks and logs. Snakebites seldom result in death.

The bite of a nonpoisonous snake causes only minor puncture wounds and requires only ordinary first aid for small wounds—scrubbing with soap and water, then treating with an antiseptic.

A poisonous snakebite might cause the victim to feel sharp, burning pain. The area around the bite might swell and become discolored. However, a poisonous snake does not inject venom every time it bites. Know which poisonous snakes are native to the area you plan to hike, and know how to identify them.

Snakes are not warm-blooded and so cannot carry rabies, though any bite that breaks the skin has the potential of causing infection.

Incident Response for Poisonous Snakebite

Get the victim under medical care as soon as possible so that physicians can neutralize the venom. A person who has been bitten by a poisonous snake might not be affected by the venom for an hour or more. Within that time, the closer to medical attention you can get the victim, the better off he or she will be. The victim might be able to walk; carrying him or her also might be an option. Before setting out, do the following:

1. Encourage a frightened victim to remain calm, and give reassurance that he or she is being cared for.
2. Remove rings and other jewelry that might cause problems if the area around a bite swells.
3. If available within three minutes of the bite, apply a Sawyer Extractor® directly over the fang marks and leave in place for no more than 10 minutes. Properly used, the extractor can remove up to 30 percent of the venom. Do not make any cuts on the bite— that's an old-fashioned remedy that can cause the victim much more harm than help.
4. Immobilize a bitten arm with a splint and a sling, keeping the wound lower than the level of the victim's heart.
5. *Do not* apply ice to a snakebite. Ice will not help the injury, but could cause damage to skin and tissue.

If the victim must wait for medical attention to arrive, add these treatment steps:

1. Have the victim lie down and remain still. Position the bitten part lower than the rest of the body. If you have not done so already, immobilize the bitten limb with a splint.
2. Put a broad constricting band (a bandanna or a strip of cloth at least 1 inch wide) around the bitten limb 2 to 4 inches above the bite (between the heart and the bite) to slow the spread of venom. This is not a tourniquet; it is intended to impede the lymphatic system but not the circulation of blood. The band should be snug, but loose enough to slip a finger under easily. Periodically check for a pulse on both sides of the band. You must not cut off blood circulation entirely. Do not use a constriction band around a finger, a toe, the head, or the trunk.
3. Treat for shock, but keep a bitten extremity lower than the heart.

Shark Attacks

Though rare, shark attacks on humans create dramatic headlines in the media. Many more people die each year from the effects of bee stings than from shark bites. Reduce even that remote likelihood of a shark attack by avoiding areas where sharks are known to congregate. Don't enter the water alone. Blood, fish bait, and human waste in the water might attract sharks, as can bright

When helping victims of bites or stings, do whatever you must to avoid being bitten or stung yourself. A rescuer who becomes injured could greatly complicate any emergency situation.

objects such as jewelry. If sharks are sighted, return to shore quickly but with a minimum of splashing.

Jellyfish Stings

Your trips along shorelines and on the open sea can bring you within proximity of a variety of animals you will enjoy observing from a distance. The Portuguese man-of-war and jellyfish have stinging cells on their tentacles. When touched, the toxins in those cells may attach to the skin and cause a sharp, burning pain.

Do not wash affected skin with fresh water, as that can cause the release of more toxin. Instead, soak the injury for 30 minutes in alcohol or vinegar, then use tweezers to remove the remaining tentacles. Quickly get the victim under medical care. People who are allergic to jellyfish stings might go into deep shock.

Keeping Risk in Perspective

Perhaps the greatest risk to be managed during trek adventures is also one of its real attractions—the simple matter of distance. The farther you travel from clinics, physicians, and rescue squads, the more you must rely upon yourself and your companions to maintain your safety. Of course, the best response to risk is to stay out of trouble in the first place. That requires planning, leadership, and an awareness of your surroundings so that you can make good decisions every step of the way. Add the first-aid training you need to respond effectively to an illness or injury that might arise, and you can make the management of risk second nature on every outdoor adventure.