THE WILDERNESS INSTRUCTOR

Classroom and Reality: What Should We Teach in Wilderness First Aid Courses?

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Curricula for courses in urban prehospital emergency care are based on published guidelines and standards describing standards of care and scope of practice for different levels of training and authorization. For Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC), these guidelines and standards are revised every 5 years at conferences sponsored by the American Heart Association and printed in their journal, *Circulation*.¹ Part 14 of these guidelines gives the recommendations of the National First Aid Science Advisory Board, cofounded by the American Heart Association (AHA) and the American Red Cross (ARC), and used as the basis of the AHA and ARC video-driven First Aid courses, which are widely accepted as de facto standards for urban first aid training. These courses are typically taught in 4 to 6 hours, and include very little skills practice, because their main objectives are to teach students how to recognize common emergencies, and when to call for an ambulance. For training in prehospital care, from Emergency Medical Responder to Paramedic, the National Emergency Medical Services Education Standards² describe the knowledge and skills that will be required in the future for certification at each level.

For wilderness emergency care training, however, there are no such official standards, only a consensus of wilderness medicine experts and educators published by the Wilderness Medical Society (WMS), *Practice Guidelines for Wilderness Emergency Care* (5th Edition, 2006). These guidelines describe emergency care for various problems in a wilderness setting, but do not prescribe curricula for courses. In his editorial for the Summer 2009 issue,³ Dr Forgey reflects on the Wilderness Medical Society's unsuccessful effort in 1999 to standardize Wilderness First Aid (WFA) curricula. He also expresses the hope that the WMS will bring together a group of experts in the future to analyze the factors involved in wilderness accidents and use the results to develop literature-based curricula for wilder-

ness courses. But until or unless that is accomplished, how can we decide what topics and skills to include in our WFA, Wilderness First Responder (WFR), and Wilderness EMT (WEMT) courses; and how much time to allot each of them?

Guidelines for prehospital and hospital emergency care are supposedly based on published evidence, so their validity depends on the quality, quantity, and relevance of the evidence. One ongoing problem with published medical evidence is the possibility of fraud, especially when large investments and potential profits are at stake. For example, according to an article published in *The Observer* in 2003, "almost half of all articles published in journals are by ghostwriters. While doctors who have put their names to the papers can be paid handsomely for 'lending' their reputations, the ghostwriters remain hidden. They, and the involvement of the pharmaceutical firms, are rarely revealed."⁴

Some examples of this practice were publicized in the *Journal of the American Medical Association* in 2008.⁵ And even conscientious researchers may not be aware of all the factors that can invalidate their results. John P.A. Ioannidis analyzed these factors in an article with the provocative title "Why most published research findings are false."⁶ So it is understandable that practitioners may be skeptical of published studies that seem to contradict their clinical and field experience.

In wilderness medicine, however, research is limited mainly by the paucity of funding. Prospective studies tend to be opportunistic and driven by the dedication of the researchers rather than large grants. As a result, they tend to be small in scale, limiting their predictive power. Even retrospective studies are limited by the paucity of data and the lack of universal reporting protocols. Many (perhaps most) wilderness emergencies are not fully reported and published, much less compiled in accessible databases.

Our students are obviously an excellent source of information about wilderness emergencies that can hap-

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pen to them. In this instructor's experience, almost all students have stories of serious injuries or other problems that they have experienced or witnessed in their wilderness activities; almost none of these emergencies were recorded or published anywhere. Often, these experiences were what motivated students to take the course. If you start a class by eliciting their stories, they can help you adjust the class to the needs of its participants, and possibly make your curriculum more realistic. In the advanced courses (WFR and WEMT), having students write the story of a real wilderness emergency (towards the end of the class) can steadily augment your own database, as well as help students bring what they have learned into focus. Have them not only describe what happened and what people on the scene did but also explain what they, after completing the course, would now do differently (if anything).

These accounts can help you do an ongoing evaluation of the relevance of what you teach to the needs of your students.^{7,8} If you encourage alumni of your courses to e-mail you accounts of wilderness emergencies where they used what they learned in the class to avoid or cope with wilderness emergencies (or found that they lacked the knowledge or skills they needed), you may be rewarded with an ongoing reality check for your curriculum.

Some organizations engage in outdoor activities where they must deal with accidents, and also teach their own emergency care courses. The National Outdoor Leadership School (www.nols.edu) and the National Ski Patrol (www.nsp.org) are 2 examples. While their textbooks obviously benefit from the authors' extensive practical experience, it would be interesting to know what use they make of data from their incident reports in designing and revising their curricula. Another organization, however, that has been cited for "a nationally standardized curriculum and certification"⁹ (the ARC) has not even published a WFA textbook, only a course outline put together by a local chapter in Pennsylvania.¹⁰

While most injuries and other problems in the wilderness (as in urban situations) are minor, they can have serious consequences in the wilderness. For example, foot blisters can seriously impair the ability to continue an activity safely. This would warrant more time for teaching prevention and treatment. Frequency, however, is not the only criterion for including a problem in a course curriculum. Rarer but more serious emergencies require attention in the classroom not only because they can cause death or disability, but also because participants are unlikely to maintain their ability to deal with these emergencies by encountering them frequently in the field. Moreover, many of these emergencies require quick action, so there is no time to review or experiment when they are happening. A sucking chest wound is a

good example: It does not take much time to teach (because the first aid level treatment is very simple), and it can really liven up a role-playing scenario in a class.

Many of the skills we teach in our wilderness courses, however, are much more complex, especially if students must learn to improvise with various materials, instead of practicing on standardized equipment. Splinting is a good example. Including enough practice and review so that students are likely to learn and retain this skill requires a significant allotment of curriculum time. But we can make this training more effective by having students bring to class, and practice with, materials they would be likely to have with them in a real wilderness emergency, depending on their activities: ice axes, paddles, hiking poles, etc.

In contrast to wilderness emergency care, CPR outcomes, performance, and training have been exhaustively studied since the first Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC) were published in a 1974 supplement to *JAMA*.¹¹ These studies have repeatedly shown very disappointing survival rates for out of hospital cardiac arrest, inability of most people (including medical professionals) to perform effective CPR on recording manikins after being trained,¹² and failure of instructors to follow course plans, provide enough skills practice, or correct student errors.¹³ Although poor teaching of CPR (and consequent poor performance in real situations) is not the only reason suggested in these studies for the poor survival rate, since CPR is not the only factor, the connection between classroom and reality is inescapable.

While we must be careful about generalizing from studies of such a specific, highly standardized set of skills, the evolution of CPR training does offer some applicable lessons for wilderness training. Perhaps the most important lesson is the increasing focus in CPR courses on practicing the skills repeatedly and realistically, and getting good corrective feedback. Although wilderness skills are too varied and improvisational to lend themselves to the video-driven format of most current CPR courses (in some of which students practice the skills along with the video), we can see the same principle applied in the National Ski Patrol Outdoor Emergency Care course¹⁴ (which this instructor has been teaching since the beginning of the program). Students typically spend more than half their classroom time doing role-playing scenarios, which require them to figure out the problems, set priorities, and use appropriate skills in a situation made as realistic as possible by the instructor. Many wilderness instructors also teach scenario-driven classes.

Another lesson is that keeping students actively involved, and engaging as many senses as possible, strongly rein-

forces the learning process. Even lecture can be made interactive by asking leading questions that induce students to make logical and causal connections and figure things out along with you. This helps them develop assessment and analytical skills that they will need to work through both scenarios and real emergencies. Good visual aids that literally show students what you are discussing also reinforce learning, but beware of the unadorned bullet point presentation, which is a sure cure for insomnia.

Although the WMS effort to standardize WFA curricula failed, it did have one side benefit. Participants received copies of everyone else's curricula. Perhaps not surprisingly, they were all very similar. In WFA, we all teach some form of patient assessment, basic wound care, bandaging, and splinting. We all teach about environmental hazards including the effects of heat, cold, and (when relevant to our students) altitude. We all discuss biological hazards, especially the ones that our students (depending on where they live and travel) are likely to encounter. We all at least mention medical problems in the wilderness. In WFR and WEMT we add more advanced skills such as wilderness extrication and transport (including spinal management), and improvised traction splinting; we review human anatomy and physiology; and we explore environmental and biological hazards, as well as medical emergencies, much more thoroughly.

By eliciting stories of wilderness emergencies (and near misses) from our students and alumni, and mining data on wilderness accidents from any outdoor organizations with which we may be affiliated, we can do an ongoing reality check of what we are teaching. However, even an evidence-based, standardized curriculum cannot guarantee that students will learn (as the many studies of CPR performance and training testify). Whether our classes are effective in preparing students for real emergencies still depends more on how we teach than on what we teach.

References

1. 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2005;112(suppl). Available at: http://circ.ahajournals.org/content/vol112/24_suppl/. Accessed July 26, 2009.
2. National Emergency Medical Services Education Standards. Available at: <http://www.nhtsa.gov/staticfiles/DOT/NHTSA/ems/811077a.pdf>. Accessed July 26, 2009.
3. Forgey WW. Wilderness first aid: managing remote area medical issues. *Wilderness Environ Med*. 2006;20:106.
4. Barrett A. Revealed: how drug firms 'hoodwink' medical journals. *The Observer*. December 7, 2003. Available at: <http://www.guardian.co.uk/society/2003/dec/07/health.businessofresearch/print>. Accessed July 26, 2009.
5. Ross JS, Hill KP, Egilman DS, Krumholz HM. Guest authorship and ghostwriting in publications related to Rofecoxib: a case study of industry documents from Rofecoxib litigation. *JAMA*. 2008;299:1800–1812.
6. Ioannidis JPA. Why most published research findings are false. *PLOS Med*. Available at: <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0020124>. Accessed July 26, 2009.
7. Donelan S. Classroom & reality: lessons from real emergencies. *Wilderness Environ Med*. 2000;11:122–124.
8. Donelan S. Classroom & reality II: more lessons from real emergencies. *Wilderness Environ Med*. 2003;14:142–145.
9. Welch TR, Clement K, Berman D. Wilderness first aid: is there an industry standard? *Wilderness Environ Med*. 2009; 20:113–117.
10. Online course by the Transylvania, PA Chapter of the American Red Cross. Available at: <http://www.transylvaniaredcross.com/wfab.htm>. Accessed July 26, 2009.
11. Standards for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). *JAMA*. 1974;227(suppl).
12. Moser DK, Coleman S. Recommendations for improving cardiopulmonary resuscitation skills retention. *Heart Lung*. 1992;21:372–380.
13. Kaye W, et al. The problem of poor retention of CPR skills may lie with the instructor. *Resuscitation*. 1991;21:61–87.
14. National Ski Patrol. Outdoor Emergency Care program. Available at: http://www.nsp.org/1/nsp/NSP_Education_Programs/Courses_xx_Curriculum_and_Publications/OutdoorEmergencyCareProgram.asp. Accessed July 26, 2009.