

## EDITORIAL

# Perspectives on being a wilderness physician: is wilderness medicine more than a special body of knowledge?

The branch of medicine called “wilderness medicine” is understood to concern itself with medical care given under “wilderness” conditions. Although we all instinctively know what is meant by “wilderness,” defining it precisely may be difficult. *Merriam Webster’s Collegiate Dictionary*, 10th edition (1993), offers the following: “(a) a tract or region uncultivated and uninhabited by human beings, and (b) an area essentially undisturbed by human activity together with its naturally developed life community.”

This writer took a stab at defining it once,<sup>1</sup> for the nonprofessional, as any area where:

- There is no 911 to call,
- No sophisticated medical facilities exist, and your only emergency equipment is what you bring along or can improvise,
- Communications are primitive or nonexistent,
- You may be stranded by severe environmental conditions, and/or
- Evacuation to definitive medical care is usually prolonged or delayed.

Others have defined “wilderness” as any physical location characterized by delayed or prolonged (over 1 hour) patient transport to medical care. Examination of these prerequisites shows that there are 2 general groups of persons who are in wilderness as far as medical care is concerned:

- Travelers in remote areas. These include backpackers, trekkers, back-country skiers, mountaineers, cavers, kayakers, scuba divers, survivors of plane crashes and boat accidents, and small-boat sailors. These are usually basically healthy (or occasionally with chronic conditions controlled by medication), and their medical problems either tend to be common injuries or exotic illnesses.
- Inhabitants of isolated villages without medical facilities. These persons can be of any age and state of health. Their medical problems tend to be common injuries and illnesses. Local health care is frequently at the First Responder level, and travel is necessary

to obtain medical care. Victims of urban disasters whose medical facilities and communications have been destroyed are part of this group.

I have had a longstanding interest in the first general group of wilderness patients, particularly as related to high altitude, cold weather, and temperate-zone wilderness medical problems. After retiring from active practice in hematology and internal medicine 6 years ago, I moved to a town with 90 year-round inhabitants that expands to about 300 during the summer. As many as 1000 to 2000 visitors a day are present during the winter snowmobile and summer tourist seasons. The town lies at an altitude of 7500 feet and is 80 miles (1½ hours) from the nearest hospital in summer (110 miles—2 hours— in winter) and 2 miles from the northeast entrance of Yellowstone National Park (YNP). Emergency transport to medical care is by YNP ambulance; helicopter support is variable due to stormy weather and mountainous terrain. Since then, I have practiced part time in clinics in YNP, have seen occasional emergencies in town, and have developed a strong interest in the second general group of “wilderness” patients. Although most of them have common illnesses such as upper respiratory infections and minor injuries, I have seen unstable angina, myocardial infarction, congestive heart failure, primary pulmonary hypertension, pheochromocytoma, metastatic embryonal cell carcinoma, intestinal neuronal dysplasia, pulmonary embolism, stroke, peripheral vascular disease, appendicitis, acute mountain sickness, chronic lymphocytic leukemia, multiple sclerosis, various types of allergic reactions, and major, multiple injuries.

Ten years ago in this publication, I listed the ways in which wilderness prehospital emergency care differs from urban prehospital emergency care.<sup>2</sup> Most of these guidelines apply equally well to wilderness medical care.

- It is practiced in the remote outdoor environment, where extreme conditions of heat, cold, altitude, and storm are common, and difficulties in obtaining food, water, and shelter are significant. Physical hazards,

such as snow avalanches, rockfalls, flash floods, wildfires, and lightning, may be present. Hazardous microorganisms, insects, marine animals, land animals, and plants may endanger the health of wilderness travelers, and preexisting medical conditions may recur or flare at awkward times.

- Definitive medical care may be hours or days away because of distance, adverse environmental conditions, lack of transportation, or difficulties in communication. Urban protocols that assume rapid transportation to a medical facility may be irrelevant.
- Illnesses rarely seen in the urban environment, such as acute mountain sickness and deep frostbite, may be encountered.
- The Emergency Medical Service requirement that there be routine physician control by telephone or radio may be unrealistic or impractical. More reliance on field protocols is necessary.
- It may be desirable to train intelligent and motivated nonprofessionals to carry out advanced procedures for common injuries and illnesses, in which a treatment delay of more than a few hours may cause adverse effects that outweigh the possible risks of the procedures.
- There is a need for rescuers to learn basic nursing and subsistence care for an injured or ill person in order to sustain the patient for days before medical assistance can be reached.
- Certain standard urban treatment protocols, such as those for cardiac arrest, may be unrealistic or even hazardous to rescuers.

When I reread this today, I am still reasonably satisfied with its completeness, but would add the following:

- *Ordinary* illnesses and injuries can occur in the wilderness as easily, and at times more easily, than at home and can be even more inconvenient.
- The amount of first-aid equipment that can be carried by the average wilderness recreational group, or even the best-equipped wilderness search and rescue group with helicopter support, is limited; improvisation **will** be necessary.

We as physicians fill one or more of the following 3 roles in relation to the wilderness environment: field participant, advisor, or field caregiver. There may be considerable role overlap. None of these roles can be well filled without motivation, special study, training, and experience.

#### THE PHYSICIAN AS PARTICIPANT

He or she should be thoroughly familiar with the types and magnitudes of any environmental stresses to be ex-

pected and should remember that medical training confers no exemption from contact with any or all of these stresses or, for that matter, from any of the laws of physics. It is necessary to have knowledge of the physiology of cold, heat, and high altitude exposure, the science of proper clothing to include preferred fabrics and the technique of layering (and unlayering), how to obtain water and wild foods if necessary, the importance of and techniques for acquiring good physical conditioning, and the special physical, chemical, animal, and plant hazards of the environment to be entered. Relying on this knowledge, the physician can devote thought and study to how injuries and illnesses resulting from these hazards (including any unusual illnesses peculiar to the area) can be prevented. For example, when camping in bear country, keep food hung well above the ground and away from sleeping areas. When camping in the desert, carry materials for constructing solar stills. When hiking above timberline, avoid areas that attract lightning strikes. When in avalanche country, carry transceivers, shovels, and probes.

With the above in mind, equipment and clothing can be selected for both everyday and survival situations. A first-aid/medical kit is prepared that should contain equipment and supplies tailored to expected needs—eg, a low-reading clinical thermometer for a cold climate and antibiotics for dysentery for a hot climate. Since wilderness medicine, like politics, is “the art of the possible,” and there is a limit to the amount of medical/first-aid equipment that can be carried by persons on foot, discretion is necessary. Item types and amounts are chosen based on length of trip, likelihood of use, and opportunity for multiple use. Favorable weight/bulk/cost-to-benefit ratio is usually also a consideration, as noted above. The ability to improvise first-aid equipment such as splints is an essential skill.

#### THE PHYSICIAN AS ADVISOR

In this case, the physician is commonly consulted by a usually but not necessarily healthy person planning a trip to a place that may present unique mental and physical challenges and stresses. Physicians who advise those who undertake wilderness excursions need to be thoroughly familiar with travel medicine in general. They also need to know the material in the “Participant” section above, including the special hazards of wilderness travel in general and the medical hazards of the geographical areas to be visited. The patient ideally should be given a thorough history and physical examination, with particular attention to any significant previous or current illnesses and injuries, allergies, drugs taken on an ongoing basis, and previous surgery. At that point, if

the physician feels that the projected trip is unwise, the patient should be strongly cautioned not to go. Otherwise, advice is given regarding immunizations, avoiding food and waterborne illnesses, special hazards of the environment (such as high altitude), special equipment and supplies likely to be needed, and the contents of a first-aid kit to include prescriptions for antibiotics, pain medications, etc, if indicated. The patient is reminded to carry extra supplies of any medications taken on a regular basis.

#### THE PHYSICIAN AS WILDERNESS CAREGIVER

Here, it is important to make a distinction between the 2 basic types of wilderness described in the first part of this article. Howard Donner's recent discussion is an up-to-date review of common expedition medical problems.<sup>3</sup> Although special knowledge of environmental, travel, and/or tropical medicine is essential, the most important requirements for both types of wilderness are good general medical training, excellent assessment skills, good judgment, confidence, and experience. In addition, the physician must be able to slip into a unique although temporary mindset that takes into account the difference between the resources available in the field and those he or she is accustomed to having available in a modern medical center. The usual practice aids such as laboratory or radiographic studies will be absent. The physician will have to rely on his/her 5 senses and good reasoning ability plus a few simple tools such as a stethoscope, thermometer, and flashlight in order to reach important decisions based on:

- What is wrong?
- How serious is it?
- Can it be treated in the field, or is evacuation to definitive medical care necessary?

The Wilderness Medical Society's *Practice Guidelines*<sup>4</sup> are useful in making this last decision, with the following emphases:

- If evacuation is necessary, does the party have enough resources to provide it or will outside help be needed?
- If it can be treated in the field, are the knowledge, skills, resources, and equipment available onsite?

The wilderness physician and at least 1 other party member should know the nearest search and rescue resources and how to contact them. If the party itself will

provide evacuation, the ability to improvise transport devices may be essential.

For mastery of wilderness medicine, the most useful prior training is in global specialties such as primary care, emergency medicine, internal medicine, and general surgery. As in any field of medicine, good follow-up is necessary to detect mistakes in diagnosis or care. Four recent unfavorable changes in the delivery of medical care are as follows:

1. Shift in emphasis toward inexpensive medical care instead of excellent medical care,
2. Increasing physician time necessarily spent dealing with paperwork, politics, bureaucracy, and business decisions rather than medicine,
3. Adverse effects on medical education of decrease in reimbursement to teaching hospitals, and
4. Deemphasis on the learning and practice of bedside diagnostic skills in favor of the use of technology and laboratory science. Although fine-tuning such diagnostic skills is a lifelong process, failure to develop them during training at a comparatively leisurely pace is difficult to repair during a busy medical practice.

In conclusion, mastery of the body of knowledge called "wilderness medicine," although very important, is not in itself sufficient to ensure good wilderness medical care. Forethought, preparation, experience, confidence in your knowledge and abilities, the ability to slip into a "wilderness" mindset, and especially, the ability to take a thorough history, do a meticulous and accurate physical examination, and draw the proper conclusions from your findings are of equal or more importance. Contemporary wilderness medicine textbooks and courses in wilderness medicine devote much attention to the body of knowledge and little attention to these less tangible but arguably more important skills.

#### References

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