THE WILDERNESS INSTRUCTOR

The Perceived Benefits of a Medical School Course in Wilderness Medicine

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Founded in 1983, the Wilderness Medical Society has since grown in numbers and stature. Its specific purpose has been “to encourage, foster, support, and conduct activities or programs concerned with life sciences which may improve the scientific knowledge of the membership and the general public in matters related to wilderness environments and human activities in these environments.”¹ It was natural that this society and its goals would attract the interest of medical students and medical residency programs. A number of formal courses have been established in medical schools to expose students to the many disciplines of wilderness medicine. The Wilderness Medical Society sponsors its own course for third- and fourth-year medical students, and courses also are taught at the University of Massachusetts Medical School; Stanford University; the University of South Carolina; University of California, San Francisco, Fresno; and the University of New Mexico. The University of Pennsylvania School of Medicine established a wilderness medicine “minicourse” in 1995. During the course, approximately 16 medical students live in a wilderness setting in central New Jersey for 2 weeks in January. Their days and evening are devoted to didactic lectures, demonstrations, and practical applications in the various areas of wilderness medicine. (An overview of the curriculum is listed in the Appendix.) This course is an intensive couple of weeks and requires much more preparation and organization by the students and the faculty than do standard courses. Furthermore, it does not appear to have the obvious direct clinical applications for hospital or office care of the more traditional courses offered at the University of Pennsylvania School of Medicine and most other medical schools. Rather, the Wilderness Medicine course at the University of Pennsylvania is designed to teach students to deal with emergency medical scenarios in remote, outdoor settings. Therefore, we were curious to see how often and in what

situations these students used the information learned in this course as they completed their residencies and began their careers. To do this, we designed a small study to investigate the extent to which students who had completed the course were using what they learned in their subsequent professional and personal lives.

Methods

In July 2003, we mailed 58 questionnaires to all the former Wilderness Medicine students from the University of Pennsylvania. This was accompanied by a cover letter that explained the purpose of the study and asked for their participation. One month after the initial mailing, we sent a follow-up questionnaire and explanatory letter with return postage included. The University of Pennsylvania Health System Institutional Review Board approved the study. The questionnaires contained the following questions and requests:

1. What is your current position? How long ago did you take the Wilderness Medicine course?
2. On a scale of 1 to 10, where 1 is “insignificant” and 10 is “major,” what, if any, impact has your Wilderness Medicine course had on your professional career?
3. If applicable, please explain the specific content of the course that you have used professionally and how often.
4. On a scale of 1 to 10, where 1 is “insignificant” and 10 is “major,” what, if any, impact has your Wilderness Medicine course had on your personal life?
5. Please list the major outdoor activities in which you have participated in the past 2 years and how much time you have spent doing each.
6. Do you think that you are likely to use knowledge gained in the course in the next 5 years? What specific things?
7. If applicable, please explain the specific content of

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Figure 1. Overall enjoyment of the course.

Figure 2. Overall usefulness of the course.

the course that you have used personally and how often.

8. What do you feel was the most valuable aspect of the course?
9. Please rate the overall usefulness of the course on a scale of 1 to 10 (1 = "a waste of precious medical school time" and 10 = "the most useful course in medical school").
10. Please rate how much you enjoyed the course on a scale of 1 to 10 (1 = "not at all" and 10 = "best course in medical school").

Course history and description

Wilderness Medicine is currently in its eighth year as a course offering at the University of Pennsylvania Medical School. It is offered as 1 of a series of intersession minicourses and is open to students in their third or fourth year of medical school.

The course is a 2-week, graded elective that is set in the Princeton-Blairstown area near the Delaware Water Gap in central New Jersey. It takes place in the middle of winter, providing an ideally cold and harsh setting for simulating various wilderness emergency scenarios. Classes consist of an average of 15 or 16 third- and fourth-year students almost evenly represented by men and women. University of Pennsylvania School of Medicine faculty and guest faculty teach the course, with students from the previous year serving as teaching assistants. The students stay in primitive cabins, and many of the participating faculty stay with them. Although students initially funded the trip themselves, the course is now supported by grants. There are daily didactic lecture sessions and daily hands-on training. However, the heart of the course is various role-playing scenarios that simulate wilderness emergency medicine situations. An emphasis is placed on student "self-learning" and active applied learning. Students not only are asked to respond

to a variety of emergency scenarios, but are also responsible for playing the role of the victim at times—a role which they take quite seriously. Importance is placed on leadership, teamwork skills, and the ability to make potentially life-and-death decisions such as whether or not to evacuate a patient. Typical challenges include 1) rescuing a person who has fallen through the ice into a river, 2) building a shelter, 3) navigating the wilderness, 4) rescuing a person with an injured neck on a mountain climbing accident, and 5) managing a mass casualty.

Results

Of the 58 questionnaires mailed, 29 (50%) were returned. Students who took the course in the past 4 years comprised the majority of responses. The responses clearly indicated that the students enjoyed the course. When asked to rate their enjoyment on a scale of 1 to 10, they reported a mean score of 9.3 (Figure 1). Over 40% of them rated this course as the best course in medical school.

There was also a strong sentiment that the curriculum was generally useful. When asked to rate the overall usefulness of the course on a scale of 1 to 10, the former students reported a mean score of 7.9 (Figure 2). Of those who replied, 81.5% believed that they were likely to use content from the course in the next 5 years, whereas 14.8% believed that they would probably use it. Only 3.7% believed they would not use some aspect of the course content in the next 5 years.

Despite busy post-medical school schedules, most of the former students who returned the questionnaires reported being fairly active in outdoor recreation, with the most popular activities as hiking or camping, skiing or snowboarding, and biking. They generally felt that the course had a positive impact on their personal life. On a 10-point scale where 1 is "insignificant" and 10 is "of

Figure 3. Impact of the course on personal life.

Figure 4. Impact of the course on professional life.

major significance,” the former students noted a mean impact of 6.5 (Figure 3). When asked to rate the course’s impact on their professional life, they continued to be generally positive (mean = 5.6), though the replies were more varied (Figure 4). Regarding the specific course content used professionally, trauma- and triage-related activities were the 2 most frequently mentioned. Nearly 70% of former students reported using course content in the treatment of some type of trauma, whereas 36% said they applied course content in triage. Additionally, 18% said they have used the basics of field medicine and improvisation taught in the course, whereas 18% reported treating an altitude-, sports-, or hypothermia-related illness such as high-altitude pulmonary edema or acute mountain sickness. The vast majority of the former students thought that they would use or continue to use information from the course in their future professional lives (Figure 5).

Discussion

The responses clearly indicate that the students who took the Wilderness Medicine course at the University of Pennsylvania School of Medicine rated the course as extremely enjoyable, and it is remarkable that 40% of them believed that this was the best course in medical school. In addition to giving the course a high enjoyment rating, the majority of the former students also provided comments such as “I loved it! Please continue,” and “Definitely the most fun and useful course I’ve taken.”

In addition to liking the course, a large majority of the former students believed that the course was generally useful. Of those who replied, most felt confident that they would use course material in the next 5 years, and the overall usefulness of the course was reported as a mean of 7.9 of 10. Interestingly, however, the specific application of the content learned in the Wilderness Medicine course, though still positive, was not quite so

notable as the degree of enjoyment and the general feeling of utility of the course. Asking about the course’s overall perceived usefulness resulted in higher marks than did asking more specific questions about course usefulness. Some students may have taken the course for “fun” rather than with an eye toward future utility. This is likely related to the high levels of enjoyment experienced in the course. Because students remember the course as an enjoyable experience, they may tend to ascribe greater value to it. The impact of the course on their personal lives was rated as of greater magnitude than on their professional lives. In the former students’ professional lives, not surprisingly, the clinical information related to triage and trauma management was most frequently mentioned and were particularly applicable to future use rather than skills in managing such medical problems as mountain sickness, a much less commonly confronted problem. Many of the replies included anecdotal comments. For instance, one individual, while hiking in Colorado wilderness, stabilized a 300-pound man experiencing a myocardial infarction by using a paper cone for a stethoscope and 2 frame packs as a stretcher. Most importantly, the majority of former

Figure 5. Likelihood of future use of information learned in the course.

students who replied reported a greater sense of confidence to meet the needs of a medical emergency outside a clinical setting.

Conclusions

The Wilderness Medicine course offered at the University of Pennsylvania is undoubtedly a highly enjoyable course. Although the enjoyment level may influence the reported usefulness of the course, lessons learned in trauma and triage may be particularly applicable in a traditional clinical setting, to the value of wilderness emergency medicine in personal outdoor pursuits, and to the overall improved sense of confidence in managing medical emergency situations.

One responder said, "I truly do think this was the most useful course in medical school because it teaches you practical, hands-on skills that you can use in any

environment. In the rest of medical school, you learn what to do when something happens and you're in the hospital with all sorts of advanced interventions at your disposal. But it was only in the Wilderness Medicine course that you learn what to do when you're not in a hospital setting . . . this course was absolutely critical."

Acknowledgments

The authors wish to thank Harvey Rubin, MD, Associate Dean for Education, University of Pennsylvania School of Medicine for his helpful input. This work was supported by the Infectious Disease Division, University of Pennsylvania, Philadelphia, PA.

Reference

1. Wilderness Medical Society. Available at: <http://www.wms.org/about/history.asp>. Accessed June 10, 2004.

Appendix

Summary of Curriculum

Lectures and demonstrations

1. Clothing selection for extreme environments
2. Field sanitation and hygiene
3. Wilderness water procurement and treatment
4. Vector control
5. Primary and secondary assessment
6. Rapid and safe movement of patients from extreme locations
7. Hypothermia
8. Litter constructing, packing, and carrying
9. Wilderness navigation
10. Climbing safely and climbing injuries
11. Exam and management of shoulder, ankle, and knee injuries
12. International travel
13. Medical kits
14. Ethical/legal dilemmas in wilderness medicine
15. Nutrition in the wilderness
16. Avalanche
17. High-altitude medicine
18. Leadership skills

Scenarios

1. A victim is on the ice after having fallen and received a concussion, and a second victim is nearby and hypothermic. The objectives of this scenario are for the team to safely get the first victim off the ice and identify the second victim by doing a thorough scene assessment.
 2. A patient has hypothermia with lower extremity fracture. The objectives of this scenario are for the rescuers to conduct a primary and secondary assessment, attempt to protect the victim from further heat loss, and splint the fracture.
 3. A victim is reported missing for several hours in a snowstorm. Rescuers are told the victim has a global positioning system and are given a compass heading to the victim's last known location. Rescuers are not told that the victim dropped the global positioning system and fractured an arm, then took a narcotic for the pain and became obtunded lying down in the snow. Objectives of this scenario are to organize a search party, use a map and a compass to determine the victim's last known location, locate victim by using principles of search technique, appropriately complete primary and secondary assessment, provide any treatment that can be performed in the field, and make an evacuation plan.
 4. Climbing Accident: One victim fell while climbing and has a closed head injury with c-spine fracture (step off on exam); the other climber received a broken wrist while losing hold of the rope while belaying. The objectives of this scenario are for the rescuers to organize a rescue party, effectively complete primary and secondary assessments for both victims, and evacuate the fall victim via litter with c-spine stabilization while having the other victim walk out.
 5. Three members of a rafting trip return to their lodge to report that one of the other members appeared to be having a heart attack and was left at the scene with a friend and the rafting-trip guide. The rescue team is told that there are 3 people left at the scene, but when they arrive at the river only a 60-year-old man clearly having a myocardial infarction and his friend are present. The guide has actually been washed downstream while trying to secure the raft and is several hundreds yards away with a concussion, radial/ulnar fracture, and a large head laceration. The objectives of this scenario are to obtain a good history in order to identify the missing victim, then allocate resources appropriately.
 6. Rescuers are given a report of a small plane crash with 4 victims and a map designating the believed crash site. Upon arriving at the crash site, the rescuers notice that the plane is still running (unsafe scene). The pilot has tachypnea and has received a major head injury; he expires within 5 minutes of rescuers arriving. There is a passenger in the back seat with second-degree burns covering both lower extremities, as well as a sucking chest wound. Two other victims are missing, and a trail of blood is seen leading downhill from the crash site. A few hundred yards away, one of the victims is found with a dislocated patella. The last victim is found still farther down the trail with an eviscerated eye and a dislocated shoulder. The objectives of this scenario are to assess scene safety, allocate resources effectively, perform primary and secondary assessments for all patients, temporize injuries in the field, and evacuate patients to a lodge.
 7. The scenario is a night-search exercise where students are given a search area in which a backpack has been hidden. The objective is to organize a search party to perform a line search by using compass bearing to orient the line.
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