

# Wilderness First Responder

*How to Recognize, Treat, and Prevent  
Emergencies in the Backcountry*

T H I R D   E D I T I O N

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# Wilderness Emergency Medical Care

## You Should Be Able To:

1. Describe the need for well-trained providers of wilderness medicine.
2. Outline a brief history of wilderness medicine.
3. Describe the difference between wilderness medicine and urban medicine.

## It Could Happen to You

After two days of late summer hiking under heavy backpacks into the Bighorn Crags of Idaho, you and three friends near the point on the map where an unnamed lake supposedly abounds with fine fishing and pleasant campsites tucked into the shadows of a dense forest. Clouds that collected over the afternoon start to spill a thin shower, and you stop to put on rain gear. With only a short series of switchbacks separating you from your destination, your group arrives at the scene of an accident. A lone hiker sits against a tree, pack by his side, face wearing a grimace of pain. He complains of lower right leg pain and the inability to bear weight on the injury. The hiker says he slipped on a wet rock while descending the trail. He is wearing a cotton T-shirt and shorts, and you note his lower right leg appears bloody and bruised. Occasional shivers disrupt his ability to speak.

Welcome to the world of wilderness medicine! It's an extraordinary world, a world filled with mountains and deserts, lakes and rivers, broad expanses of tundra and thin passages through serpentine canyons, fields of ice and fields of flowers, deep oceans with distant shorelines, and undeveloped lands where English is a foreign language. It's a world of cold and heat, wet and dry, high and low, dark and light, rushing noise and immense quiet, and, sometimes, utter solitude. It takes an hour to hike to this place, or a day of paddling, or a week of climbing, or a month of sailing. What common threads weave through the world of wilderness medicine? There is extended contact time with the patient, often more than one hour separating you from definitive medical care. Who stands beyond the one hour? Outdoor leaders and educators do, wilderness guides and enthusiasts, military personnel, remote researchers, field journalists, and many more. And they share the fact that hospitals and, usually, physicians are far enough away that the closest thing to anything definitively medical could be *you*. You need self-reliance and decision-making skills to get the job done well.

## First Response and Responsibility

Wilderness medicine is often difficult and demanding. The wilderness can turn little emergencies into big emergencies. There is a smaller margin for error than in an urban environment. The Wilderness First Responder (WFR) must be able to recognize, treat, and, whenever possible, prevent problems created by and within a wilderness environment. Anticipating and preventing problems and managing the risks that are inherent in wilderness travel are at least as important as recognizing and treating problems. Indeed, taking action to prevent emergencies, especially emergencies related to the wilderness environment such as heat, cold, altitude, hygiene, and blisters, is a particular responsibility of the WFR. The best guideline for the WFR might well be stated as this: *Plan ahead and prepare*.

To travel beyond the trailhead or put-in is to accept responsibility for your health and well-being, as well as the health and well-being of those you lead or travel with. The WFR must know how to travel in wilderness, how to dress and eat and drink, how to choose and care for gear—in short, how to live properly and safely in wilderness.

Whatever terms you choose to define wilderness, broad or narrow, physical or spiritual, all tracts of the world's wild lands share two common truths: They are decreasing in size and increasing in value. To journey into wilderness is to accept the responsibility to leave what you find as untouched by your passing as possible, to leave *zero impact* in the backcountry.

## A Brief History of Wilderness Medicine

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Before there was any medicine, there was "wilderness medicine," if we use that term to describe care given people far from a hospital. Evidence in prehistoric skeletal remains indicates that broken bones were set and adequate healing occurred. Almost every culture that has left record of its existence has left signs that some form of medicine was practiced, often well outside of a medicine man or woman's "office."

In the frigid winter of 1811-12, Napoleon's surgeon general, Baron Larrey, trained soldiers to care for their wounded comrades at the battlefield. Here was the first known orchestrated effort to keep participants in action by providing immediate attention in the field. Hypothermia and frostbite drove Larrey and the tiny remainder of Napoleon's troops out of Russia without the defenders having to fire too many shots, but the precedent had been set, and prehospital emergency medicine took its initial organized leap forward.

During the early years of the United States, almost all medicine was wilderness medicine, care provided in remote environments. Doctors were few, self-reliance was necessary for survival, and people learned to provide treatment for themselves and others when it was required. To early American pioneers, wilderness was a constant presence and medicine was a regular activity. When this nation went to war, management of injuries in the field continued to be an immediate necessity; our battlegrounds were another type of wilderness, and much of the modern growth in emergency medicine originated with the U.S. military.

As populations congregated in cities, medical needs were met more and more by physicians and hospitals, but accidents and sudden illnesses remained a major health problem. The American Red Cross, founded in 1905, began teaching first-aid classes that continue today, classes that have affected hundreds of thousands of people. First aid, then and now, has been designed to provide care over a relatively short time span, until a physician can be reached.

The next official leaps in urban prehospital care were taken in 1966, a year that was important for two significant developments. First, the United States government passed the National Highways Safety Act, giving the U.S. Department of Transportation the responsibility for developing an emergency medical

services (EMS) system. From this act came the first emergency medical technician (EMT) course. The EMT program became extremely popular but was oriented (and remains today) toward the "golden hour"—the goal of getting the patient to the hospital within sixty minutes. Second, the American Heart Association (AHA) began to teach cardiopulmonary resuscitation (CPR) courses to the public.

After World War II, with the appearance of more and more leisure time, people began to return to remote areas for recreation. Their medical problems followed them. Prior to 1966 a significant unofficial realization had taken place, an awareness of the inadequacy of Red Cross first-aid courses to prepare outdoor enthusiasts for extended wilderness ventures. In 1942 the *Sierra Club Manual of Ski Mountaineering* included a chapter on remote evacuation, perhaps the first printed material on "wilderness medicine." In the 1950s training programs were initiated that adapted the growing knowledge of medicine to wilderness settings. These early "mountaineering first-aid" programs were written by physicians and managed by outdoor organizations such as The Mountaineers in Seattle. A grand addition to the almost nonexistent literature of wilderness medicine appeared in 1967: the first edition of *Medicine for Mountaineering*, edited by James Wilkerson, MD. (It is now available in its sixth edition.)

In 1976 Stan Bush, a wilderness search-and-rescue director in Colorado, proposed the first Wilderness EMT course. In 1977 the Appalachian Search and Rescue Conference (ASRC) began offering wilderness-oriented EMT classes at the University of Virginia, and the National Outdoor Leadership School (NOLS) began to offer advanced first-aid courses designed especially to meet the needs of their instructors. In February 1977, Stonehearth Open Learning Opportunities (SOLO), a training center in Conway, New Hampshire, began offering wilderness first-aid courses, specializing in the needs of outdoor leaders. The first edition of *Wilderness Medicine* by William Forgey, MD, the "Father of Wilderness Medicine," was published in 1979. Founded in 1983, the Wilderness Medical Society (WMS), a physician-oriented group, began to offer wilderness medical training through conventions and scientific meetings. The first edition of *Management of Wilderness and Environmental Emergencies*, edited by Paul Auerbach and Edward Geehr, both MDs, the definitive piece of wilderness medicine literature to date, also appeared in 1983. (It is now available in its fifth edition under the title *Wilderness Medicine*.) In 1984 SOLO developed the first Wilderness First Responder curriculum and, in January 1985, taught the first WFR course to Outward Bound instructors in Florida. In 1990 the first edition of *Medicine for the Backcountry* was published, a book written by Buck Tilton and Frank Hubbell, cofounder of SOLO, to provide the first practical guide for WFR students. (It is now available in its third edition.)

The 1980s saw the birth of other wilderness prehospital

emergency medicine training organizations, such as Wilderness Medical Associates (WMA), and, in 1990, the Wilderness Medicine Institute (WMI) was founded. In 1999 WMI became a part of NOLS. And the list keeps growing.

Research and development in wilderness medicine continues to be a dynamic area of the medical world. Providers of wilderness medical treatment and prevention are reaching out further and further into the field to save lives and limit suffering, including major contributions to the development of "disaster medicine." To be the best possible WFR will require you to learn well now and to keep up with the steady advancement of wilderness medicine.

## Wilderness Medicine vs. Urban Medicine

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Wilderness medicine involves standard medical principles provided in a context that requires attention to extended contact time with the patient, environmental extremes, treatment with limited and nonspecialized equipment that may require improvisation, and the possible lack of communication.

### *Extended Contact Time*

Patient needs change over time. Problems may become worse and the patient's life or limb may be threatened by the changes. Open wounds, for instance, require little additional attention from the urban first responder because they are handled by the hospital, typically within an hour. In the wilderness an open wound may lead to life-threatening infection before an evacuation can be accomplished.

Over hours, through nights, and sometimes for days, attention to the patient's general well-being must be considered. Such factors as urination, defecation, hydration, thermoregulation, and physical and psychological comfort must be monitored.

A patient's injury in the wilderness may merit a different approach than in an urban environment to improve the long-term outcome. A dislocation, for instance, may necessitate an attempt at reduction.

### *Environmental Extremes*

Cold, heat, wind, rain, snow, ice, rough terrain, high altitude, darkness, and other environmental extremes often increase the stress and risks to the patient and to the rescuers. In addition to the physical risk, harsh conditions may complicate even the simplest care.

### *Limited Equipment/Improvisation*

In the wilderness there is often little or no medical equipment available. The principles of treatment do not change, but care may have to be provided with improvised gear.

## *Communication*

Urban rescuers rarely make transport decisions. The patient either gets transported or refuses transport. In the wilderness rescuers must make independent decisions regarding not only patient treatment but also whether or not (and how) to evacuate the patient, often without any communication with the rest of the world.

One of the greatest challenges of wilderness medicine, however, is the variety of situations the rescuer may find, unique circumstances that often defy a "cookbook" approach to medicine. To choose the treatment "recipe," the WFR needs training *and* common sense as a foundation for making decisions.

Another unique aspect of wilderness medicine is this: The decisions made and treatment provided by a WFR often enable the patient to remain in the field to enjoy a wilderness experience.

## *Training*

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What a WFR needs to know is well established. Training should cover underlying general anatomy and physiology and the foundational skill of a thorough patient assessment. The recognition, treatment, and, where applicable, prevention of all the most likely traumatic, medical, and environmental problems needs to be addressed. Students need to be trained in the management of these emergencies over a long period of time, and such training should include, to name a few priority considerations: the cleaning and closing of wounds; the reduction of dislocations and angulated fractures; the effects on care of cold, heat, and other environment-related problems; a focused assessment of the spine to determine whether or not to take long-term spinal precautions; the management of anaphylaxis; and the cessation of CPR. Instruction should include the handling of minor as well as major complications. In addition, students need to learn principles of general patient care over hours to days, which includes keeping a patient warm, clean, and comfortable; paying attention to nutrition and hydration needs; and monitoring body functions. Training should include basic rescue considerations from a wilderness environment because all patients will require answers to these questions: Can they stay or go, and should it be fast or slow?

The first-aid kit that saves lives, prevents disability, and eases suffering is carried, for the most part, in the human brain. The safest plan for anyone who works or plays far from definitive medical intervention is to be well trained in wilderness medicine.

## Conclusion

After a quick initial assessment, you determine that your patient in the Bighorn Crags has no immediate threats to life. Within a few minutes you've helped ease him off the wet ground onto his sleeping pad. You've dug dry clothing and rain gear from his pack, and, protected from the environment, his shivering begins to subside.

A focused assessment reveals no concerns other than the lower right leg and the potential for moderate to severe hypothermia. Your assessment of the leg reveals the possibility of a fracture. With the wound thoroughly cleaned and bandaged, you and one of your friends immobilize the leg using extra clothing for padding and a Crazy Creek chair for rigid support.

While you're treating the patient, your two other companions have set camp as close as comfortably

possible. It's no problem for the four of you to carry the patient into the tent. You help him into his sleeping bag and begin dinner preparations.

Over dinner you and your group decide the best plan of action includes going out for help. You write, complete with details concerning the status of the patient, a request for aid. Two of your friends will start out with the message tomorrow morning.

All this, and much more, is the stuff of wilderness medicine. The instruction offered by this book will help you learn to provide care in urban and wilderness settings, but the emphasis in every case remains on response to the sick or injured when definitive treatment is far away, and, whenever possible, on steps to take to prevent emergencies.



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